

## Effectiveness of the "Sayang Warga" Application as a Potential Solution for Stunting Reduction in Surabaya

### Efektifitas Aplikasi "Sayang Warga" Sebagai Potensi Pengentasan Stunting di Kota Surabaya

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#### Abstract

*This study aims to explain the effectiveness of the Sayang Warga service application in accelerating the reduction of stunting in the government of Surabaya City, using the service effectiveness system theory proposed by Delone and Lean. Stunting is a condition of chronic malnutrition that occurs in children under five years old. This research employs a qualitative research method and is conducted in Surabaya City. The study utilizes secondary data from literature sources and applies an interactive model of qualitative data analysis techniques. The results of this study indicate the effectiveness of the Sayang Warga application in addressing stunting in Surabaya City. The application serves as an innovative breakthrough, facilitating the Surabaya City Government in stunting data collection. Consequently, with this application, the Surabaya City Government is more organized in preventing stunting.*

**Keywords:** *effectiveness; application; public service innovation; stunting*

#### Abstrak

Tujuan penelitian ini yaitu menjelaskan tingkat efektifitas aplikasi layanan sayang warga dalam mempercepat penurunan stunting pada pemerintah Kota Surabaya dengan menggunakan teori efektivitas system layanan yang dikemukakan oleh Delone and Lean. Stunting adalah kondisi kekurangan gizi kronis yang terjadi pada anak dibawah usia lima tahun. Penelitian ini menggunakan metode penelitian kualitatif. lokasi di Kota Surabaya. Penelitian ini menggunakan data sekunder dari pustaka. Penelitian ini menggunakan teknik analisis data kualitatif model interaktif. Hasil dari penelitian ini menunjukkan tingkat keefektivan aplikasi Sayang Warga terhadap pengentasan stunting di Kota Surabaya, karena aplikasi tersebut menjadi terobosan baru untuk dapat dimanfaatkan serta memudahkan Pemerintah Kota Surabaya dalam melakukan pendataan stunting. Berkat adanya aplikasi ini pemerintah Kota Surabaya lebih terorganisir dalam mencegah stunting.

**Kata kunci:** efektivitas; aplikasi; inovasi pelayanan publik; stunting.

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## **Introduction**

The rapid advancement of technology is undeniable, providing almost all societal elements access to fast and accurate information. The increasing number of digital technology users has led various sectors to offer a range of applications and information services to fulfill societal needs. This digital evolution is utilized not only by the general public but also by various government institutions to offer easy and high-quality services to the community. Providing the best and highest quality services to the public is one of the government's duties, as stated in Article 18 regarding public services of Law No. 25 of 2009, which asserts that quality services adhering to principles and objectives are the public's right. Positive public assessment of government performance is reflected in the provision of good and accessible services.

The rapid technological advancements have transformed public services, shifting from conventional methods to online or electronic systems. The Indonesian government has issued various policies to enhance public service quality, one of which is the implementation of the Public Service Innovation Competition (KIPP) by the Ministry of Administrative and Bureaucratic Reform (Kemenpan RB). In 2023, KIPP recognized the top 45 exemplary public service innovations, including the "Sayang Warga Surabaya" application (System for Resident Assistance and Protection in Surabaya). This innovation, initiated by the Surabaya City Government, competed with 2,269 innovations from ministries, provinces, regencies, and cities. The application, available for free download on Android (Play Store) and web-based, allows local RT (Neighborhood Association) administrators and Kader Surabaya Hebat (KSH) to record various community issues related to poverty and health problems, including stunting.

Stunting is a condition of chronic malnutrition that occurs in children under five years of age (World Health Organization, 2022). This condition is crucial to address, particularly during the first 1000 days of life (HPK), from pregnancy until the child is two years old. The determination of this condition is based on height-for-age measurements, where results are more than two standard deviations (SD) below the average growth standard for children as per WHO (World Health Organization, 2015). Stunting can lead to various physiological, developmental, economic, and mental issues in children. Physiologically, it can increase mortality and morbidity rates, result in

shorter stature in adulthood compared to average adults, increase obesity and other degenerative diseases, and lower reproductive health (WHO, 2017).

Developmentally, stunting can cause a decline in cognitive, motor, and language development, poor academic performance in school, reduced learning capacity, and unrealized potential. Economically, stunting can raise healthcare expenses, increase opportunity costs due to caring for a sick child, and lower work capacity and productivity (WHO, 2017). Furthermore, mentally, stunting may lead to anxiety, depressive symptoms, and lower self-esteem compared to children who do not experience stunting. Those who experienced stunting before the age of two exhibit worse emotional and behavioral conditions in late adolescence (Walker, Chang, Powell, Simonoff, & Grantham-McGregor, 2007).

This situation is not aligned with one of Indonesia's missions/goals of forming a Golden Generation by 2045 (Siapakah kamu jadi generasi emas 2045, 2021). To achieve this, the country has implemented various programs across different sectors. One of these is the Stunting Reduction Acceleration Program (Oebaidillah, 2021). This program has been implemented in all provinces in Indonesia since 2018, under the legal umbrella of Presidential Regulation (Perpres) No. 72 of 2021 concerning Stunting Reduction Acceleration (Kementerian Sekretariat Negara RI, 2021). The program successfully reduced the stunting rate to 24.4% from 30.8% in 2018. However, this figure is still far from the main target of 14% nationally by 2024 (Kementerian Sekretariat Negara RI, 2022).

Surabaya, as the city/regency with the sixth highest stunting cases in East Java at 28.90%, remains above the provincial average of 23.50% (SSGI, 2021). The city continues to strive to eradicate stunting at the municipal level. In July 2022, there were 6,722 active stunting cases in Surabaya (Pemerintah Kota Surabaya, 2022). The departments involved in stunting eradication include the health department, social services, education, food security and agriculture, regional planning, population and civil registration, water resources and public works, sanitation and green open spaces, environment, women's empowerment and child protection, and public housing and settlement areas (Peraturan Walikota Nomor 79 Tahun 2022 tentang Percepatan Penurunan Stunting di Kota Surabaya, 2022). This collaborative effort is fully

supported by various legal frameworks in Surabaya, including Regional Regulations, Mayoral Regulations, Mayoral Circular Letters, and related Department Head Letters. The latest legal basis includes Mayoral Regulation No. 69 of 2022 on Accelerating Stunting Reduction in Surabaya and the Mayor's Letter on the Stunting Reduction Acceleration Team in Surabaya for 2022 (Peraturan Walikota Nomor 79 Tahun 2022 tentang Percepatan Penurunan Stunting di Kota Surabaya, 2022).

The introduction of this application is expected to address stunting issues swiftly and accurately. However, the application has some limitations. At the RT and KSH management levels, it is not possible to update the number of active users regularly, as the number of active accounts using the web page cannot be checked by the general public. Additionally, the application has numerous shortcomings, such as a plethora of menus with identical functions across all accounts, leading to data being accessible to other users' accounts and creating confusion.

To evaluate the effectiveness of an application in accelerating the reduction of stunting, it is essential to consider existing evidence and strategies. The World Health Organization (WHO) has emphasized the importance of cost-effective interventions and policies to address stunting in children under five years old (Onís & Branca, 2016). Various applications have been developed to assist in monitoring and prevention. For instance, the "ELSIMIL" application was introduced as part of the Stunting Reduction Acceleration Program (Nusantarie, 2024). Additionally, the smartphone application "Toddler Nutrition Management for Stunting (MNBS)" has shown positive effects on the growth of stunted toddlers (Wicaksono & Satiti, 2020). These technological tools contribute to tracking growth and development, which is fundamental in effectively addressing stunting. The utilization of information systems and smart applications, such as "Aplikasi Ting Pintar" and "Aplikasi Posyandu," highlights the integration of technology in accelerating stunting reduction efforts (Selviyanti et al., 2022; Soetjatie, 2022).

Although various studies have examined the use of technology for stunting reduction, such as the ELSIMIL and MNBS applications that have shown positive effects (Nusantarie, 2024; Wicaksono & Satiti, 2020), there is a research gap regarding the specific effectiveness of the "Sayang Warga" application in Surabaya. Previous

studies have focused on the general impact of technology and national policies (Oebaidillah, 2021) but have not explored the implementation and effectiveness of this application in the local context. Therefore, further research is needed to assess the effectiveness of the "Sayang Warga" application in supporting the stunting reduction acceleration program in Surabaya, as well as to identify obstacles and potential improvements in its usage. Based on the aforementioned issues, the researcher is interested in conducting a study titled "The Effectiveness of the Sayang Warga Application as a Potential Solution for Stunting Alleviation in Surabaya." The objective of this research is to explain the effectiveness level of the service application launched by the Surabaya city government in accelerating stunting reduction using the service system effectiveness theory.

### **Research Methods**

This study discusses the public service innovations implemented by the Surabaya City Government, which were recognized with the Commendable Public Service Innovation Award at the 2023 Public Service Innovation Competition (KIPP) in the city government cluster (Diah, 2023). Therefore, this research employs qualitative analysis using longitudinal data planning analysis by considering information sources deemed capable of supporting the obtained data (Hughes, 2011). The study utilizes secondary data collection and acknowledges potential limitations, including the selective use of a very small sample size and limited analysis. The research applies interactive data analysis proposed by Miles and Huberman, involving several key components: data reduction, data presentation, data condensation, and conclusion drawing/verification (Miles, Huberman, & Saldana, 2014). After this process, steps for data presentation are undertaken, which include condensing and refining the collected data to reach a conclusion. This stage involves data evaluation from initial collection to presentation, identifying patterns, and providing explanations.

## **Results And Discussion**

### **Analysis of the Effectiveness of the Sayang Warga Application**

In this section, the researcher analyzes the results of observations regarding various factors, particularly external factors, such as the responses provided by users of the Sayang Warga application regarding stunting case data collection. This study examines the effectiveness of the service system and assistance provided by the Surabaya City Government through the Sayang Warga application, based on a theory proposed by Delone and Lean (2003), which states that the effectiveness of an information system can be assessed using six main factors:

#### **(a) System Quality**

The primary factor to be assessed is the quality of the system of the Sayang Warga application and whether it meets the initial objectives for which it was created. Several aspects can be used to evaluate the system quality:

**Ease of Use:** Ease of use is a crucial consideration in any application. The Sayang Warga application is accessible via the web and Android smartphones, ensuring broad usability.

**Availability:** This pertains to the availability of features or menus within the Sayang Warga application that users can utilize. The application provides a general description of the utility of each menu. However, it is observed that only two menus are frequently used, while other menus are either useful only at the initial stage of application use or inaccessible to certain users, such as the Surabaya Great Cadre (KSH), due to limited access rights. Despite this, the two frequently used menus are detailed with various submenus appropriate for data entry processes, facilitating user interaction with these features.

**Response Time:** The response time is evaluated based on the duration it takes for users to interact with the application, significantly affecting their subsequent attitudes. Since the Sayang Warga application is currently in web form and only accessible via Android devices, response times are influenced by both the device and the data signal strength.

**Usability:** The Sayang Warga application greatly assists field officers, such as KSH, in performing their duties, particularly in routine data collection from residents. The ease

of data entry is enhanced by the presence of pre-filled information once the head of the household is identified, thereby reducing the risk of errors during data entry by KSH. This analysis aims to provide a comprehensive understanding of the Sayang Warga application's effectiveness, focusing on key aspects of system quality as per Delone and Lean's (2003) framework.

### **(b) Information Quality**

This factor aims to determine the quality of information produced or output by the Sayang Warga application. Several factors support the intended quality of information:

**Easy to Understand:** The Sayang Warga application provides information and menus that are easy and clear for users to understand. However, some menus present too many options, which can sometimes confuse users during data entry.

**Completeness:** The system in the Sayang Warga application is expected to meet the information needs of users, especially regarding complaints, not just in the resident data entry menus. Therefore, menus with lesser benefits can be simplified, and more supporting menus that are easily accessible according to user needs can be added.

**Relevance:** The Sayang Warga application is useful in assisting the data collection tasks performed by the Kader Surabaya Hebat. The reports generated can be rechecked, and the data is neatly stored in the application, making it quickly accessible when needed. However, there is one menu that cannot be accessed by users/KSH because it requires access from the district's PIC to add new data.

**Timeliness:** The information contained in the Sayang Warga application is updated weekly, monthly, and yearly. Some data is updated annually, some monthly, and some weekly. Therefore, all information is the latest available data from the community.

**Accuracy:** The information in the Sayang Warga application is considered accurate because the data is entered directly by the KSHs, who are active in the community for continuous data updates, as well as by the residents themselves. However, the accuracy also depends on the performance quality of the KSHs, as the data entries rely heavily on the community's reporting, reflecting their actual conditions.

### (c) Service Quality

Measuring service quality requires support from users and institutions, as the quality of a service is the main aspect evaluated by the public. The following are the results of the service quality assessment of the Sayang Warga application:

**Reliability:** This refers to the capability of the staff or department running the information system to support user services. This application supports KSHs' work by enabling them to regularly collect data according to needs, monitor the progress, and identify declines in the local residents' quality of life. For instance, the success of the Sayang Warga application in reducing the stunting rate in Surabaya is highlighted (majalah.tempo.co) due to the regular data updates by the residents through the application.

**Empathy:** This represents the attitude and willingness of KSHs during the data entry process and the staff associated with the Sayang Warga application, including the district-level PIC who assists with any issues KSHs face during resident data entry. Additionally, the health center staff plays a role in regularly checking KSHs' work, reminding them to complete any overlooked data promptly to avoid delays.

**Responsiveness:** This reflects the speed of reaction or response during the data entry process. A major advantage of the Sayang Warga application is that any errors in data entry can be corrected, and the data can be saved again. The response from the staff is very quick, as any complaints during data entry are immediately addressed through phone calls or direct meetings. Although there can be delays because the designated PIC is not exclusively tasked with this duty but also serves other roles within the district, resulting in occasional unavailability

### (d) User

This section can be analyzed through users' experience with the Sayang Warga application, evaluating its outcomes or outputs. The access process encounters several obstacles, with frequent issues causing unsaved data, requiring users to re-enter data from the beginning. These issues result in ineffective performance for KSH. Additionally, the dependence on an online application is affected by signal quality, which sometimes disrupts the data input process.



**(e) User Satisfaction**

Since the Sayang Warga application is still a web-based site and Android app, user satisfaction in this study is collectively assessed through user ratings on the Play Store.

**(f) Net Benefits**

This section will discuss the benefits derived from the Sayang Warga service and management application for both creators and users. Several benefits include:

**Surabaya City Government:** As the organizer, the successful implementation of the Sayang Warga program or application showcases the Surabaya City Government's effectiveness in fulfilling its duties. Evidence of the application's success or benefits positively impacts public perception of the Surabaya City Government's performance.

**Kader Surabaya Hebat (KSH):** As users, KSH benefits from the application, as data collection only requires a single, portable device. The web-based and Android application is also easily accessible from anywhere through the available website, allowing multiple accounts to access it, which facilitates KSH members who do not have Android devices to use the application with their username and password. However, implementation has not received full attention from the Surabaya City Government. Some KSH members feel there is an imbalance in task execution, particularly older members who continue to serve as KSH due to the recently introduced incentives. If they relinquish their KSH duties, they will lose the desired incentives. However, continuing with the tasks poses challenges in using the application. Some even receive help from their families to complete their tasks. This situation contributes to delays or setbacks. It is hoped that the Surabaya City Government will provide assistance to older KSH members who continue to serve the community. Thus, the effectiveness of the Sayang Warga application can be maximized, supported by competent human resources capable of performing their duties well. Updates to the Sayang Warga application are also necessary, addressing the various problems faced by users that affect the application's performance. This clearly impacts KSH performance since the primary tool for data reporting or collection is the Sayang Warga application. Moreover, application usage is heavily influenced by the quality of the internet signal.

Therefore, future improvements and innovations are needed to enhance the quality and effectiveness of the Sayang Warga application.

## **Conclusion**

Based on the above discussion regarding the effectiveness of the Sayang Warga application as a potential tool for alleviating stunting in Surabaya, it can be considered quite effective. The application offers several advantages and ease of use in the data collection process. Generally, the quality of the Sayang Warga application can support the performance of the Surabaya Hebat cadres in providing services and assistance to the citizens of Surabaya. The data above shows that the effectiveness level of the application is not very high due to several influencing factors. Therefore, some improvements are necessary to provide maximum service for Sayang Warga users.

The existence of the Sayang Warga application demonstrates its users' successful utilization, as evidenced by the positive impact on the community, indicating accurate data collection. However, some menu items are inaccessible to users, particularly citizens, requiring assistance and guidance from Surabaya Hebat cadres or the person in charge. Consequently, there is still a dependency on others in operating the application. It is hoped that the Sayang Warga application will continue to develop fully and support the Surabaya city government through Surabaya Hebat cadres in providing services and assistance for stunting prevention.

Furthermore, the most supportive factors in the process of reducing stunting in Surabaya are the funding and the dedicated team from the city government, along with the willingness of village teams and cadres to implement the program. Attention should be given to the social conditions and community awareness, which have not yet fully recognized the need to change old habits for the common good. Maximizing existing services at family learning centers to directly reach parents or families dealing with stunting, providing education on proper childcare practices, either personally or in groups, is essential. Topics may include child development, alternative feeding strategies when children refuse nutritious food, and emotional regulation for parents to be mentally prepared for childcare

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