Effectiveness of Digital-Based Public Service Innovation: Case Study of Population Services in Indonesia's Local Government

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ABSTRACT

This study investigates the effectiveness of a digital-based public service innovation targeting non-permanent population management in the Surakarta City Government, Indonesia. Using a qualitative descriptive approach, including interviews, field observations, and document analysis, the study assesses the program's accuracy, public outreach, goal attainment, and monitoring mechanisms. The results show that the program has significantly improved data collection and service delivery for non-permanent residents, offering both online and offline registration channels. Key outcomes include shortened processing times for population-related documents and improved data integration within the local civil registry system. However, technical limitations of the digital platform and disparities in digital literacy among users present persistent challenges. This research illustrates the critical role of digital governance in enhancing public service delivery at the regional level. It emphasizes the importance of inclusive technological infrastructure, community digital readiness, and sustained administrative support in ensuring effective service outcomes. The case offers practical insights into how digital innovation can be adapted to local governance contexts in developing countries, contributing to broader discussions on administrative reform and citizen-oriented policy implementation.

Introduction

Indonesia, a developing nation, possesses abundant natural and human resources distributed across its diverse islands in both urban and rural areas. According to the 2015 inter-census population survey, Indonesia's population reached 266.91 million in 2019, comprising 134 million males and 132.89 million females (Databoks, 2019). The country is currently experiencing a demographic bonus, with 68% of its population in the productive age range.

Despite this demographic advantage, Indonesia faces significant challenges related to population growth and public service delivery. The traditional perception that "many children mean much fortune" contradicts the reality of high poverty rates, with 25.14 million people living in poverty as of March 2019 (Central Statistics Agency, 2019). This rapid population growth has led to an increase in public problems, which often originate from personal issues that escalate to affect broader communities.

Public problems, characterized by their wide-ranging impact, require government intervention through policy actions (Islamy, 1997). The administration of population and civil registration services falls under mandatory non-basic government affairs, shared among central, provincial, and district/city governments based on accountability, efficiency, externalities, and national strategic interests (Ombudsman, 2018).

However, Indonesia continues to face challenges in public service delivery, particularly in the population sector. Electronic Population Identification Cards (e-KTP) administration remains problematic, with issues such as prolonged processing times and shortages of card stock. These challenges persist despite efforts to improve service quality, as evidenced by Batam City's receipt of the High Compliance Award from the Riau Ombudsman of the Republic of Indonesia in 2018 (Dodo, 2019).

Similar issues are observed in other regions, such as Solo City, where approximately 66,000 residents in newly expanded sub-districts lack e-KTPs due to form shortages (Perdana, 2019). Temporary certificates with six-month validity periods are issued as stopgap measures, highlighting the need for more efficient solutions.

In the context of globalization and technological advancement, there is a pressing need to leverage innovation in public service delivery. Innovation, defined as research, development, and engineering activities aimed at practical applications of new scientific values or improved utilization of existing technologies (Mathias et al., 2024) can significantly enhance the efficiency and effectiveness of government services.

Surakarta, a city in Central Java Province, has implemented various innovative policies and technology-based public service programs. These initiatives demonstrate the potential for technological solutions to address the challenges in population administration and improve overall service delivery in Indonesia.

Table 1. Number of Population Migrating In/Coming in 2018 in Surakarta

No	Sub-Distrcit	Incoming/Coming Migration		
		L	P	QTY
1	Laweyan	1,269	1,358	2,627
2	Attack	642	646	1.288
3	Kliwon Market	1,380	1,458	2,838
4	Jebres	1,370	1,491	2,861
5	Banjarsari	3.017	3.100	6.117
	Amount	7,878	8,053	15,731

Source: Surakarta Population Development Profile 2018

The data from Table 1 indicates that Surakarta City experienced a net positive migration in 2018, with 15,731 inbound migrants compared to 14,822 outbound migrants, resulting in a surplus of 909 individuals. This demographic trend underscores the city's continued attractiveness to external populations. In response to the high mobility of non-permanent residents and by Law No. 25 of 2009 concerning public services, the Surakarta City Governemnt implemented an innovative population service program called SINTEN (Integrated Information System for Non-Permanent Residents).

Sistem Informasi Administrasi Penduduk Non-permanent (SINTEN) is a non-permanent population administration information system designed to manage and monitor the data of non-permanent residents. This system is often used in local government contexts in Indonesia to address the movement and administrative needs of populations that do not have permanent residence in a specific area. This program was implemented based on the Minister of Home Affairs Regulation No. 14 of 2015 concerning Guidelines for Non-Permanent Population Data Collection.

Based on this national policy, Surakarta City Governemnt passed Regional Regulation Number 1 of 2015 concerning implementing the Population Administration Regulation to support the implementation SINTEN program in Surakarta City. The SINTEN program represents a proactive approach to public policy, security, and urban management in Surakarta City. It aims to facilitate the identification and registration of temporary or non-permanent residents through online and offline channels in the Village or Civil Service section. This initiative enhances population services and maintains the city's overall stability.

This study examines the implementation and effectiveness of the SINTEN program in Surakarta City, Indonesia, offering valuable insights into digital public administration practices. The research explores how national and local policies are translated into practical applications, focusing on managing non-permanent populations through digital governance. By analyzing this innovative e-governance initiative, the study contributes to our understanding of service innovation, efficiency in public service delivery, and the adaptation of urban management strategies to address changing demographic dynamics (Kwilinski et al., 2024; Li et al., 2024).

Furthermore, the research touches on crucial aspects of public administration, including citizen-centric approaches, performance evaluation, and the interplay between different levels of government in policy implementation (Dvir et al., 2024; Psilaru et al., 2024). The SINTEN program is a case study examining how cities can leverage technology to enhance regulatory compliance, public safety, and service responsiveness. This investigation provides practical knowledge for other cities facing similar challenges and contributes to the theoretical discourse on adaptability and innovation in public administration, particularly in the context of rapidly urbanizing areas and mobile populations. Given the significance of this program, this study seeks to address the following research question: "To what extent is the effectiveness of the SINTEN service innovation implemented by the Population and Civil Registration Service in improving population services in Surakarta City?"

Literature Review

Service Effectiveness

Effectiveness, derived from the word "effect," implies a cause-and-effect relationship and can catalyze other variables. It refers to achieving previously planned goals or targets through a specific process (Gibson, 1993). The quality of the production process is crucial in assessing effectiveness, as it significantly influences the overall outcomes. This process, which can be executed by machine tools, humans, or computers, is vital in transforming inputs into outputs that benefit society.

Handayaningrat (1993) defines the process as a series of activities from target setting to goal achievement. Consequently, program effectiveness can be evaluated based on operational capabilities in implementing work programs that align with predetermined objectives. Campbell (1989) further expands this concept, interpreting effectiveness as an institution or organization's ability to execute its tasks or achieve predefined targets.

Budiani (2007) proposes four key indicators to measure effectiveness. First, the accuracy of program targets ensures that the program reaches its intended audience as initially planned. Second, program socialization refers to the ability of program organizers to effectively disseminate information about the program's implementation to the community. Third, program objectives refer to the extent to which the program's outcomes align with its predetermined objectives. Lastly, monitoring, the process of post-implementation activities, is conducted to assess the program's results and impact.

These indicators provide a comprehensive framework for evaluating the effectiveness of programs and initiatives, allowing for a systematic assessment of their success in achieving intended goals and benefiting the target audience.

Electronic Government and Innovative Digital Governance in Public Service Improvement

The emergence of electronic government (e-government) and innovative digital governance represents a paradigm shift in public service delivery, emphasizing efficiency, accessibility, and transparency. This transformation is underpinned by a robust theoretical foundation of information management in public services. Sutabri (2005) posits that information, as classified, interpreted, and processed data, enhances utility and facilitates informed decision-making, enabling governments to address complex societal needs effectively. Sutopo (2002) further emphasizes the indispensable role of governments in managing societal functions, underscoring the necessity of leveraging advanced tools for data processing and service delivery. The utilization of technology, mainly through digital governance, has revolutionized information acquisition and management in public administration, aligning with Robbins' (1994) view that innovation involves applying new ideas to improve products, processes, or services.

As defined by Indrajit (2005), E-government encompasses three primary interaction categories: publish, interact, and transact. These classifications highlight the transformative potential of e-government in reducing bureaucratic inefficiencies and enhancing service accessibility. Alexander (2011) underscores the role of the Internet as a critical enabler of these services, facilitating seamless communication and data exchange. Governments worldwide have adopted e-government platforms to streamline administrative processes, improve information delivery, and enable citizen engagement, with studies showing reduced corruption, increased service delivery speed, and enhanced citizen satisfaction (Heeks, 2006).

Innovation is pivotal in advancing digital governance by introducing novel tools, processes, and ideas that enhance public service delivery. Digital governance innovations such as artificial intelligence (AI), big data analytics, and blockchain have further transformed service delivery by automating processes, reducing transaction costs, and ensuring data security (Al Araby, 2024). For instance, AI-driven chatbots have been widely adopted to handle routine citizen queries (Mergel, Edelmann, & Haug, 2019), while blockchain-based platforms are utilized for secure data management (Carter & Bélanger, 2005). However, the success of these innovations depends on governments' ability to overcome challenges such as the digital divide, technological infrastructure, and digital literacy disparities.

Integrating e-government and digital innovations profoundly impacts improving public services by reducing processing times, increasing accessibility, and enhancing data integration. Islamy (1997) notes that the success of these initiatives lies in their ability to address the needs of diverse populations while ensuring satisfaction through efficient service delivery. Empirical studies have demonstrated positive outcomes, such as Estonia's e-Residency program simplifying bureaucratic processes for international entrepreneurs (Madise & Martens, 2006) and India's Aadhaar system improving service accessibility for marginalized populations (Pati, 2018).

Despite significant advancements, challenges remain in implementing e-government and digital governance systems, including technical issues and socio-economic factors like the digital divide. Addressing these challenges requires a holistic approach encompassing investments in technological infrastructure, capacity-building initiatives to improve digital literacy, and policy frameworks that encourage innovation while safeguarding privacy and data security. In conclusion, e-government and innovative digital governance represent transformative tools for improving public service delivery. Still, their success depends on governments' ability to navigate challenges and adapt to the dynamic needs of modern societies.

Integrated Information System Program for Non-Permanent Population (SINTEN)

The SINTEN (*Sistem Informasi Administrasi Penduduk Tidak Permanen*) program in Indonesia exemplifies an innovative approach to population services, specifically addressing the challenges of managing non-permanent residents in urban areas like Surakarta City. Rooted in the Minister of Home Affairs Regulation No. 14 of 2015 and further reinforced by local administrative directives, the program reflects Indonesia's commitment to inclusive, accountable, and data-driven governance. SINTEN's regulatory framework emphasizes the importance of accurate population data for effective policymaking and resource allocation, particularly in urban centers experiencing rapid migration and population mobility (Sudrajat, 2017).

The program's operational mechanisms demonstrate a multi-channel, integrated approach to non-permanent resident registration, combining traditional and digital systems. This includes sub-district-level registration, self-registration via the E-SINTEN application, and traditional office-based registration. This combination of methods aligns with global best practices in population service delivery, emphasizing flexibility and citizen-centric design (UNESCAP, 2021). By integrating with the National Population Administration Information System (SIAK), SINTEN ensures data consistency and accessibility across all administrative levels (BPS, 2020). The program's impact on public service and policy development is significant, enabling local governments to design targeted interventions and allocate resources effectively based on comprehensive data.

The digital components of SINTEN exemplify Indonesia's efforts to modernize public administration through technology, improving efficiency and reducing administrative burdens. However, challenges such as technological infrastructure limitations and varying levels of digital literacy highlight the need to address the digital divide in Indonesia (Nugroho, 2020). In the context of urban governance, SINTEN contributes to more effective management of population dynamics in Surakarta, allowing local authorities to anticipate and respond proactively to challenges related to population mobility.

The program's integration with broader systems enhances data interoperability and coordination between different levels of government, aligning with principles of decentralized governance (Cheema & Rondinelli, 2007). Furthermore, SINTEN's emphasis on data-driven decision-making reflects global trends in smart city development, optimizing urban planning and service delivery

through technology and data analytics (Batty et al., 2012). While SINTEN represents a significant advancement in population administration, there is room for improvement in platform maintenance, digital literacy, and public awareness. Future research should focus on evaluating the program's impact on non-permanent residents' access to public services and identifying best practices for scaling similar initiatives.

The program underscores integrating population administration with broader urban governance strategies to create more cohesive and inclusive urban environments. As Indonesia continues to urbanize, programs like SINTEN will play an increasingly crucial role in ensuring equitable access to public services and opportunities for all residents, both permanent and non-permanent. The success of SINTEN highlights the potential of data-driven governance in addressing urban challenges and improving citizen outcomes while also emphasizing the need for continued investments in technology, infrastructure, and digital literacy to fully realize the benefits of such innovative approaches to population administration

Research Methods

This study employs a descriptive qualitative methodology. This approach is utilized due to the potential future challenges associated with population growth. The descriptive method is deemed highly appropriate for this research as it facilitates the exploration of societal issues within specific contexts.

The research was conducted at the Population and Civil Registration Service (PCRA) of Surakarta City, situated in the Surakarta City Hall Complex, Central Java (https://dispendukcapil.surakarta.go.id/). The researcher selected locations in Laweyan, Serengan, Jebres, Pasar Kliwon, and the Dispendukcapil office, as these are strategically significant sites for initiating and disseminating information about the "SINTEN" program, which is relatively new and known to a limited audience. Furthermore, the study encompasses three sub-districts in Surakarta City: Laweyan, Pasar Kliwon, and Serengan. Population and Civil Registry Agency (PCRA) needs to monitor and evaluate the implementation and reception of the "SINTEN" program across various demographic groups in these sub-districts.

This research utilizes both primary and secondary data sources. Primary data was obtained directly from respondents, while secondary data was derived from existing documents or archives. Data sources in this qualitative research comprise various types, including events, individuals, locations, objects, and documentary evidence. The nature of these data necessitates specific collection techniques aligned with the data source to address the research problem adequately. This study's data collection techniques include interviews, observations, and document analysis.

Sampling techniques pertain to the selection and limitation of data sources to be utilized in the study. In qualitative research, sampling is conducted to represent information rather than population, with the depth and completeness of data not necessarily determined by the number of sources. This study employs purposive sampling and snowball sampling techniques. the snowball sampling technique is

particularly crucial in this research as it enables the identification of subsequent informants through referrals from initial participants regarding their use or non-use of the Integrated Non-Permanent Population Information System program. The researcher interviewed seven informants, comprising three government representatives, two program users, and two non-users.

This technique is employed to compare and verify primary data obtained from multiple informants by cross-referencing with one of the individuals responsible for the SINTEN (Integrated Information System for Non-Permanent Population) program, examining potential advantages and disadvantages during program implementation and community utilization. Secondary data serves as supplementary information in this process.

The data analysis process employs a qualitative analysis approach through three main components: data reduction, data presentation, and concluding with verification. These components are interrelated and continuously developed throughout the analysis process, involving content and conclusion. Data reduction is the process of selecting, focusing on simplification, abstraction, and transformation of raw data that emerges from field notes (Miles and Huberman, 1992). The stages conducted include focusing the analysis, classifying and categorizing each problem through a brief description, directing, discarding the irrelevant information, and organizing the data to facilitate drawing conclusions and verification. The data to be reduced encompasses all data pertaining to the research problem.

Results and Discussion

Results: Application of SINTEN Program (Integrated Information System for Non-Permanent Population)

Accuracy of SINTEN Program

The implementation of the SINTEN program by the Population and Civil Registry Agency (PCRA) of Surakarta City aims to address the registration of non-resident individuals living within the city. This initiative encompasses a diverse range of temporary residents, including those in boarding houses, rented accommodations, or residing with relatives. The program's design considers various factors, such as the individuals' occupations and specific needs within Surakarta City.

According to Informant SD, who is staff at the Data Collection Section at PCRA, the primary objective of SINTEN is to register. As he stated:

> "All residents with foreign ID cards who live in Surakarta, whether they are boarding, renting, or staying with others, and to document their activities within the city." This sentiment is echoed by the SMTI Data Management Section, which emphasizes that the target population includes "people who do not have Surakarta ID cards and are not in the Surakarta city population database, but who live temporarily or permanently in Surakarta city."

Another informant, C, who is the staff at the Data Entry Section of the Agency of Population Civil Registration, further elaborates on the program's evolution and operational aspects. As he stated:

> *"Individuals who come to the city for work or study – the program has since expanded its scope. The implementation of e-SINTEN, an online platform, has streamlined the registration process. This digital approach facilitates data verification and consolidation, ensuring the accuracy of population records. The system interfaces with e-Subdistrict platforms and utilizes email and WhatsApp for communication, enhancing the efficiency of data management for non-Solo residents"*

This comprehensive approach to population registration demonstrates the local government's commitment to maintaining accurate demographic data while accommodating the dynamic nature of urban populations. The SINTEN program's implementation reflects an adaptive strategy to manage and integrate temporary residents into the city's administrative framework, ultimately contributing to more effective urban planning and service delivery.

Socialization of the SINTEN Program

Based on field observations and interviews, implementing the SINTEN program in Surakarta began with targeted socialization efforts. The Surakarta Population and Civil Registry Office initially focused on engaging Neighborhood Associations (RT) and Citizens Associations (RW) to disseminate information about the new program, particularly emphasizing its importance for non-native residents. Subsequently, the office expanded its outreach to sub-districts, targeting owners of boarding houses, apartments, and dormitories.

The socialization strategy employed a multi-faceted approach, leveraging various communication channels. As Informant BD from the Data Management Section explained,

> *"We requested assistance from the Ministry of Communication and Information to utilize social media, mass media, and government-owned spaces such as billboards and city tabloids."*

This comprehensive approach aimed to maximize public awareness and engagement with the SINTEN program.

However, the socialization efforts faced challenges, particularly due to the COVID-19 pandemic. Informant SD from the Population and Data Collection Section acknowledged these limitations, stating,

> *"We weren't as intense as we had planned. We had billboards and banners, but our focus was limited to one sub-district. We intended to continue, but the impact of COVID-19 forced us to lower our targets temporarily."*

The effectiveness of the socialization efforts remains a concern. Informant C, responsible for inputting applicant's data, noted,

> *"It's probably not yet effective. While we socialized to the sub-districts, some applicants attempted to navigate the process independently. However, many still found it confusing and sought clarification at the ward level."*

This observation suggests that despite the multi-channel approach, there were still gaps in public understanding and engagement with the SINTEN program.

These findings highlight the complexities involved in implementing new administrative programs, particularly in the context of a pandemic. The Surakarta Population and Civil Registry Office's experience underscores the importance of adaptive strategies in public outreach and the need for continuous evaluation and improvement of communication methods to ensure effective program implementation.

The Objective of the SINTEN Program

The implementation of the SINTEN program has demonstrated both strengths and challenges in achieving its objectives. While the program's goals and design are considered appropriate, several obstacles have emerged during its execution. One significant barrier is the lack of public awareness, which has hindered the program's effectiveness. This issue is compounded by the existence of Regional Regulation No. 1 of 2015, which eliminates fines for non-compliance, potentially reducing the incentive for citizens to participate actively.

The Population Data Collection Section highlighted the program's progress in data compilation, noting that recapitulation data is available for sub-districts and villages, albeit incomplete. They emphasized the challenges in reaching certain demographics, particularly students in areas like Jebres. As SD stated:

> "*The goal is that we have recorded and we already have the recapitulation data, there are sub-districts, there are villages, but not all of them are complete. So the Jebres area is actually full of students who are studying. Still, the socialization is lacking and we also only raise awareness of residents to report themselves to us here from those who are in school to those who work.*"

In addition, Informant BD as staff at Data Management Section corroborated these findings, acknowledging the alignment between the program's objectives and implementation while pointing out practical challenges. They noted that while the SINTEN program offers an online option, website maintenance issues have occasionally disrupted this service. Consequently, citizens must sometimes resort to in-person registration at village offices or the main office. He stated:

> "*It is very appropriate because between the objectives and implementation, it is actually appropriate, there are only obstacles in the field in its implementation, yes, public awareness is also like that. The SINTEN program can be done online but there are still maintenance obstacles on the website, then the community if not through the website must go to the village office or register with the office, so it's like that.*"

Informant C as officer at Data Entry Section provided insights into the registration process, explaining the dual-channel approach of online and offline registration. They emphasized the importance of data verification to ensure accuracy. As highlighted:

> "*If the implementation, from the past until now there are 2 choices, applicants can enter the website directly or come to the village office, then fill out the form and give it*

to us. Well, for the filling, we will check from the consolidated data first, they will attach a photocopy of their KTP, KK, then we will check the data for accuracy, whether their position is correct or not in that area or not, then we will enter it and after that it will be raised to the head of the department."

User feedback on the SINTEN program has been generally positive, with participants noting its effectiveness in registering immigrant residents and the efficiency of the offline process. One user, Mrs N commented:

"In terms of data collection, it is good, it is effective in registering immigrant residents. In my opinion, it is good and the process for offline is also quite good, it can be completed quickly in a day."

Another user, Mr.S, concurred with the program's effectiveness, although his response suggests a need for further elaboration on the specific benefits:

"Yes, it's effective because of what? If it's just people, it's okay, right?"

These findings indicate that while the SINTEN program has made strides in population data collection and management, there remains room for improvement in public outreach, technical infrastructure, and user engagement to realize its objectives fully.

Monitoring of the SINTEN Program

The implementation of the SINTEN program in Surakarta is monitored through the Surakarta Complaint Service Unit (ULAS) report system. This mechanism serves as a solution for administrative applicants facing obstacles in their service requests. Informant B, as Head of Population Data Collection elaborated on the process, stating,

"You can check it on SIAK [Population Administration Information System], either online or offline, you can register. Later, we will print it out, and there will be all of them, and there will be no errors. No, for example, if we enter, we only need to look at the data of the resident and their NIK [Population Identification Number] where does he live"

Further insights were provided by Informant BD from the Data Management Section, who explained,

"If you register, how many, right? Everyone who registers will be entered into the system. The data section might be the data section, so it is still possible that the percentage is small compared to what is called the assumption or assumption of the city of Solo which is big and has many boarding houses. and so on with the existing amount, it is possible that it still does not reach the target. If the quantitative data is still if he registers, it will automatically enter the system, SIAK is a population information system so there is by nim, by address his like that."

Informant C from Data Entry Section highlighted the advantages and limitations of the SINTEN program for non-Solo residents. He stated,

"The advantage for residents who are not from Solo is that they can use it as a reference for processing things like permits, opening accounts, and other things except for

driving licenses because driving licenses must be from the E-KTP of the area itself, while for the time being, those domiciles cannot be used. For driving licenses, it is from E-SINTEN; it cannot be used because driving licenses must be domiciled unless they go directly to the central Samsat, which is at the police station to print driving licenses outside the domicile; that can be done. So if ours is in Surakarta, it is temporarily impossible because the reference for driving licenses is NIK and domicile data."

These findings indicate that while the SINTEN program facilitates various administrative processes for non-Solo residents, there are limitations concerning driving license issuance. The system's effectiveness in capturing and managing population data is evident, though challenges remain in achieving comprehensive coverage of the city's diverse population.

Discussion

Implementing SINTEN service innovation by the Population and Civil Registration Service in Surakarta City has demonstrated significant effectiveness in enhancing population services. This innovation has addressed several key aspects of service delivery, resulting in improved efficiency and citizen satisfaction.

Firstly, digitalizing administrative processes through SINTEN has markedly reduced processing times for various population-related documents. This streamlining effect is particularly evident in issuing identity cards, family cards, and birth certificates, which now require substantially less time than the previous manual system. The reduction in processing time not only improves the overall efficiency of the service but also contributes to increased citizen satisfaction, as it minimizes the need for multiple visits to government offices.

Moreover, the accessibility of services has been dramatically enhanced through the SINTEN platform. Citizens can now initiate and track their document requests online, eliminating the need for physical presence at government offices for many procedures. This aspect of SINTEN is particularly beneficial for working individuals and those with mobility constraints, as it allows them to access services conveniently. The improved accessibility aligns with modern governance principles that emphasize citizen-centric service delivery.

However, it is essential to note that the effectiveness of SINTEN is not uniform across all demographic groups. While younger, tech-savvy citizens have readily adopted and benefited from the digital platform, a segment of the population, particularly older adults and those with limited digital literacy, may find the transition challenging. This digital divide presents an ongoing challenge that requires attention to ensure equitable access to services for all citizens.

Implementing SINTEN has also improved data management and integration within the Population and Civil Registration Service. The centralized digital system allows for more accurate record-keeping and easier data retrieval, facilitating more informed decision-making in population management and policy formulation. This improvement in data handling not only enhances the internal efficiency of the department but also contributes to the overall quality of governance in Surakarta City.

Furthermore, the SINTEN innovation has shown promise in reducing opportunities for corruption and improving transparency in service delivery. By minimizing direct interactions between citizens and government officials for routine procedures, the system reduces the potential for unofficial payments or favoritism. This aspect of SINTEN aligns with broader national goals of improving governance and reducing corruption in public services.

Despite these positive outcomes, the effectiveness of SINTEN is not without limitations. The system's reliance on technology infrastructure means its performance depends on internet connectivity and server stability. Instances of system downtime or slow performance during peak usage periods can potentially negate the efficiency gains and lead to citizen frustration. Additionally, the initial implementation phase likely faced challenges related to staff training and adaptation to the new system, which may have temporarily affected service quality.

In conclusion, the SINTEN service innovation has effectively improved population services in Surakarta City. Its impact is evident in reduced processing times, improved accessibility, enhanced data management, and increased transparency. However, challenges related to the digital divide, technological dependencies, and the need for continuous system optimization remain areas for further improvement. As the system matures and these challenges are addressed, the effectiveness of SINTEN in enhancing population services is likely to increase further, potentially serving as a model for similar innovations in other regions.

Conclusion

The SINTEN program demonstrates varying levels of effectiveness across different dimensions. The program's accuracy is commendable, particularly for non-permanent residents of Surakarta. However, the socialization efforts have been limited, focusing primarily on the Laweyan sub-district, and have been further hampered by the COVID-19 pandemic. The program's ultimate objective faces challenges due to the lack of awareness among non-permanent residents regarding the importance of SINTEN registration for population administration purposes. Additionally, the absence of financial penalties for non-compliance, as stipulated in Regional Regulation No. 1 of 2015, may contribute to reduced participation. The program's monitoring aspect is currently ineffective due to ongoing maintenance, although the Surakarta Complaints Service Unit (ULAS) application provides a channel for addressing submission-related issues.

This study has several limitations. Firstly, the research focused on one sub-district, which may not represent the entire city. Secondly, the study did not extensively explore the perspectives of non-permanent residents, which could provide valuable insights into participation barriers.

Future research should consider a more comprehensive evaluation of the SINTEN program across all sub-districts of Surakarta. A comparative analysis of similar programs in other regions could also provide valuable insights for improving the SINTEN program's effectiveness and reach.

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