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SIPANDUK Digital Public Service Innovation: An E-Service Quality Approach

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Abstract

The SIPANDUK (Population Administration Service Information System) application is a digital service innovation developed by the Kuningan Regency Population and Civil Registration Office to make it easier for the public to process population documents online. The objective of this study is to assess the service quality of the SIPANDUK application, identify the obstacles hindering its implementation, and examine the efforts made to improve the quality of SIPANDUK services. This study employed a descriptive qualitative approach, utilizing data sources such as observations, interviews, and documentation from key informants and supporting informants. The theory used is E-Service Quality by Parasuraman, Zeithaml, and Malhotra (2005), which consists of seven dimensions (efficiency, system availability, fulfillment, privacy, responsiveness, compensation, and contact). The results of the study indicate that the SIPANDUK application is not yet optimal in the dimensions of efficiency, fulfillment, and compensation. The suboptimal efficiency is caused by the low level of public awareness regarding the application. In the fulfillment dimension, technical challenges remain, specifically regarding the limited features for user account recovery. Additionally, the lack of an official compensation mechanism has prevented the handling of user complaints from operating at full capacity. Meanwhile, the SIPANDUK application has achieved optimal performance in the dimensions of system availability, privacy, responsiveness, and contact. Efforts to improve service quality are being undertaken through increased public awareness of the application, the development of account recovery features, and the establishment of a clearer and more structured compensation mechanism.

Introduction

Public services are a core component that underpins government operations, with their core objectives being to meet the public's basic needs and improve people's well-being. Previously put forward a general definition that covers all types of services including administrative, information, and licensing services, which can be provided by public or private entities, and offered either for free or at a fee (Supriadi & Manullang, 2020). This paper adopts the definition proposed by (Heryanto, 2018), narrowing the scope of its discussion to public services provided by government agencies.

Existing research indicates that (Wulandari et al., 2021) proposed that in the digital age, technology iterates rapidly, and many areas of human life have become highly dependent on technology; (Sangaji & Irianto, 2025) defined the digitization of public services as a core element that leverages the internet to improve public sector performance, classifying it under the scope of e-government that emerged over the past 20 years; (Roy, 2017) pointed out that online services are more cost-effective than offline services, and this advantage has earned widespread recognition from governments at all levels.

According to research by (Sangaji & Irianto, 2025), the digitalization of public services uses information and communications technology (ICT) as its core support. Per the classification compiled by (Apandi, 2020), the four types of implementation platforms for this initiative include websites and mobile applications, which can improve operational efficiency and enhance public accessibility.

According to (Lindgren et al., 2019) digitalization has reshaped the delivery model of public services oriented toward the general public, covering the core domain of civil registration. A 2025 study by (Amalia et al., 2025) defines civil registration as a service for managing legal documents, administered by officially authorized agencies at the sub-district and municipal levels; today, members of the public can submit applications and obtain required information online, eliminating the need to visit physical service halls in person.

This paper proposes that e-services within the scope of digital technology can resolve three long-standing persistent problems of traditional bureaucratic systems, support the public to complete three types of online administrative affairs, and highlight their core value of public convenience. However, their implementation effectiveness must be evaluated with the support of appropriate quantitative indicators. Drawing on the research of (Santos, 2003), this paper defines e-service quality as a tool for comprehensively assessing customers' perceptions of the excellence and quality of the digital services they receive.

The Government of Indonesia has successively promulgated Law No. 24 of 2013, the Population Administration Law, and Presidential Decree No. 95 of 2018, the E-Government System decree, which provide a clear, definite normative basis for the electronic management of national population data and the innovation of internet-enabled administrative services. The Population and Civil Registration Office of Kuningan Regency, acting pursuant to Decree No. 188/KPTS.202-DISDUKCAPIL/2021 issued by the Regent of Kuningan in 2021, launched SIPANDUK, a local online civil registration mobile application. The app supports the processing of six types of official documents: electronic national identity cards, family cards, children's identity cards, birth certificates, marriage certificates, and death certificates. It eliminates the hassle of in-person visits to government offices for local residents, reduces waiting times, speeds up service processes, and lays a solid, compliant practical foundation for the digitalization of local government affairs.

Among existing studies on the SIPANDUK civil registration application in Gunungkidul Regency, Indonesia, the 2025 research output by (Putri et al., 2025) only summarizes the application's public convenience features, and does not carry out an in-depth analysis of the digital service quality (e-SQ) of this innovative project during its local implementation. Most previous studies in the field also only focus on application accessibility, or infrastructure-related challenges such as unstable network connectivity and the general public's low digital literacy. To date, there is no structured, comprehensive research that assesses the digital service quality of this specific application scenario.

A gap in this research lies in the lack of in depth studies on the factors influencing the quality of SIPANDUK's digital services, particularly regarding comprehensive services quality measurement and the identification of barriers to app usage, which may affect is effectiveness in delivering public service optimally.

This study takes the SIPANDUK digital public service application as its research object, and sets three core research tasks: drawing on the E-Service Quality theoretical framework, focusing on the two dimensions of efficiency and responsiveness to test the application's service quality, identifying barriers to its on-the-ground implementation, and clarifying optimization steps to improve the application's service quality.

Method

This study adopts a descriptive qualitative research method. It takes SIPANDUK, the public service digital application of the Population and Civil Registration Office (Disdukcapil) of Kuningan Regency, Indonesia, as its research subject. This study aims to analyze the phenomenon of public service digitalization, with a core focus on the digital service quality of this application in civil registration scenarios. The research is developed based on the conclusion proposed by (Sugiyono, 2013) that this descriptive qualitative method can generate in-depth understanding of social phenomena. It collects the experiences and perceptions of users and public officials through interviews, and obtains direct insights into service processes via the observation method.

This study independently designed a key informant recruitment plan, and enrolled two categories of research subjects affiliated with different institutions. To ensure the compliance of our sample selection, we adopted the definition of research informants proposed by Moleong, which was cited via (Ardianto, 2014), to provide an academic basis for the sampling work of this study.

This study selects descriptive analysis as its core data analysis method. This method is chosen because it can clearly present the characteristics of the research phenomenon and sort out the correlations between variables identified through fieldwork. (Sugiyono, 2013) proposes that data analysis for qualitative research must be carried out in two stages. Following this proposition, this study advanced its analysis during the data collection process and within a specified time limit after data collection was completed. Concurrently, the study organized its data into an easy-to-read format, using this method to explore information in depth and deepen its understanding of the research phenomenon.

This study first adopts triangulation as a data validation technique. The core of this technique is to compare data collected across multiple sources and multiple methods to ensure the consistency of research findings; in practical implementation, non-core research data is used to verify the already collected research data. The academic basis for this method originates from the definition proposed by (Sugiyono, 2013), which integrates multiple types of data collection methods and data sources to validate data effectiveness. Subsequently, this study adopts matched descriptive data analysis techniques to systematically sort through collected data and deepen understanding of the quality of digital public services. This study also cites the conclusion from (Sugiyono, 2013) that data analysis for qualitative research must be carried out in two distinct phases: during the data collection period, and within a specified time frame after data collection is completed.

Results and Discussion

SIPANDUK, whose full name is the Population Management and Service Information System, is a digital innovation project developed in the public service sector that relies on information and communications technology (ICT). The public can access this system via its official website https://sipanduk.kuningankab.go.id or its exclusive Android app. The system was launched in 2021 and has remained in continuous operation to date.

The original development purpose of the government affairs application SIPANDUK was to build an efficient, transparent, and accurate access channel for the public to access civil registration services. Meanwhile, it leverages information and communications technology (ICT) to improve the quality of public services I Kuningan Regency, enabling fast online processing of administrative procedures. Existing external studies have confirmed that this application simplifies the registration process: it not only relieves economically disadvantaged groups of the transportation costs incurred from traveling back and forth to the local civil registration office (Disdukcapil), but also provides a convenient access portal for users familiar with digital technologies.

Building on the positive value of the digital public service application SIPANDUK noted in the preceding text, this paper sorts out two core barriers to its optimized on-the-ground implementation: first, on the technical end, the account recovery function has limited capabilities, and users cannot independently resolve issues such as facial verification failures or forgotten PIN codes; second, on the user end, public awareness of the application is extremely low, and most new users only learn of its existence when they need to process administrative services. To address these barriers, this paper proposes three promotion pathways: social media promotion, offline on-site outreach, and cross-departmental collaboration.

At present, the service quality of SIPANDUK, the village-level government affairs application deployed in the Kuningan Regency, is inconsistent across localities. The core cause of this gap is the uneven competencies and skills of application operators managed by each sub-district. The roles of the Regency's Population and Civil Registration Office

and sub-district officials urgently require greater attention, as the performance of these two bodies directly impacts public satisfaction with the application. Improvements must be implemented across three core dimensions: service promotion, digital literacy enhancement, and function development (including account recovery and optimization of the compensation mechanism), to refine population-related government services and deliver benefits to all local residents.

Quality of Service for the SIPANDUK Application

This study cites the 2005 research of three scholars, Parasuraman, Zeithaml, and Malhotra. We adopt the seven indicators extracted from their electronic service quality (e-SQ) theory a framework developed to assess the service quality of all types of electronic channels as our core analytical tool. We take the SIPANDUK application in Kuningan County, Indonesia as a case to examine local digital public service innovation, and the following sections will elaborate on each of these indicators in turn.

Efficiency

In 2005, scholars Parasuraman, Zeithaml, and Malhotra put forward the e-service quality theory, which lists efficiency as a core measurement indicator. This indicator refers to the degree to which users can quickly complete service processes through a system with minimal effort. We apply this indicator to evaluate the effectiveness of the SIPANDUK application, within the scenario of digital civil registration, in assisting the public to obtain civil registration documents online.

This study conducts its analysis based on key informant interviews, comparing differences in efficiency and ease of use between the civil registration services delivered via the SIPANDUK application and traditional services. The study finds that the application-based service incurs lower costs, requiring no additional travel expenses, though it is only suited for residents who own mobile devices and have basic information technology literacy. Sub-district officials provide users with full-process guidance covering all steps from downloading the application from the app store, creating a personal PIN, to scanning and verifying identity data. This support greatly lowers the barrier to use, making the service more smooth and accessible.

Table 1: Summary of SIPANDUK Service Data

No.	Types of Services	2023	2024	2025
1.	Electronic ID Card	7.099	2.202	1.456
2.	Child Identification Card	891	2.069	322
3.	Family Card	7.241	3.554	2.774
4.	Birth Certificate	856	424	129
5.	Marriage Certificate	2	0	1
6.	Death Certificate	392	250	113
Total Services		**15.711**	**8.499**	**4.815**

We conducted our analysis using aggregated three-year operational data from SIPANDUK, an Indonesian government public service application. In 2023, this application recorded a total of 15,711 service instances. The two most frequently used

services are electronic ID cards and family cards. Citizens no longer need to visit the offline office of Disdukcapil, the competent authority in charge of civil registration, which saves them time and transportation costs, and effectively improves the administrative efficiency of local civil registration.

In 2024, the service supply volume of the SIPANDUK application stood at 8,499, and dropped to 4,815 in 2025. Although this marks a significant decline, the application can reduce costs and improve efficiency for users proficient in digital technologies, and has gained broad public acceptance.

This study found through field observations that the vast majority of the public only learns about SIPANDUK, a government affairs app, when they arrive at sub-district offices to process administrative documents. This exposes a severe lack of promotion efforts by service providers across three channels: social media promotion, on-site promotion, and cross-departmental collaboration, which has slowed the efficiency of digital services. The effectiveness of digital services depends not only on technology itself, but is also constrained by the public's digital literacy. Existing public data shows that although this app has been widely popularized, it still faces two core challenges: insufficient public awareness, and insufficient public ability to access its services.

System Availability

In previous classic studies on digital service quality, the core dimension of system availability for digital services has been clearly defined. This study applies this well-established classic definition to a targeted analysis of the public service application SIPANDUK, and proposes that optimal system availability is the core prerequisite for the smooth delivery of public services. To clarify the actual operating status of this application, this study adopts the key informant interview method, and conducts research on two groups of core respondents: individual users of the application and local sub-district officials.

The research finds that SIPANDUK's core strength is its support for users to access the platform and submit service requests 24 hours a day from any location. However, its application processing link adopts a queuing system restricted to official working hours on business days, which negates the value of its full-time service availability. In addition, two technical problems occur frequently among end users: failed facial verification and forgotten PIN codes. The application itself is not equipped with an automatic account recovery function, and none of the interviewed sub-district officials have the permission to reset system accounts, which greatly extends the timeframe for resolving these problems. Based on these findings, this study proposes that future efforts should carry out targeted optimizations for functions including account recovery and facial verification, to address the existing shortcomings in current services.

Fulfillment

In their 2005 classic study in the service field, Parasuraman, Zeithaml, and Malhotra clarified the core definition of the dimensions of electronic service (e-service) fulfillment. This general framework provides a core benchmark for the evaluation of digital public services. This paper takes the SIPANDUK app.

launched by Disdukcapil, Indonesia's competent authority in charge of civil registration, as its research subject. The paper first decomposes the general fulfillment dimensions into three core elements adapted to the local public service context. Then, drawing on field research that adopts a stratified sample selection approach including two categories of interviews with key information providers and app supporters, respectively it verifies the app's on-the-ground implementation performance.

The app integrates six core functions: user guides, official document application, data updates, online queuing, real-time status tracking, and push notifications. It supports online processing of six types of official documents, including electronic identity cards and family cards. All of the app's functions meet the requirements of the e-service fulfillment dimensions, and align with the public's core expectations for public services.

Privacy

Parasuraman, Zeithaml, and Malhotra (2005) define privacy as a dimension centered on the management and protection of users' personal data. Across scenarios ranging from general digital public services to e-government, it is especially critical to build the public's trust in data security. The SIPANDUK application examined in this study processes sensitive demographic data that is protected by applicable laws and regulations, which validates the rationale for positioning privacy as a core evaluation dimension of this research.

This study, based on user feedback collected through interviews, finds that all respondents who used the SIPANDUK application believed their personal data was well protected. All users entrusted the rights and responsibilities for data protection to Disdukcapil staff, and this trust is supported by the application's security system featuring dual login verification: email authentication and exclusive verification codes.

This paper sorts out the on-the-ground personal data protection measures for Indonesia's SIPANDUK application based on interviews with the application's operators: the Communication and Information Office (Diskominfo) of Kuningan Regency, which is responsible for managing the application's servers and hardware facilities, has developed an official privacy policy that clearly discloses the rules governing the use and protection of users' personal data. The application's operators are only permitted to access personal data that users actively submit. The office also regularly carries out penetration tests to identify system vulnerabilities, encrypts data across the entire process, and continuously safeguards the security of users' data.

Responsiveness

In 2005, Parasuraman, Zeithaml, and Malhotra proposed the e-service quality theory. The responsiveness dimension defined in this theory refers to the speed and effectiveness with which a website or application platform responds to user needs. This dimension covers the public's requests, inquiries, and complaints; it can help build user trust, improve the actual effectiveness of public services, and has a positive correlation with both service quality and user satisfaction.

This study draws on first-hand interview data collected from key informant interviewees of the SIPANDUK application and the application's operator. First, we

verify the application's real-world performance of running smoothly under the premise of stable network conditions. Next, from the operator's

perspective, we unpack the application's core design intention centered on rapid response to user demands, alongside the underlying optimized processing mechanisms that support the realization of this goal. We only observed response limitations in two specific scenarios: when data requests reach peak volume, and when the system carries out routine maintenance, the application experiences minor response delays. The application is also equipped with a personalized response module adapted to meet the needs of diverse users, as well as a one-way notification function that includes the supplementary document prompt labeled "incomplete documents". The operator further disclosed that it will continue to monitor the application's performance moving forward, implement iterative optimizations to address responsiveness issues in line with user needs, and continuously refine the overall user experience.

Compensation

Classic academic studies have clearly defined the core definition of the compensation dimension within the E-ServQual electronic service quality framework. Building on this foundation, this study further expands the connotation of this dimension, proposing that compensation covers not only financial compensation, but also three types of non-financial compensation: timely response, clear information transmission, and priority services. This work anchors an analytical framework adapted to local government service contexts, and conducts an empirical investigation of the SIPANDUK digital government service in Kuningan Regency, Indonesia.

This service is linked to the underlying business system SIAK. The superior agency with full authority to resolve all technical issues of the system is the local Population and Civil Registration Office of Kuningan Regency (known locally as Disdukcapil, Kuningan Regency Population and Civil Registration Office). The interview subjects for this study are SIPANDUK's township-level operation support staff and the project's core key informants.

The research findings are presented in layered order as follows: First, restricted by the boundaries of their powers and responsibilities, township-level offices lack the authority to address technical failures related to the SIAK system. They can only provide users with initial explanations of their problems, and guide users to complete subsequent procedures at the superior Disdukcapil office. Second, the region has not established a formal user compensation mechanism: there is neither financial compensation, nor any support measures that meet the requirements of E-ServQual's compensation dimension, such as priority services.

Third, users commonly encounter problems including login difficulties and forgotten PIN codes, and must work through a tedious and lengthy administrative process entirely on their own to resolve these issues. A passive solution that relies only on explanations and guidance cannot effectively improve problem-solving efficiency. This study ultimately confirms that the formal user compensation mechanism for SIPANDUK has not yet been systematically implemented. Although various aid measures have been

implemented, a large number of users remain dissatisfied. The root cause of this issue is the absence of a compensation mechanism and the lack of a systematic, effective set of solutions to problems.

Contact

Parasuraman, Zeithaml, and Malhotra (2005) explain that the "contact" dimension in E-Service Quality refers to direc interactions between users and service providers, whether through customer service, hotlines, or other communication channels. This dimension encompasses the ease with which users can contact the relevant parties if they have questions or issues that nees to be resolved. In the context of the SIPANDUK application, this contact dimension is crucial to ensure users can easily reach the relevant parties if they have questions, complaints, or issues that need to be resolved.

Based on interviews with supporters of SIPANDUK, an Indonesian government service application, the platform has established two exclusive communication channels on WhatsApp: WA IMAS, which handles information services, and WA SURIP, which receives user suggestions, feedback and complaints. Both channels are linked to the app's managing body, the Disdukcapil office. This setup enables efficient, direct communication with low access barriers for users. The Disdukcapil office has pledged that all messages will be followed up and responded to in line with applicable procedures, while also advising users to maintain a stable network connection when using the service.

Most users report that they find it relatively easy to contact the Disdukcapil office when they encounter problems or have questions about the app. Several communication channels, such as WhatsApp (WA IMAS for information and WA SURIP for suggestions, feedback, and complaints), are available to help users get the assistance they need. Although the communication channels and customer service provided are considered effective enough in handling user complaints or questions, there is still room for improvement in their effectiveness.

Barriers to Innovation in Digital Public Services: SIPANDUK

This study, based on direct field observations, finds that significant barriers still impede the rollout and implementation of the SIPANDUK app, which is designed to provide civil registration services. These barriers fall into three specific categories: First, the public has low awareness of the app and low digital literacy; there is no supporting social media promotion or offline outreach, so users only learn of the app's existence when they come to process administrative affairs. Second, technical failures occur frequently, such as failed facial verification and forgotten PIN codes, and inadequate account recovery functions leave users unable to resolve these issues on their own. Third, the lack of an official compensation mechanism lengthens the problem resolution cycle. Targeted optimizations are needed to address these gaps: strengthening outreach efforts, developing dedicated account recovery functions, and building a formal compensation mechanism.

Overall, although the SIPANDUK app offers many benefits in improving the efficiency of civil registration services, these challenges indicate that there are several

areas that still need improvement, particularly regarding outreach, digital literacy, app feature development, and the resolution of technical issues.

Efforts to Improve the Quality of SIPANDUK's Digital Public Services

Based on direct field observations, in an effort to address various obstacles to the implementation of the SIPANDUK Digital Public Service Innovation, the Kuningan Regency Population and Civil Registration Office (Disdukcapil) has undertaken several initiatives to evaluate and improve the quality of the SIPANDUK application. These include increasing awareness of the application through social media, conducting outreach in the field, and fostering cross-sectoral collaboration to introduce the SIPANDUK application more widely to the public, particularly before they require its services. Second, to address limitations in digital literacy, the Population and Civil Registration Office has made efforts to regularly conduct outreach to the public and provide more intensive training and guidance, both directly by sub-district officials and through digital tutorials that are easily accessible to the public.

From a technical standpoint, the Population and Civil Registration Office (Disdukcapil) continues to conduct ongoing development and evaluation of account recovery and automatic verification features, which are essential so that users can resolve these issues independently without having to wait for assistance from staff. Additionally, disdukcapil must establish clear compensation mechanisms, such as providing priority service or additional assistance to users experiencing technical issues. This will enhance user satisfaction and ensure that the SIPANDUK application functions more optimally, free from disruptive obstacles.

Conclusion

This study introduces the well-established 7-dimensional E-Service Quality assessment tool to conduct an operational evaluation of SIPANDUK, the exclusive public service application launched by Indonesia’s Directorate General of Population and Civil Registration (Disdukcapil). This paper first presents its core overarching conclusion: the public service innovation of this application has not yet been fully optimized. It then breaks down the application’s strengths and shortcomings across each dimension. Four dimensions, namely system usability, privacy, responsiveness, and connectivity, boast strengths that can support the stable operation of the app’s basic services. The efficiency and fulfillment dimensions face multiple barriers: failed facial verification, users forgetting their PIN codes, and low public digital literacy.

For the compensation dimension, no formal service interruption compensation mechanism has been established. Finally, this paper proposes rectification plans: retain the existing strengths, focus remediation efforts on the problematic dimensions, and launch priority services and alternative solutions to address gaps in the compensation dimension.

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