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RESEARCH ARTICLE

Design and Usability Evaluation of SIPDES: A Citizen-Centered Web Platform for Integrated Village Complaint and Information Services

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Abstract
Digital public services at the village level can reduce administrative friction and improve access to complaint handling and public information. Their value, however, depends on whether they are designed around citizens' needs and perceived as usable. This study developed SIPDES, a citizen-centered web prototype that integrates authentication, village complaint submission and status tracking, village information, public-service information, and community schedules. The study combined a one-month observation period, five semi-structured interviews with village officials, interactive prototyping in Figma, and end-user evaluation using the System Usability Scale (SUS). A purposive sample of 25 target users who routinely used internet-enabled devices evaluated the prototype. The sample included 22 village residents and 5 village officials; because the role categories were not mutually exclusive, 2 participants belonged to both groups. Participants were aged 26–50 years (12 women and 13 men), and their educational attainment ranged from senior high school to doctoral level. Individual SUS scores ranged from 77.50 to 90.00, with a mean of 83.10 (SD = 4.23) and a median of 85.00, and all participants scored above 70. Based on established benchmarks, the result is acceptable, corresponds to Grade B, and approaches the Excellent adjective rating. These findings support high perceived usability of the integrated prototype. Because the evaluation involved a purposively recruited, digitally familiar adult sample at the prototype stage, the result should not be interpreted as evidence of improved operational service performance. Future studies should examine response time, resolution rate, accessibility, privacy, and sustained adoption after implementation.

Keywords
Digital Government; Village Complaint System; Citizen-Centered Design; Usability Evaluation; SIPDES.

1 | INTRODUCTION

Digital transformation has shifted public-service delivery from institution-centered administrative procedures toward increasingly citizen-centered digital services. Contemporary digital-government research emphasizes that technology alone does not produce public value; services must reflect citizens' roles, needs, capabilities, and interaction contexts (Dechamps *et al*., 2025; Distel & Lindgren, 2023). This requirement is particularly important in local and rural settings, where digital services can strengthen access to information and institutional resilience but may also reproduce administrative burdens when citizens are required to navigate complex procedures without adequate support (Levesque *et al*., 2024; Hyytinen *et al*., 2022; Madsen *et al*., 2022).

At the village level, complaint handling is a critical point of interaction between citizens and local government. Complaints provide direct evidence of service failures, unmet needs, local infrastructure problems, and citizen expectations. Digital public services can reduce the time and distance required to contact public institutions, while proactive and well-integrated services can reduce procedural burden and make information easier to obtain (Scholta & Lindgren, 2023; Pawlowski & Scholta, 2023). Nevertheless, the existence of an online channel does not automatically ensure meaningful participation. Digital participation tools are most valuable when they support two-way information flows and make government follow-up visible to citizens (Shin *et al*., 2024; Sharma *et al*., 2024).

Transparency and responsiveness are therefore central design requirements for a digital complaint service. Evidence from digital participation research indicates that greater transparency can strengthen citizen participation, whereas the speed and usefulness of government responses influence perceived responsiveness and public support (Zhao *et al*., 2023; T. Chen *et al*., 2023). Digital public-service systems should consequently make the progress of a complaint visible, provide understandable status information, and preserve an accountable record of interactions. Similar concerns have been identified in evaluations of transparency and accountability in public e-services (Saldanha *et al*., 2022). Online complaint data are also important beyond the individual transaction, because studies have shown that digital complaint and petition platforms can reveal recurring public concerns and help government agencies understand patterns in citizen demand (Jiao *et al*., 2024; Feng *et al*., 2023). Citizen feedback has likewise been used to identify dimensions of digital-government service quality, including efficiency, execution, response quality, and attitude (Ye *et al*., 2023). These findings suggest that complaint systems should not be treated merely as electronic submission forms; they can function as a structured citizen–government communication mechanism.

However, service quality in digital government is multidimensional. Recent measurement research identifies ease of use, website functionality, information quality, assistance, privacy and security, interactivity, and aesthetics as relevant dimensions of e-government service quality (Aljukhadar, 2022). Citizens' decisions to use digital public services are also shaped by awareness, perceived usefulness, technical readiness, trust, prior adoption experience, and the availability of support (Garcia-Rio *et al*., 2023; Popescu *et al*., 2024; Ilieva *et al*., 2024). For village services, these considerations are especially relevant because residents may have heterogeneous levels of digital literacy and may access the system primarily through smartphones.

Existing web-based complaint systems commonly focus on complaint submission and administrative handling. In contrast, citizens often need related information in the same service journey: service requirements, announcements, community activities, schedules, and the current status of submitted reports. Although government social media can extend communication reach, it does not by itself provide a coherent end-to-end service journey or structured complaint tracking (Yuan *et al*., 2023). This study addresses this design gap by developing SIPDES as an integrated village digital-service prototype that combines complaint submission and tracking with village information, village-service information, and community schedules. The contribution is not claimed to arise merely from adding features; rather, the study positions the system as a citizen-centered service artifact whose design decisions are linked to identified user problems and whose usability must be empirically evaluated. Applied interface-design research has similarly shown the value of user-centered and human-centered approaches for translating user needs into prototype structures across public-service and other application contexts (Kureerung *et al*., 2022; Putra, I. G. E. P. D. Putra, *et al*., 2026; Putra, K. W. S. Putra, *et al*., 2025a; Putra, Suranata, *et al*., 2024).

Accordingly, this study addresses two research questions: (RQ1) What functional and non-functional requirements are required for an integrated village complaint and information service? and (RQ2) What level of perceived usability does the SIPDES prototype achieve when evaluated by target users using the System Usability Scale (SUS)? The study therefore focuses on the design of an integrated village-service prototype and an empirical assessment of its perceived usability rather than claiming improvements in public-service quality before full operational implementation.

2 | BACKGROUND THEORY

2.1 Citizen-centered Digital Public Services and Complaint Services

Citizen-centered digital government treats citizens not merely as recipients of online transactions but as active users whose needs, capabilities, and service contexts should shape digital-service design. This perspective emphasizes public value, accessibility, reduced administrative burden, and coherent service journeys (Dechamps *et al*., 2025; Distel & Lindgren, 2023; Madsen *et al*., 2022). In rural and local-government settings, digital services can strengthen access to public information and contribute to institutional resilience when they are designed around practical community needs (Levesque *et al*., 2024). Complaint systems represent a direct citizen–government interaction channel, and their value depends on more than the ability to submit a report: citizens also need understandable follow-up, visible status information, and responsive institutional handling. Research on digital transparency, responsive e-government, and public-service accountability indicates that visible government follow-up can support participation, trust, and public support (Zhao *et al*., 2023; T. Chen *et al*., 2023; Saldanha *et al*., 2022). Online complaint and petition data can additionally reveal patterns in public concerns and provide structured evidence for administrative decision making (Feng *et al*., 2023; Jiao *et al*., 2024).

2.2 Interface Design and Usability Evaluation

Digital public-service quality is multidimensional and includes usability, website functionality, information quality, assistance, privacy, security, interactivity, and visual presentation (Aljukhadar, 2022; Ye *et al*., 2023). User-centered and human-centered design approaches provide a practical basis for translating user needs into interface structures, navigation flows, and prototypes. In a mobile-government context, requirement-oriented usability design has been shown to improve traceability between user needs, interface components, and subsequent evaluation (Kureerung *et al*., 2022). Related applied studies have combined user-centered or human-centered approaches with SUS, the User Experience Questionnaire (UEQ), remote usability testing, and complementary evaluation methods in tourism, health, fitness, and educational applications (Putra, Rokhmawati, *et al*., 2022; Putra, Suranata, *et al*., 2024; Putra, K. W. S. Putra, *et al*., 2025a; Putra, Wanditya, *et al*., 2025b; Putra, I. G. E. P. D. Putra, *et al*., 2026). The System Usability Scale (SUS) is a ten-item technology-agnostic instrument that produces a global usability score from 0 to 100. Its simplicity and robustness have led to wide use across interactive systems, while later studies have extended its benchmarking and examined its measurement properties (Bangor *et al*., 2008; Baumgartner *et al*., 2021; Hyzy *et al*., 2022). In this study, SUS is used to determine whether the integrated SIPDES prototype is perceived as usable by end users, without treating usability as direct evidence of operational public-service improvement.

The theoretical concepts were translated into the final SIPDES requirements through four lines of reasoning. Citizen-centeredness and administrative-burden reduction informed integrated access to complaints, information, services, and schedules (FR-02–FR-06) and simple cross-device navigation (NFR-01). Transparency and responsiveness informed complaint history and status visibility, administrative response and update functions, and understandable feedback (FR-03, FR-07, and NFR-03), while privacy and trust informed account authentication and role-based data protection (FR-01 and NFR-02). Service-quality and usability principles, in turn, informed clear labels, consistent navigation, and feedback across citizen and administrator workflows (NFR-01 and NFR-03). This mapping provides the conceptual basis for the requirements summarized in Table 1 (Aljukhadar, 2022; Madsen *et al*., 2022; Zhao *et al*., 2023; Trkman *et al*., 2023).

3 | METHOD

3.1 Research Design and Context

This study adopted a prototype-based, citizen-centered system design approach. The research process consisted of requirements identification, system-requirements formulation, interactive prototype development, and end-user usability evaluation using the System Usability Scale (SUS). SUS was selected because it provides a concise and standardized global measure of perceived usability and has demonstrated robustness across diverse interactive systems (Bangor *et al*., 2008; Baumgartner *et al*., 2021; Hyzy *et al*., 2022). The study was conducted in the context of village-level public services, particularly complaint handling and the dissemination of village information. The initial system concept was developed from documented service problems, including manual complaint submission, limited visibility of complaint follow-up, and fragmented access to village information. The resulting prototype was designed for two principal roles: citizens and village administrators.

Usability participants were recruited through purposive sampling from the two intended user groups: village residents and village administrative staff. Eligibility required participants to belong to at least one target group, routinely use an internet-enabled device such as a smartphone or computer, be able to access and navigate internet-

based services independently, and have practical relevance to using or administering village complaint and information services. Twenty-five participants completed the SUS evaluation. This total exceeds the approximately 12–15 participant range commonly cited as a practical minimum for obtaining reasonably stable questionnaire-based usability estimates and was therefore considered defensible for a prototype-stage SUS evaluation (Sauro & Lewis, 2016). The non-probability sample was intended to obtain informed evaluations from target users rather than estimate usability for the entire village population. The final sample comprised 25 unique participants. Twenty-two were village residents and five were village officials. The role categories were not mutually exclusive: two participants belonged to both groups, so the role counts sum to 27 while the unique sample remained 25. Participants were 26–50 years old; 12 were women and 13 were men; and educational attainment ranged from senior high school to doctoral level. These characteristics are reported descriptively. Because the role groups were overlapping and uneven, the study reports aggregate SUS results rather than inferential subgroup comparisons.

3.2 Requirements Identification

Requirements identification combined observation conducted over a one-month period, five semi-structured interviews with village officials, and a review of literature concerning digital public services, citizen complaints, transparency, and e-government service quality. Each of the five officials participated in one interview session. Observation focused on how complaints were submitted, how follow-up was communicated, how residents obtained village information, and where users had to switch between office visits, informal communication, and separate information channels. The interviews explored recurring service difficulties, expected citizen functions, administrator workflow needs, desired status feedback, access-device considerations, and privacy requirements. Observation therefore documented the citizen-facing service journey, while the interviews provided the administrative perspective on complaint handling and information management. The resulting notes were consolidated into problem statements, grouped into themes, and translated into candidate system capabilities. Duplicate or overlapping capabilities were merged, each requirement was assigned to the relevant actor, and the set was classified as functional or non-functional. The requirements were then cross-checked against the literature and the prototype scope, producing FR-01–FR-08 and NFR-01–NFR-03 in Table 1. No separate quantitative needs-assessment instrument was used; therefore, no unsupported percentage-based needs claims are reported.

3.3 Functional and Non-functional Requirements

Functional requirements specify the actions that citizens and administrators must be able to perform, whereas non-functional requirements define expected qualities such as usability, responsive access, authentication, information clarity, and protection of user data. Each retained requirement was linked to a recurring service problem, a role-specific stakeholder expectation, and/or a literature-supported quality principle. This distinction and traceability are important because digital public-service quality is influenced not only by feature availability but also by ease of use, functionality, information quality, assistance, privacy, and security (Aljukhadar, 2022; Popescu *et al*., 2024). The principal requirements implemented in the prototype are summarized in Table 1, which presents the functional capabilities required for the citizen and administrator roles together with the principal non-functional qualities expected from the prototype.

Table 1. Functional and Non-Functional Requirements of SIPDES

ID	Requirement	Actor	Type
FR-01	Register and authenticate an account	Citizen	Functional
FR-02	Submit a complaint with category, description, location, and supporting attachment	Citizen	Functional
FR-03	View complaint history and current status	Citizen	Functional
FR-04	Access village announcements and public information	Citizen	Functional
FR-05	Access information about village services	Citizen	Functional
FR-06	View village/community schedules	Citizen	Functional
FR-07	Verify, respond to, and update complaint status	Administrator	Functional
FR-08	Manage village information, services, and schedules	Administrator	Functional
NFR-01	Provide simple and consistent navigation on desktop and mobile devices	Both	Non-functional
NFR-02	Protect user and complaint data through authentication and role-based access	Both	Non-functional
NFR-03	Provide understandable status feedback and error messages	Both	Non-functional

Note. FR = functional requirement; NFR = non-functional requirement.

3.4 Prototype Design

The interactive prototype was developed in Figma using the requirement set in Table 1 as the primary design input. The design process covered information architecture, navigation flow, interface layout, and high-fidelity interactive screens for authentication, the citizen dashboard, complaint submission and status tracking, village information, village-service information, community schedules, and administrative management. Requirement-to-screen traceability was maintained: FR-01 informed authentication; FR-02 informed the complaint form; FR-03 informed complaint history and status tracking; FR-04–FR-06 informed the three information modules; and FR-07–FR-08 informed administrator response and content-management workflows. NFR-01–NFR-03 guided consistent navigation, role-based access, and visible feedback. The interface used clear labels, consistent navigation patterns, visible complaint status, and layouts suitable for common web-enabled devices. These decisions align with research on platform design, accessibility, and requirement-oriented usability in digital public services (Kirklies *et al*., 2024; Townley & Koop, 2024; Kureerung *et al*., 2022).

3.5 System Usability Scale Evaluation

Perceived usability was evaluated using the 10-item System Usability Scale (SUS). Each item was rated on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree), with positive and negative statements presented alternately. SUS is a technology-agnostic instrument that produces a single score from 0 to 100 and is widely used for evaluating interactive systems (Bangor *et al*., 2008; Baumgartner *et al*., 2021). Recent studies continue to use SUS means and benchmark ranges to communicate perceived usability in information systems and citizen-facing public digital services (Hyzy *et al*., 2022; Kureerung *et al*., 2022; Farzah & Oktaviana, 2022; Martalisa *et al*., 2024; Putera *et al*., 2024). Its brevity and standardized scoring made it suitable for evaluating the integrated SIPDES prototype without treating the resulting score as an operational performance measure. The analysis included 25 complete SUS response sets from purposively selected target users who met the inclusion criteria described in Section 3.1. The sample composition, age range, gender distribution, and educational range are reported in Section 3.1. SUS results were analyzed at the aggregate level. Although role and basic demographic characteristics were recorded descriptively, inferential subgroup analyses were not performed because the role categories were overlapping and the subgroup sizes were small and uneven. The study was designed to estimate the overall perceived usability of the prototype rather than test differences between demographic or role-based subgroups.

3.6 SUS Scoring and Data Analysis

SUS scores were calculated for each participant using the standard scoring procedure. For odd-numbered items (Q1, Q3, Q5, Q7, and Q9), the adjusted contribution was calculated as response minus 1. For even-numbered items (Q2, Q4, Q6, Q8, and Q10), the adjusted contribution was calculated as 5 minus the response. The ten adjusted contributions were summed and multiplied by 2.5 to obtain a score between 0 and 100 (Bangor *et al*., 2008; Sauro & Lewis, 2016; Østervang *et al*., 2024). The evaluation was summarized using the number of participants, mean, sample standard deviation, median, minimum, maximum, and proportion of scores above the accepted usability threshold. Interpretation followed the benchmark proposed by Bangor *et al*. (2008), in which scores above 70 are considered acceptable, scores in the 80s correspond to Grade B on the conventional grade analogy, and adjective benchmarks progress from Good toward Excellent in this range.

4 | RESULTS AND DISCUSSION

4.1 Results

SIPDES defines two principal user roles: citizens and village administrators. Citizens require a single access point for complaint submission, complaint-status monitoring, village information, village-service information, and community schedules. Administrators require capabilities for complaint verification and response, complaint-status updating, user management, and village-content management. The integrated role structure supports a service journey in which citizens can move from information seeking to complaint submission and follow-up within one platform rather than relying on disconnected channels (Madsen *et al*., 2022; Saylam & Yıldız, 2022). The prototype integrates the complaint journey and the village information journey in a single interface. Authentication provides controlled access to personalized complaint records, and the citizen dashboard functions as the main navigation hub. The complaint module captures the complaint title, category, description, incident location, and supporting evidence. Following submission, the complaint is intended to enter an administrative workflow in which its status can be updated and presented to the citizen. Separate information modules provide announcements, village-service information, and community schedules. This integrated structure is intended to reduce fragmented information seeking and repeated channel switching, which are common sources of administrative burden in digital self-service (Madsen *et al*., 2022).

Figure 1 presents the authentication interface, consisting of the login screen for registered users and the registration screen for new users. This interface serves as the entry point to the SIPDES platform and provides the basic account-access functions required before users can access personalized complaint and information services (Figure 1).

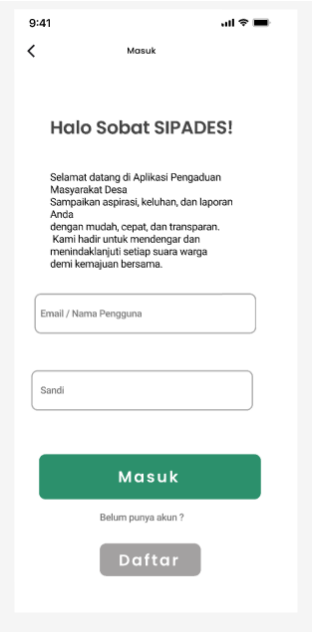


Figure 1. Login and Registration Interface of the SIPDES Prototype

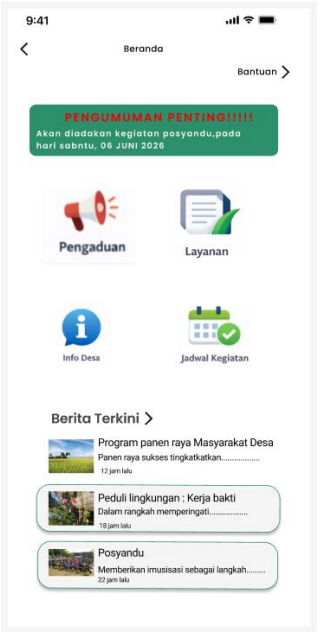


Figure 2. Citizen Dashboard and Integrated Village-Service Navigation

Figure 2 shows the main citizen dashboard, which centralizes access to complaint submission, complaint-status monitoring, village information, service information, and community schedules. The dashboard was designed to reduce navigation effort by presenting the most frequently used functions on a single landing page (Figure 2).

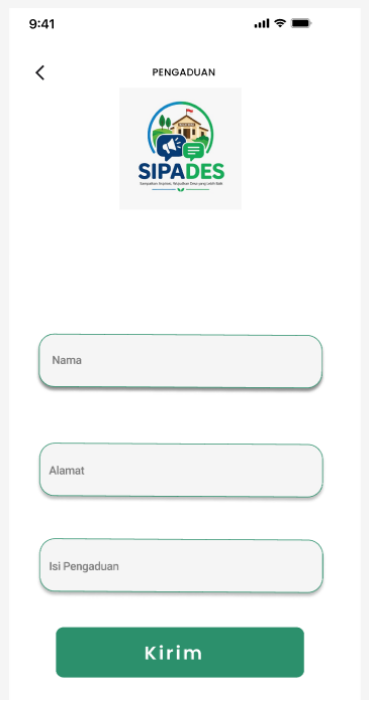


Figure 3. Online Complaint Submission Interface

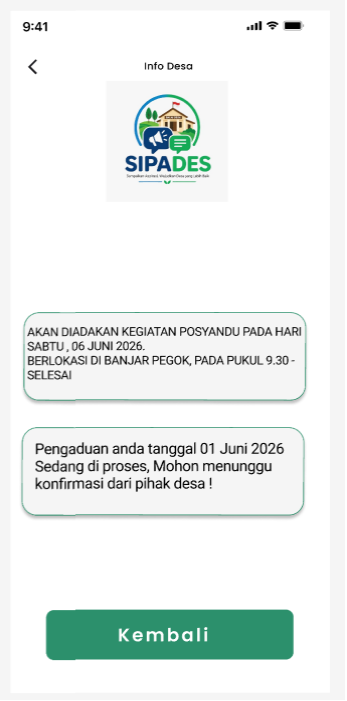


Figure 4. Village Information and Complaint-Status Display

Figure 3 illustrates the online complaint form that enables citizens to enter a complaint title, category, description,

location, and supporting evidence. This interface aims to standardize incoming reports and improve the completeness and traceability of complaint data submitted to the village administration (Figure 3). Figure 4 displays the village-information area together with complaint-status tracking, allowing users to monitor report progress while also accessing current village updates. The integration of these functions was intended to strengthen transparency and help users obtain contextual information without leaving the system. Figure 5 presents the village-service information interface, where citizens can access service-related information such as administrative support and other public-service options. By making service information available online, the interface is intended to reduce the need for in-person visits to the village office.



Figure 5. Village-Service Information Interface

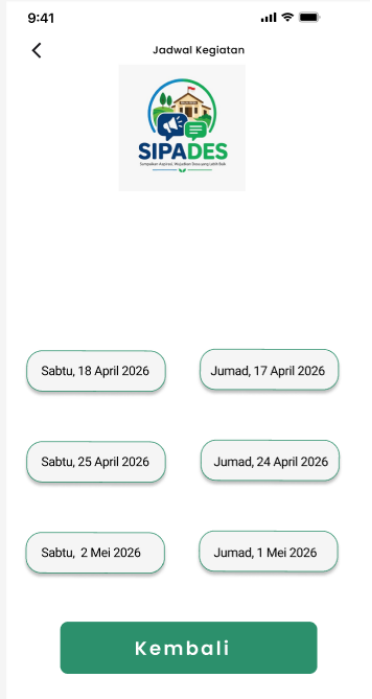


Figure 6. Community Schedule Interface

Figure 6 shows the community schedule interface, which communicates upcoming village activities and service-related events. This screen supports the timely dissemination of public schedules and improves residents' access to information about community planning and participation opportunities (Figure 6). Table 2 summarizes the results of the SUS evaluation.

Table 2. Summary of System Usability Scale Evaluation Results

Metric	Value
Number of participants	25
Mean SUS score	83.10
Standard deviation	4.23
Median	85.00
Minimum	77.50
Maximum	90.00
Scores > 70	25/25 (100%)
Acceptability/grade	Acceptable/Grade B
Adjective interpretation	Close to Excellent

Note. SUS = System Usability Scale.

The SUS evaluation included 25 participants and produced individual scores between 77.50 and 90.00. The mean SUS score was 83.10 (SD = 4.23), and the median was 85.00. All 25 participants (100%) obtained scores above 70, indicating that the prototype fell within the acceptable range for every respondent. The relatively small dispersion of scores indicates that perceived usability was consistently positive across the evaluated sample. Based on the benchmark of Bangor *et al.* (2008), the mean score of 83.10 corresponds to Grade B and lies close to the Excellent adjective benchmark, as illustrated in Figure 7.

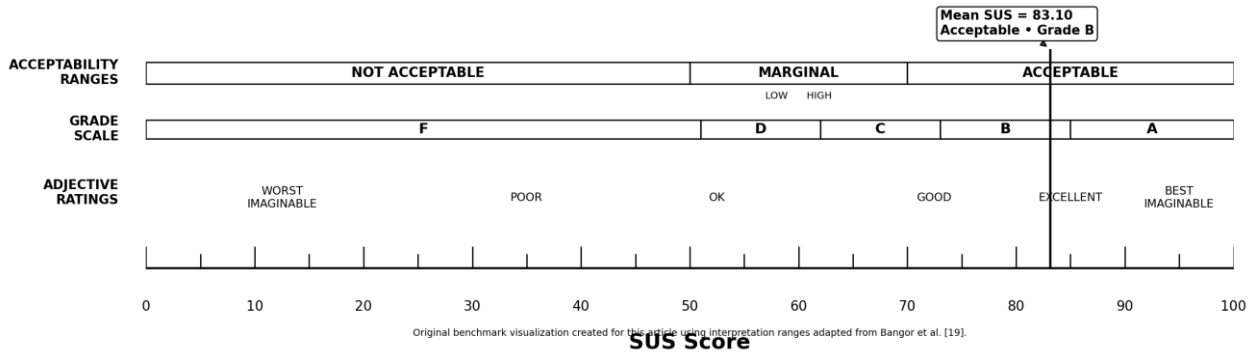


Figure 7. Original SUS Interpretation Benchmark for Classifying the SIPDES Usability Result (Mean SUS = 83.10)
Note. Adapted from Bangor *et al.* (2008).

4.2 Discussion

The SUS result provides empirical support for the perceived usability of the SIPDES prototype. The mean score of 83.10 is substantially above the approximately 70-point study mean reported in large-scale SUS benchmarking research (Bangor *et al.*, 2008) and is consistent with the range commonly interpreted as good to near-excellent usability (Østervang *et al.*, 2024; Hyzy *et al.*, 2022). In addition, all 25 participants scored above 70, while the sample standard deviation was 4.23. Together, these findings indicate a consistently positive overall perception of the prototype rather than a high mean produced by only a small subset of participants.

The favorable usability result is relevant to the citizen-centered positioning of SIPDES because the platform integrates complaint submission, complaint-status tracking, village information, service information, and community schedules within a single interface. Digital-government research emphasizes that citizens benefit when service journeys reduce fragmentation, administrative burden, and uncertainty regarding government follow-up (Madsen *et al.*, 2022; Zhao *et al.*, 2023; T. Chen *et al.*, 2023; Saldanha *et al.*, 2022). The SUS score suggests that participants perceived the integrated interface as usable as a whole, although SUS does not identify which individual feature contributed most strongly to that perception. Complaint-status visibility remains a particularly important design element, since prior research on transparency and responsive e-government indicates that participation and public support depend not only on the ability to submit input but also on whether government follow-up is visible and understandable (Zhao *et al.*, 2023; T. Chen *et al.*, 2023; Saldanha *et al.*, 2022). In SIPDES, complaint tracking is therefore treated as a core component of the service journey. The positive SUS result supports the overall usability of this design direction, but feature-level effectiveness should be examined in future task-based or post-implementation studies.

The result must also be interpreted within the scope of the instrument. SUS measures perceived overall usability and should not be treated as direct evidence that village public-service quality has already improved. Demonstrating institutional improvement would require operational indicators such as complaint-response time, resolution rate, completeness of responses, reduced repeat visits, citizen satisfaction, or before-and-after comparisons following implementation. Consequently, the present study supports a claim of high perceived prototype usability, not a causal claim of improved public-service performance. Privacy and trust also remain important considerations for implementation because complaint records may contain personal identity, location, photographs, documents, or allegations involving other individuals. Previous research shows that privacy concerns and trust can influence willingness to use government digital platforms (Trkman *et al.*, 2023; M. Chen *et al.*, 2023; Upadhyay *et al.*, 2022). A production version of SIPDES should therefore implement role-based permissions, secure authentication, clear data-retention rules, controlled complaint visibility, and appropriate procedures for confidential reports.

External SUS studies of citizen-facing government platforms provide a broader benchmark for interpreting SIPDES. The SIPDES mean of 83.10 is higher than the 71.40 reported for the BAKTI-Kemkominfo website (Farzah & Oktaviana, 2022), the 65 reported for the Banjarbaru civil-registration public-service application (Martalisa *et al.*, 2024), and the 59 reported for the Pekanbaru dalam Genggaman e-government application (Putera *et al.*, 2024). It is closer to, although below, the 87.60–90.88 scores obtained by framework-supported redesigns of the EarthquakeTMD mobile-government interface (Kureerung *et al.*, 2022). Together with the general benchmarks reported by Bangor *et al.* (2008), this range positions SIPDES as a highly usable prototype relative to several public-sector digital services. Nevertheless, the values are contextual rather than direct rankings because the studies differ in system purpose, development maturity, participant composition, devices, interaction tasks, and evaluation procedures. The authors' previous interface studies are retained as secondary methodological context rather than as the primary comparative benchmark. Journeys, Glowessence, and MedCov combined user- or human-centered

design with SUS and reported means of 90.75, 87.00, and 96.75, respectively (Putra, I. G. E. P. D. Putra, *et al*., 2026; Putra, K. W. S. Putra, *et al*., 2025a; Putra, Suranata, *et al*., 2024). Fitme and the mobile microteaching study used UEQ and SEQ/remote usability testing rather than directly comparable SUS outcomes (Putra, Wanditya, *et al*., 2025b; Putra, Rokhmawati, *et al*., 2022). These studies demonstrate continuity in the authors' user-centered evaluation practice, whereas the external government-service studies above provide the more objective basis for positioning the SIPDES score.

This study has several limitations. Purposive sampling targeted participants who were already familiar with internet-enabled devices. The sample was therefore non-probabilistic and may yield more favorable usability perceptions than a sample that deliberately includes residents with limited digital experience. The relatively narrow SUS range of 77.50–90.00 is encouraging, but the sampling characteristics narrow the interpretation of the result. Purposive recruitment ensured that participants had sufficient digital familiarity to evaluate a web prototype, yet this criterion may underrepresent residents who have limited experience with internet-based services. The sample covered adults aged 26–50 years, included 12 women and 13 men, and spanned educational attainment from senior high school to doctoral level, which limits generalization to younger and older residents. The role distribution was also overlapping and uneven: 22 participants were residents, five were officials, and two belonged to both groups. These descriptive characteristics improve reporting transparency, but the sample size and design do not support reliable role-, age-, gender-, or education-based comparisons, and the study therefore did not conduct role-based or demographic inferential comparisons. Future evaluation should deliberately recruit younger and older residents and users with lower digital familiarity so that accessibility and digital-inclusion disparities can be examined (Kirklies *et al*., 2024; Townley & Koop, 2024).

The qualitative requirements phase consisted of a one-month observation period and five interviews, one session with each village official. Although this provides direct administrative insight, the interview evidence primarily reflects the perspective of village officials and may not capture the full diversity of resident experiences; future studies should therefore include direct interviews or focus groups with a broader resident sample. In addition, evaluation occurred at the prototype stage, so real complaint-processing latency, system performance, cybersecurity incidents, administrative workload, and long-term adoption were not measured. SUS provides a global subjective usability score and does not supply objective task-completion efficiency, error, or feature-level diagnostic evidence. The single-group design likewise does not demonstrate improved public-service quality or causal effects, because operational before-and-after outcomes and a comparison condition were outside the study scope.

5 | CONCLUSIONS AND FUTURE WORK

This study developed SIPDES as a citizen-centered web prototype that integrates village complaint submission and status tracking with village information, service information, and community schedules. A one-month observation period, five individual interviews with village officials, and relevant literature were translated into traceable functional and non-functional requirements. End-user usability evaluation involved 25 purposively selected target users, comprising 22 residents and five officials, with two participants belonging to both categories. The evaluation produced a mean SUS score of 83.10 (SD = 4.23), a median of 85.00, and a range of 77.50–90.00, and all participants scored above 70. Based on established benchmarks, the prototype is acceptable, corresponds to Grade B, and approaches the Excellent adjective rating. External comparisons with citizen-facing government platforms further position the score within a favorable usability range, while differences in context and method prevent direct ranking. The findings support high perceived prototype usability rather than a causal claim of improved village public-service performance. Future research should implement SIPDES operationally and evaluate complaint-response time, resolution rate, task performance, citizen satisfaction, accessibility across user groups, security and privacy controls, and longitudinal adoption.

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REFERENCES

Aljukhadar, M., Belisle, J. F., Dantas, D. C., Sénécal, S., & Titah, R. (2022). Measuring the service quality of governmental sites: Development and validation of the e-Government service quality (EGSQUAL) scale. *Electronic Commerce Research and Applications*, *55*, 101182. https://doi.org/10.1016/j.elerap.2022.101182

Bangor, A., Kortum, P. T., & Miller, J. T. (2008). An empirical evaluation of the System Usability Scale. *International Journal of Human-Computer Interaction, 24*(6), 574–594. https://doi.org/10.1080/10447310802205776

Baumgartner, J., Ruettgers, N., Hasler, A., Sonderegger, A., & Sauer, J. (2021). Questionnaire experience and the hybrid System Usability Scale: Using a novel concept to evaluate a new instrument. *International Journal of Human-Computer Studies, 147*, Article 102575. https://doi.org/10.1016/j.ijhcs.2020.102575

Chen, M., Cao, Y., & Liang, Y. (2023). Determinants of open government data usage: Integrating trust theory and social cognitive theory. *Government Information Quarterly, 40*(4), Article 101857. https://doi.org/10.1016/j.giq.2023.101857

Chen, T., Liang, Z., Yi, H., & Chen, S. (2023). Responsive e-government in China: A way of gaining public support. *Government Information Quarterly, 40*(3), Article 101809. https://doi.org/10.1016/j.giq.2023.101809

Dechamps, S., Simonofski, A., & Burnay, C. (2025). Citizen-centricity in digital government: A theoretical and empirical typology. *Government Information Quarterly, 42*(1), Article 102005. https://doi.org/10.1016/j.giq.2024.102005

Distel, B., & Lindgren, I. (2023). A matter of perspective: Conceptualizing the role of citizens in e-government based on value positions. *Government Information Quarterly, 40*(4), Article 101837. https://doi.org/10.1016/j.giq.2023.101837

Farzah, A., & Oktaviana, S. (2022). Analisa Usability Website BAKTI-Kemkominfo Menggunakan System Usability Scale. *MULTINETICS*, *8*(1), 17-27. https://doi.org/10.32722/multinetics.v8i1.4495

Feng, X., Wang, C., & Wang, J. (2023). Understanding how the expression of online citizen petitions influences the government responses in China: An empirical study with automatic text analytics. *Information Processing & Management, 60*(3), Article 103330. https://doi.org/10.1016/j.ipm.2023.103330

Garcia-Rio, E., Palos-Sanchez, P. R., Baena-Luna, P., & Aguayo-Camacho, M. (2023). Different approaches to analyzing e-government adoption during the COVID-19 pandemic. *Government Information Quarterly, 40*(4), Article 101866. https://doi.org/10.1016/j.giq.2023.101866

Hyytinen, A., Tuimala, J., & Hammar, M. (2022). Enhancing the adoption of digital public services: Evidence from a large-scale field experiment. *Government Information Quarterly, 39*(3), Article 101687. https://doi.org/10.1016/j.giq.2022.101687

Hyzy, M., Bond, R., Mulvenna, M., Bai, L., Dix, A., Leigh, S., & Hunt, S. (2022). System Usability Scale benchmarking for digital health apps: Meta-analysis. *JMIR mHealth and uHealth, 10*(8), Article e37290. https://doi.org/10.2196/37290

Ilieva, G., Yankova, T., Ruseva, M., Dzhabarova, Y., Zhekova, V., Klisarova-Belcheva, S., Mollova, T., & Dimitrov, A. (2024). Factors influencing user perception and adoption of e-government services. *Administrative Sciences, 14*(3), Article 54. https://doi.org/10.3390/admsci14030054

Jiao, Y., Li, C., Yao, Z., Weng, C., Lian, A., & Dong, R. (2024). How can online citizen complaints provide solutions to refine environmental management: A spatio-temporal perspective. *Information Processing & Management, 61*(2), Article 103611. https://doi.org/10.1016/j.ipm.2023.103611

Kirklies, P.-C., Neumann, O., & Hohensinn, L. (2024). Promoting digital equality in co-production: The role of platform design. *Government Information Quarterly, 41*(1), Article 101903. https://doi.org/10.1016/j.giq.2023.101903

Kureerung, P., Ramingwong, L., Ramingwong, S., Cosh, K., & Eiamkanitchat, N. (2022). A framework for designing usability: Usability redesign of a mobile government application. *Information, 13*(10), Article 470. https://doi.org/10.3390/info13100470

Levesque, V. R., Bell, K. P., & Johnson, E. S. (2024). The role of municipal digital services in advancing rural resilience. *Government Information Quarterly, 41*(1), Article 101883. https://doi.org/10.1016/j.giq.2023.101883

Madsen, C. Ø., Lindgren, I., & Melin, U. (2022). The accidental caseworker: How digital self-service influences citizens' administrative burden. *Government Information Quarterly, 39*(1), Article 101653. https://doi.org/10.1016/j.giq.2021.101653

Martalisa, A., Saputro, S. W., Nugrahadi, D. T., Abadi, F., & Budiman, I. (2024). Evaluation of user experience in the Banjarbaru Disdukcapil public service application using User Experience Questionnaire and System Usability Scale. *Scientific Journal of Informatics, 11*(4), 925–936. https://doi.org/10.15294/sji.v11i4.13780

Østervang, C., Jensen, C. M., Coyne, E., Dieperink, K. B., & Lassen, A. (2024). Usability and evaluation of a health information system in the emergency department: Mixed methods study. *JMIR Human Factors, 11*, Article e48445. https://doi.org/10.2196/48445

Pawlowski, C., & Scholta, H. (2023). A taxonomy for proactive public services. *Government Information Quarterly, 40*(1), Article 101780. https://doi.org/10.1016/j.giq.2022.101780

Popescu, M. A. M., Barbu, A., Moiceanu, G., Costea-Marcu, I.-C., Militaru, G., & Simion, P. C. (2024). Citizens' perception of digital public services: A case study among Romanian citizens. *Administrative Sciences, 14*(10), Article 259. https://doi.org/10.3390/admsci14100259

Putera, T. P., Angraini, A., Saputra, E., Megawati, M., Fronita, M., & Marsal, A. (2024). Usability evaluation of Pekanbaru dalam Genggaman application using System Usability Scale (SUS). *Sistemasi: Jurnal Sistem Informasi, 13*(2), 608–615. https://doi.org/10.32520/stmsi.v13i2.3782

Putra, A. A. A. W., Putra, I. G. E. P. D., Sudharma, M. W., & Putra, I. M. D. (2026). Designing Journeys application interface to improve Indonesian UMKM accessibility with a user centered design approach. *Jurnal JTIK (Jurnal Teknologi Informasi dan Komunikasi), 10*(2), 792–798. https://doi.org/10.35870/jtik.v10i2.5754

Putra, A. A. A. W., Putra, K. W. S., & Saban, A. T. (2025a). Designing a user-centered facial health application (Glowessence) with usability testing. *International Journal Software Engineering and Computer Science (IJSECS), 5*(1), 77–87. https://doi.org/10.35870/ijsecs.v5i1.3422

Putra, A. A. A. W., Rokhmawati, R. I., & Az-Zahra, H. M. (2022). Perancangan dan Evaluasi User Experience Aplikasi Microteaching Pendukung Standar Kompetensi Mahasiswa Calon Guru berbasis Mobile dengan Pendekatan Human Centered Design dan Remote Usability Testing. *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer*, *6*(1), 402-410.

Putra, A. A. A. W., Suranata, I. W. A., & Kusumawati, A. A. I. P. (2024). Pengembangan prototype aplikasi MedCov Indonesia dengan metode human centered design dan usability testing. *Jurnal Algoritma*, *21*(2), 91-100. https://doi.org/10.33364/algoritma/v.21-2.1970

Putra, A. A. A. W., Wanditya, I. M. D., & Fhadillah, M. L. H. (2025). Pengembangan antarmuka website kebugaran Fitme untuk mendukung pola hidup sehat dengan penerapan metode human-centered design. *Jurnal Indonesia: Manajemen Informatika Dan Komunikasi*, *6*(1), 161-173. https://doi.org/10.35870/jimik.v6i1.1136

Saldanha, D. M. F., Dias, C. N., & Guillaumon, S. (2022). Transparency and accountability in digital public services: Learning from the Brazilian cases. *Government Information Quarterly, 39*(2), Article 101680. https://doi.org/10.1016/j.giq.2022.101680

Sauro, J., & Lewis, J. R. (2016). *Quantifying the user experience: Practical statistics for user research* (2nd ed.). Morgan Kaufmann.

Saylam, A., & Yıldız, M. (2022). Conceptualizing citizen-to-citizen (C2C) interactions within the e-government domain. *Government Information Quarterly, 39*(1), Article 101655. https://doi.org/10.1016/j.giq.2021.101655

Scholta, H., & Lindgren, I. (2023). Proactivity in digital public services: A conceptual analysis. *Government Information Quarterly, 40*(3), Article 101832. https://doi.org/10.1016/j.giq.2023.101832

Sharma, S., Kar, A. K., & Gupta, M. P. (2024). Untangling the web between digital citizen empowerment, accountability and quality of participation experience for e-government: Lessons from India. *Government Information Quarterly, 41*(3), Article 101964. https://doi.org/10.1016/j.giq.2024.101964

Shin, B., Floch, J., Rask, M., Bæck, P., Edgar, C., Berditchevskaia, A., Mesure, P., & Branlat, M. (2024). A systematic analysis of digital tools for citizen participation. *Government Information Quarterly, 41*(3), Article 101954. https://doi.org/10.1016/j.giq.2024.101954

Townley, C., & Koop, C. (2024). Exploring the potential and limits of digital tools for inclusive regulatory engagement with citizens. *Government Information Quarterly, 41*(1), Article 101901. https://doi.org/10.1016/j.giq.2023.101901

Trkman, M., Popovič, A., & Trkman, P. (2023). The roles of privacy concerns and trust in voluntary use of governmental proximity tracing applications. *Government Information Quarterly, 40*(1), Article 101787. https://doi.org/10.1016/j.giq.2022.101787

Upadhyay, P., Kumar, A., Dwivedi, Y. K., & Adlakha, A. (2022). Continual usage intention of platform-based governance services: A study from an emerging economy. *Government Information Quarterly, 39*(1), Article 101651. https://doi.org/10.1016/j.giq.2021.101651

Ye, X., Su, X., Yao, Z., Dong, L.-A., Lin, Q., & Yu, S. (2023). How do citizens view digital government services? Study on digital government service quality based on citizen feedback. *Mathematics, 11*(14), Article 3122. https://doi.org/10.3390/math11143122

Yuan, Y.-P., Dwivedi, Y. K., Tan, G. W.-H., Cham, T.-H., Ooi, K.-B., Aw, E. C.-X., & Currie, W. (2023). Government digital transformation: Understanding the role of government social media. *Government Information Quarterly, 40*(1), Article 101775. https://doi.org/10.1016/j.giq.2022.101775

Zhao, B., Cheng, S., Schiff, K. J., & Kim, Y. (2023). Digital transparency and citizen participation: Evidence from the online crowdsourcing platform of the City of Sacramento. *Government Information Quarterly, 40*(4), Article 101868. https://doi.org/10.1016/j.giq.2023.101868.

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