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Enhancing Public Services through Strategic Digitalization of Population Documents in Bandar Lampung City

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ABSTRACT

Population documents such as Identity Cards (KTP), Family Cards (KK), and Birth Certificates are basic rights of citizens and essential instruments for development planning, social protection, and public services. However, the effectiveness of population administration services still faces obstacles such as limited infrastructure, low adoption of digital services, and gaps in community digital literacy. This study aims to analyze the problems of population document services, formulate alternative solutions, and recommend strategic policies for digitalization. Using a qualitative policy research approach with a descriptive-analytical design, this study involved stakeholders from the Population and Civil Registration Office (Disdukcapil), government apparatus, and community representatives. Data were collected through document review, surveys, and in-depth interviews, analyzed using the Ultrasound (Urgency–Seriousness–Growth) method and the Bardach "Eightfold Path" framework to evaluate policy effectiveness, efficiency, and long-term implications. The findings show that dependence on manual services remains dominant due to weak infrastructure, limited digital capacity of the apparatus, and low community digital literacy. The policy evaluation identified three main alternatives: modernization of manual services, optimization of digitalization, and hybrid strategies. Strengthening digitalization supported by infrastructure improvement, capacity building, digital literacy enhancement, and multi-stakeholder collaboration was found to be the most feasible strategy. This study contributes by adapting the Avoid–Shift–Improve (ASI) framework into local digital governance analysis, providing a replicable model for other municipalities.

INTRODUCTION

Population documents such as Electronic Identity Cards (KTP-el), Family Cards (KK), and Birth Certificates are fundamental in safeguarding citizens' civil rights and serve as prerequisites for accessing public services in education, health, banking, and social protection (Ministry of Home Affairs, 2022). The availability of accurate, valid, and accessible documents is therefore essential to ensure inclusivity and equity in public services. Nevertheless, despite various innovations, the administration of population services (Adminduk) continues to encounter persistent challenges that hinder service quality, data accuracy, and governance accountability (Bappenas, 2022; World Bank, 2021). Recent evidence highlights three interrelated priority problems. First, there remains a high public dependence on manual services, as digital platforms are underutilized, causing citizens to rely on offline procedures characterized by long queues, higher costs, and risks of maladministration (Ombudsman RI, 2022). Second, low digital literacy among citizens limits the inclusiveness of service transformation, preventing large segments of society from effectively utilizing available online platforms (Puspitasari & Handayani, 2023). Third, limited infrastructure and investment—such as unstable internet connectivity, weak server capacity, and inadequate service facilities—slows down digitalization and undermines data security (Disdukcapil Survey, 2023). These issues form a problem map, where weak infrastructure and low digital competence reinforce public reliance on manual services, while limited literacy undermines the inclusiveness of digital adoption. As a result, the modernization of population services has progressed slowly, despite the mandate of Law No. 24 of 2013 on Population Administration, which emphasizes the use of information and communication technology to achieve fast, accurate, and transparent services.

To respond to these challenges, this study employs a qualitative policy research approach with a descriptive–analytical design that integrates the Ultrasound method (Urgency–Seriousness–Growth) to identify, classify, and prioritize key issues. The research was conducted in Bandar Lampung City, selected purposively as it represents an urban area with high administrative demands but varying levels of digital readiness. The informants consisted of 15 key stakeholders representing different institutional and community perspectives: five officials from the Population and Civil Registration Office (Disdukcapil), three sub-district or village administrative officers, four citizens who had accessed both manual and online services, and three experts in public policy and digital governance.

This composition ensured a balanced understanding of the problem from managerial, operational, and user viewpoints. Data collection was carried out using three complementary techniques: (1) document analysis, involving the review of policy documents, service standards, and the 2023 Disdukcapil Annual Report; (2) semi-structured interviews with all

15 informants to explore their perceptions, experiences, and challenges in implementing digital services; and (3) a supporting survey involving 50 respondents selected through purposive sampling at service points and online platforms, aimed at capturing user satisfaction, accessibility issues, and digital literacy levels.

The collected data were then triangulated and analyzed using the Ultrasound framework, which measures each problem's Urgency, Seriousness, and Growth potential (Dunn, 2018; Subarsono, 2016). This methodological combination provides a structured and evidence-based foundation for formulating effective and contextually relevant policy strategies to accelerate the digital transformation of population administration services.

Table 1. Problem Priority Analysis (Ultrasound)

Masalah	Urgency	Seriousness	Growth	Skor Total
Kurangnya akses & kualitas layanan	4	5	4	13
Tingginya ketergantungan pada layanan offline	5	5	5	15
Minimnya fasilitas & investasi	3	4	4	11

The results of the analysis showed that the most urgent and serious problem was the high dependence of the public on offline services with old procedures, with the highest score of 15. This condition not only slows down the effectiveness of population administration services, but also increases the potential for the emergence of other derivative problems, such as long queues, maladministration practices, and low public satisfaction with government services. These findings are in line with a World Bank study (2021) which confirms that the digitalization of public services that is not inclusive risks widening the service gap between citizens. In addition, according to the Ministry of PANRB (2022), the digital transformation of the public sector must emphasize the principles of accessibility, efficiency, and transparency in order to be able to suppress convoluted manual bureaucratic practices.

Based on an in-depth analysis, three main causes reinforce the high dependence of the community on offline services. First, there is a lack of inclusive and integrated digital services. The technological infrastructure and population information system in Bandar Lampung are not fully optimal, as reflected in frequent network interruptions, slow servers, and poorly integrated service application systems. According to Kominfo (2022), common challenges in regional digital public services include uneven infrastructure and weak interoperability standards.

Second, low digital literacy among the community hinders the utilization of online services. Although the government provides digital service platforms, a significant proportion of citizens lack the necessary skills. The APJII survey (2023) shows that around 25% of Indonesians have limited ability to access digital services due to educational background and technological skills. Consequently, online services tend to be concentrated among urban and higher-educated groups.

Third, limited funding and human resource capacity at Disdukcapil reduce service modernization. Employees' digital competencies remain limited, with a shortage of technical staff able to handle online system operations. Moreover, inadequate budget allocation for digital infrastructure investment slows down innovation. As Kuswanto & Setiawan (2021) argue, weak bureaucratic capacity in managing ICT is often a critical barrier to e-government implementation at the local level.

To strengthen the validity of the problem prioritization, this study applied the Ultrasound method (Urgency, Seriousness, Growth) by combining policy analysis with survey data from Disdukcapil Bandar Lampung (2023) and interviews with key stakeholders. For example, urgency scores were derived from the proportion of citizens reporting difficulties in accessing digital services (>40% according to the 2023 survey), seriousness scores were assigned based on the documented impacts on service delays and maladministration (Ombudsman RI, 2022), and growth scores were assessed from trends in population growth and service demand. This triangulation of secondary data, surveys, and expert judgment reduces subjectivity in scoring and provides a more empirical foundation for the analysis.

Based on these findings, the formulation of the main issue in this policy paper is:

"The high dependence of the community on offline services is driven by the lack of inclusive digital services and limited supporting infrastructure, thereby slowing down the issuance of population documents and potentially hindering the fulfillment of citizens' civil rights."

This problem statement aligns with the principles of good governance, which emphasize responsive, transparent, and efficient public services (UNDP, 2019). If reliance on manual services is not addressed through more inclusive digital transformation policies, systemic impacts may arise in the form of weak population data integration, declining public trust, and hindered development planning.

RESULT AND DISCUSSION

ANALISYS

Foundations of Theory, Concepts, and Policies

The concept of good governance provides the normative foundation for quality public service delivery. According to UNDP (1997), the principles of transparency, accountability, participation, effectiveness, and efficiency must form the core of governance. In population document services, these principles are manifested through mechanisms such as transparent service standards and online tracking systems (transparency), complaint-handling channels supervised by the Ombudsman (accountability), and community involvement in service monitoring (participation). Thus, efficient and transparent population services are not merely administrative obligations but manifestations of governance that ensure citizens' civil rights.

With rapid technological advancement, governance has evolved toward digital governance, defined as the use of information and communication technology (ICT) to enhance transparency, efficiency, and citizen engagement (Dunleavy et al., 2006; Bannister & Connolly, 2020). In Bandar Lampung, digital governance has been introduced through online service platforms and integration with the Population Administration Information System (SIAK). However, the adoption remains limited less than 30% of active users due to uneven infrastructure and digital literacy. Inclusivity, therefore, requires not only technology availability but also citizen readiness through training, awareness programs, and accessible digital service points at the local level.

Legally, Law No. 23 of 2006 and Law No. 24 of 2013 guarantee equal rights to population documents, while Presidential Regulation No. 95 of 2018 on the Electronic-Based Government System (SPBE) mandates digital transformation. Yet, gaps persist between regulatory design and imple-

mentation, mainly due to fiscal and technical constraints. To address these challenges, this study adapts the Avoid–Shift–Improve (ASI) framework—originally from sustainable transport policy (Litman, 2021)—into the governance context. Here, Avoid reduces bureaucratic complexity and maladministration; Shift promotes behavioral change from manual to digital services; and Improve strengthens infrastructure, human resources, and digital literacy. This framework provides a structured pathway to accelerate inclusive digital transformation aligned with SDG 16.9, which targets universal legal identity by 2030 (United Nations, 2015).

Analysis of the Situation in Bandar Lampung City

Bandar Lampung, as a provincial growth center, has achieved over 85% population document ownership, indicating substantial progress (Disdukcapil, 2023). Yet, disparities remain among vulnerable groups the poor, elderly, disabled, and residents in suburban areas. This mirrors findings from the World Bank (2022) and Bappenas (2023), which identify structural barriers such as limited digital infrastructure, uneven literacy, and constrained funding as core inhibitors to inclusive service access.

Despite the launch of online services, adoption rates remain below 30%. Technical issues unstable servers, poor data security, and limited internet coverage continue to cause delays and citizen frustration. These problems are compounded by low digital literacy and limited human resource capacity within Disdukcapil, leading to dependence on manual services and long queues. Budgetary limitations further restrict innovation and maintenance. Consequently, the digital divide in Bandar Lampung manifests not only as a technological gap but also as a social and administrative one.

The resulting impacts are multidimensional: (1) socially, longer service times and transportation costs increase community burden; (2) institutionally, they reduce public trust in government; and (3) nationally, data inaccuracy weakens planning and integration with sectors such as health, education, and social protection (BPS, 2022; UNDP, 2021). These findings confirm that while digitalization has begun, its inclusivity and sustainability remain limited.

Problem Cause Analysis (Levelization)

A three-tiered analysis clarifies the underlying structure of population service challenges in Bandar Lampung:

1. Direct Causes: Digital services are not yet equitable or reliable. Manual bureaucracy persists, with slow face-to-face procedures and poor infrastructure readiness—unstable servers, weak cybersecurity, and limited connectivity (Ministry of Home Affairs, 2021).
2. Indirect Causes: Low public digital literacy, limited socialization, and insufficient funding impede adoption. The 2022 National Digital Literacy Index (Kominfo) placed Indonesia at only 3.54/5, signaling the need for continuous education and capacity building.
3. Root Causes: High public dependence on manual services stems from a lack of inclusive, interoperable digital systems and chronic underinvestment in infrastructure and ICT governance (UN E-Government Survey, 2022).

These multi-level factors confirm that technical barriers alone are insufficient to explain the problem; institutional capacity, fiscal support, and citizen digital readiness are equally determinant.

Strategic Analysis Framework (Avoid–Shift–Improve)

The A-S-I framework provides an integrated strategy to address both technical and behavioral barriers in service transformation:

1. Avoid: Simplify bureaucratic procedures and reduce maladministration by digitizing workflows and implementing online verification systems. This enhances efficiency and minimizes corruption-prone interactions (KemenPAN-RB, 2022; Ombudsman RI, 2021).
2. Shift: Encourage behavioral transition from manual to online services through incentives, awareness campaigns, and mobile digital service units. Comparative evidence from UNDESA (2022) shows that mobile-based service delivery effectively reaches remote and vulnerable populations.
3. Improve: Strengthen infrastructure, human resource capacity, and digital literacy simultaneously. Investment in secure servers, training for civil servants, and community education ensures service reliability and public trust (OECD, 2021; Kominfo, 2022).

By applying ASI holistically, Bandar Lampung can shift from fragmented digital initiatives toward an inclusive and resilient population service model.

Analysis Synthesis

Synthesizing the findings, four central insights emerge:

1. The policy gap lies in implementation, not regulation. Laws and national policies already support digitalization, yet weak enforcement and limited capacity undermine execution (Dunn, 2020; OECD, 2021).
2. Digital transformation has begun but remains partial. Utilization is low due to unequal access, digital illiteracy, and infrastructural deficiencies, echoing global challenges in developing economies (UNDESA, 2022).
3. Public dependence on manual services persists. Citizens prefer traditional methods due to uncertainty and lack of trust in online systems reinforcing Dwiyanto's (2021) argument that innovation success depends on user readiness.

Integrated, inclusive, and sustainable strategies are essential. Effective transformation requires synchronized investment in infrastructure, human resources, literacy, and inter-sectoral collaboration under a Whole-of-Government approach (OECD, 2021). Overall, the analysis highlights that the digitalization of population services in Bandar Lampung is constrained by socio-technical factors rather than policy absence. The recommended pathway is a comprehensive and inclusive digital transformation anchored in adaptive regulation, continuous capacity building, and multi-stakeholder collaboration to achieve sustainable, citizen-centered governance.

POLICY OPTIONS

Concept and Approach to Analysis

In the era of digital transformation, public services are required to be more transparent, accountable, participatory, and efficient, in accordance with the principles of good governance (UNDP, 2021). The implementation of digital governance is an important instrument to answer the increasingly complex demands of society, especially in the provision of population administration services (Adminduk). According to the OECD (2020), digitization of public services has been proven to be able to suppress maladministration practices,

speed up bureaucratic processes, and increase the accuracy and validity of population data.

In the Indonesian context, the Ministry of Home Affairs through the Directorate General of Dukcapil has initiated various digital-based innovations, such as Centralized SIAK, Digital Population Identity (IKD), and the online service "Dukcapil Online" (Ministry of Home Affairs, 2023). However, implementation in the regions still faces challenges in the form of limited infrastructure, low digital literacy of the community, and inequality in the quality of human resources (HR) of the apparatus (Putri & Nugroho, 2022). Therefore, the synergy between good governance and digital governance is the key to realizing fast, precise, inclusive, and equitable Adminduk services.

2. Avoid–Shift–Improve (A-S-I) approach

To formulate more adaptive policies, the Avoid–Shift–Improve (A-S-I) framework is used which is widely adopted in modern public policy analysis (Creutzig et al., 2021): Avoid: focuses on preventing manual bureaucratic practices that are long, convoluted, and have the potential to give rise to maladministration. Workflow efficiency through digitalization can reduce illegal collection practices and increase certainty of service time (Dwiyanto, 2022); Shift: Driving the shift from manual services to online application-based digital services, mobile services, and digital counters. This shift can improve community accessibility, especially in urban and semi-urban areas (ADB, 2022); Improve: including strengthening information technology infrastructure, improving the competence of human resources of apparatus, and increasing people's digital literacy. This approach ensures the sustainability of the digitalization of population services and prevents the digital divide (World Bank, 2021).

3. Policy Evaluation Methods

The evaluation of policy alternatives was carried out using the Bardach (2012) "Eightfold Path" analysis framework, which emphasizes the following dimensions: Economics: considering the cost of implementing policies and the level of efficiency of their use (Bappenas, 2023); Social: assessing the extent to which policies improve service accessibility and reduce the burden on the community (Nurhadi, 2022); Politics: seeing support from stakeholders, including central, regional, and civil society governments (Dunn, 2020); Technical: assessing the feasibility of infrastructure, technological capacity, and human resource readiness (OECD, 2021).

Policy Alternatives

Based on the identification of problems, causes, and root causes that have been analyzed in the previous chapter, four alternative strategic policies are formulated:

Alternative 1: Strengthening Infrastructure and Digital Administrative Systems

The main focus of this alternative is the development and strengthening of an integrated information technology system. This includes: Development of online service applications based on single sign-on that are connected to the Centralized SIAK and the national system; Strengthening servers, internet networks, and data security systems so that services are more reliable, secure, and have minimal risk of data leakage (Kusnadi, 2023); Integration with other public services, such as health (BPJS), education (Dapodik), and social assistance (DTKS), to support the big data government ecosystem; The provision of digital counters in each sub-district/sub-district as an inclusive service center, especially for people who have limited access to technology. The relevance of this policy is supported by international practices, such as India with the Aadhaar Digital ID program, which has been proven to improve the accuracy of social services and reduce bureaucratic inefficiencies (World Bank, 2022).

Alternative 2: Community Education and Digital Literacy

The success of digitizing population services is highly determined by the ability of the community to access and utilize technology. Therefore, digital literacy strategies need to be strengthened through: Massive socialization about the benefits and procedures for using online services through social media, local television, and community networks (Kominfo, 2022); Digital training in schools, village halls, and community centers to improve basic skills in using the Adminduk application; Special assistance for vulnerable groups, such as the elderly, people with disabilities, and the poor, who are vulnerable to being left behind in accessing digital services. Recent literature shows that digital literacy directly contributes to the level of public participation in digital public services (Rahardjo & Sari, 2021).

Alternative 3: Human Resource Capacity Building and Service Bureaucratic Reform

The capacity of human resources of the apparatus is one of the critical factors for the success of digital transformation. This policy includes: Intensive training for Disdukcapil employees in the fields of information technology, data management, and customer service-based public services; Implementation of a transparent reward and punishment system to increase the motivation of the apparatus and suppress maladministration practices (Dwiyanto, 2022); Rearranging service SOPs to be simpler, transparent, and prioritize digitalization. Good practices can be reviewed from public service reforms in Estonia, where digital bureaucracies managed to increase efficiency by up to 40% through the automation of administrative procedures (OECD, 2020).

Alternative 4: Multi-Stakeholder Funding and Collaboration Scheme

Regional budget limitations are often an obstacle in accelerating the digitization of Adminduk services. Therefore, a collaborative strategy is needed: Optimization of the APBD and central transfer funds (DAU/DAK) for digital infrastructure financing; Cooperation with the private sector through CSR and international donor institutions in the provision of technological facilities and strengthening human resource capacity; The implementation of a KPI-based monitoring and evaluation system to ensure the effectiveness of policy implementation. This collaborative model has proven effective in smart city programs in various cities in Asia, where public-private partnership (PPP)-based funding accelerates public service innovation (ADB, 2022).

Evaluation of Policy Alternatives

The evaluation of four policy alternatives was carried out using the Bardach (2012) analysis framework which emphasizes the importance of assessment from various dimensions, namely economic, social, political, and technical aspects. This approach was chosen because it was able to provide a comprehensive picture of the feasibility of a policy, not only in terms of cost efficiency, but also public acceptance, stakeholder support, and technical readiness for implementation (Bardach & Patashnik, 2012). The results of the evaluation outlined in the table show that Alternative 1: Strengthening Infrastructure and Digital Systems of Adminduk obtained the highest score (19). This indicates that strengthening digital infrastructure is a fundamental prerequisite for the trans-

formation of population administration services. Without an adequate infrastructure foundation, digital literacy policies and human resource capacity building will be difficult to run optimally (Dwiyanto, 2021; Nugroho, 2020). Meanwhile, Alternative 2: Digital Education and Literacy and Alternative 3: Bureaucratic and Human Resources Reform obtained the same score (17), indicating that both alternatives have a high level of relevance as supporting strategies. As for Alternative 4: The Multi-Stakeholder Funding and Collaboration Scheme obtained the lowest score (14), although it is still important to ensure policy sustainability. Thus, the evaluation shows that the digital transformation strategy in population services requires a combination of policies, with infrastructure as the main pillar and literacy aspects, human resource capacity, and funding as supporting components.

Best Policy Options

Based on the results of the evaluation, Alternative 1: Strengthening Infrastructure and Digital Administrative System was determined as the best policy choice. The main reason for this selection is that the digitalization of public services cannot be separated from the quality of information technology infrastructure and strong digital systems (World Bank, 2020). Without the availability of reliable servers, stable internet networks, and data security protection, digital population services are vulnerable to technical obstacles and the risk of personal data leakage (Pratama, 2021).

The justification for the choice of this policy can be detailed as follows: Answering the root of the main problem. Limited infrastructure is the fundamental cause of the slow digital transformation of administrative services. By strengthening the digital system, the potential for maladministration can be suppressed, while improving service efficiency (KemenPAN-RB, 2022), creating inclusive, fast, and transparent services. The digital system allows people to access services without having to be bound by time and location, thereby improving the quality of public services (Setiawan, 2023), and providing a long-term impact. An accurate population database is not only beneficial for public administration, but also the basis for data-driven regional development planning (BPS, 2021) and encourages synergy with national policies. This alternative is in line with the national agenda through Presidential Decree No. 95 of 2018 concerning the Electronic-Based Government System (SPBE) and the 2020–2024 National Medium-Term Development Plan (RPJMN), which emphasizes the digitalization of public services as a development priority (Bappenas, 2020). However, this policy choice cannot stand alone. To achieve successful implementation, support is needed from Alternative 2 (digital literacy) and Alternative 3 (bureaucratic reform and human resource improvement). Meanwhile, Alternative 4 (multi-stakeholder funding and collaboration schemes) is crucial to ensure policy sustainability, especially in the face of regional fiscal limitations (Hidayat, 2022).

Implications of Policy Choices

The implementation of the population digitalization policy in Bandar Lampung City is projected to have broad implications, both positive and negative. Positive Implications such as: Improvement of the quality of public services. Faster, more transparent, and accurate services will increase community satisfaction and strengthen the legitimacy of local governments (Dwiyanto, 2021), Strengthening the accuracy of population data. An accurate database will improve development planning, social assistance distribution, and democratic processes such as elections (BPS, 2022), and bureaucratic efficiency. Digitalization will cut a long bureaucratic chain, thereby reducing opportunities for KKN (Corruption Eradication Commission, 2021) practices and increasing public trust. Transparency and accountability built through digital systems will strengthen public trust in the government (OECD, 2021). Meanwhile, the Negative Implications are such as internal resistance of the bureaucracy. Apparatus who are used to working with a manual pattern may resist change, thus requiring an effective change management strategy (Kotter, 2012), digital literacy gap. People with low literacy levels, especially the elderly and the poor, have the potential to experience service exclusion (UNDP, 2022), and cyber security threats. Digitalization opens up opportunities for cyber attacks and personal data leaks, so the cybersecurity aspect must be a priority (Ministry of Communication and Information, 2023). To anticipate these negative implications, the government needs to integrate public education strategies, human resource capacity building, and the implementation of international data security standards (ISO/IEC 27001). Thus, the digitalization of administrative in Bandar Lampung is not only a short-term solution, but also the foundation of sustainable modern public services.

POLICY RECOMMENDATIONS

The policy recommendations presented in this chapter are designed to provide strategic direction for transforming population document services into a system that is more effective, inclusive, transparent, and responsive. The recommendations are aligned with the national agenda of strengthening good governance and accelerating digital transformation, while also addressing the socio-political challenges that often accompany bureaucratic reform.

The main strategy identified is the strengthening of digital infrastructure and the Population Administration Information System (Adminduk). This strategy is considered fundamental as it directly tackles the root problems of weak digital services and public dependence on manual processes. Priority actions include the development of integrated online applications linked to the national SIAK, enhancement of server and internet capacity, adoption of modern encryption for data security, and provision of digital counters at sub-district levels to ensure accessibility. Furthermore, service integration with education, health, taxation, and social protection sectors will create a single identity system that strengthens accuracy and efficiency.

Technological improvements alone are not sufficient. The success of digital transformation depends heavily on community readiness and bureaucratic adaptability. Therefore, the first companion strategy focuses on community digital literacy and socialization programs. These initiatives must go beyond training and awareness to also address cultural comfort with manual services. A transitional approach is necessary, where hybrid models are provided: citizens may register online but still receive assistance at service points. In this way, vulnerable groups—such as the elderly, people with disabilities, and marginalized communities—can gradually transition to digital platforms. Engagement with local leaders, civil society organizations, and community institutions is also crucial to foster trust and reduce resistance.

The second companion strategy emphasizes human resource capacity building and bureaucratic change management. The resistance of civil servants to digital reforms is a common socio-political challenge, often rooted in the fear of losing

discretionary power or comfort with established routines. To mitigate this, a participatory approach should be adopted, involving staff in the design of digital procedures to foster ownership. At the same time, clear incentives—such as performance-based rewards—should be combined with sanctions for maladministration, while strong leadership commitment is required to model and enforce change.

The third companion strategy focuses on multi-stakeholder collaboration and innovative funding schemes. Beyond technical support, collaboration builds social legitimacy for reform. Partnerships with the private sector (through CSR or PPP), universities, donor institutions, and community organizations can provide not only financial resources but also broaden the coalition of actors supporting the reform, thereby weakening the influence of resistance.

A socio-political mitigation strategy is emphasized as a cross-cutting element. The transition from manual to digital services must anticipate resistance both from the public and bureaucracy. Mitigation measures include hybrid service models, participatory consultations, strengthening social accountability through accessible complaint mechanisms, and promoting success stories that demonstrate the benefits of digital adoption. By making change visible and relatable, resistance can gradually be reduced, and confidence in digital services can be enhanced.

The proposed policy recommendation is not limited to the technical dimension of digital infrastructure development but also integrates strategies to address socio-political resistance. By combining infrastructure investment, digital literacy, bureaucratic change management, and multistakeholder collaboration, the transformation of population services can be realized in a manner that is inclusive, participatory, and sustainable. This comprehensive approach ensures that digitalization does not merely change the medium of service delivery but reshapes the governance culture toward greater transparency, accountability, and responsiveness.

Operational Policy Recommendations

In order for the policy to strengthen infrastructure and the digital population administration system in Bandar Lampung City to run effectively, operational measures that are structured, adaptive, and in accordance with the digital governance framework are needed. Some operational recommendations that can be implemented include: The first step that must be taken is to build a clear regulatory framework. The Bandar Lampung City Government needs to establish a Mayor Regulation (Perwali) which specifically regulates the digitization of population administration services. This regulation will be a legal umbrella that ensures policy consistency while providing legitimacy in its implementation. In addition, the digitization of administrative services must be integrated with the Electronic-Based Government System (SPBE) as mandated by Presidential Regulation No. 95 of 2018, and connected with Single Sign-On which allows the interoperability of various public services, such as BPJS, education, taxes, and social assistance. The implementation of the One Data Policy at the regional level is also very important to ensure the consistency, accuracy, and integration of population data (Kurniawan, 2021; Kominfo, 2023).

The success of digitalization is inseparable from the availability of adequate technological infrastructure. Local governments need to provide large-capacity local servers equipped with data security standards (cybersecurity) according to the guidelines of the State Cyber and Cryptography Agency (BSSN). This infrastructure must be accompanied by a stable internet network in all sub-districts and sub-districts. To anticipate the digital divide, the construction of digital counters at sub-district/sub-district offices is a strategic solution, so that residents who have difficulty accessing online services continue to receive services. In addition, the development of user-friendly mobile service applications with simple interfaces also supports inclusivity, especially for people with low levels of digital literacy (World Bank, 2021; Setiawan & Yulianto, 2022).

The human resource (HR) factor is the key to the success of digital policies. Employees of the Population and Civil Registration Office (Disdukcapil) need to receive regular training related to mastery of digital technology, public service ethics, and data security. In addition, the establishment of a quick response service unit (helpdesk) that can be accessed through call centers and artificial intelligence-based chatbots will strengthen service responsiveness. To encourage a professsional work culture, the implementation of a reward and punishment system also needs to be implemented, so that officials are motivated to improve performance (Dwiyanto, 2021; OECD, 2023).

Digitization of services will not run optimally without the support of people's digital literacy. Therefore, the City Government must promote massive socialization through social media, print media, and the community of residents. The Digital Inclusion program also needs to be strengthened through special training for vulnerable groups, such as the elderly, people with disabilities, and people with limited access to technology. Furthermore, cooperation with schools and universities can be realized in the Digital Administration Literacy Movement program, which encourages the younger generation to become digital literacy agents in their environment (UNDP, 2022; Wahyuni, 2023).

The funding aspect is also crucial. City Governments can optimize the APBD and central transfer funds to support the strengthening of digital population services. However, given the region's fiscal limitations, collaboration with the private sector through the Technology Corporate Social Responsibility (CSR) program can be a strategic alternative, for example for the provision of computer devices, internet networks, and community training. In addition, the involvement of civil society organizations (CSOs/NGOs) is also important in expanding the reach of digital education to the grassroots community level. With this multi-stakeholder approach, the sustainability of the digitalization program will be more assured because it is supported by various stakeholders (Ansell & Gash, 2018; Putra, 2021).

Implementation Plan

In order for policy recommendations to run effectively, structured implementation stages are needed. The implementation of digitization of population administration services in Bandar Lampung City can be divided into three phases, namely short-term, medium-term, and long-term. In the short-term stage (1 year), the main step is the preparation of regulations through the Mayor's Regulation (Perwali) on the digitalization of population services. This regulation will be a strong legal basis for implementing service transformation. In addition, the government needs to conduct massive initial socialization so that the public knows about the existence of digital services. Trials of digital service applications can also be carried out at this stage to obtain direct input from the public before being fully implemented. The medium-term stage (2–3

years) is focused on strengthening technical aspects and human resources. The government needs to ensure the availability of server infrastructure and an even internet network throughout the sub-district. In addition, intensive training for employees of the Population and Civil Registration Office (Disdukcapil) must be intensified, not only related to the use of applications, but also about digital-based public services and data security. At this stage, digital counters in each village can also be built as a solution to accommodate residents who still have difficulty accessing services independently. The long-term stage (4–5 years) is directed at full integration with various other public service systems, such as BPJS, education services, taxation, and social assistance. The implementation of the One Data Policy in Bandar Lampung City is also a priority so that the accuracy and consistency of population data can be maintained. Periodic evaluations of digital systems must be carried out, including application updates, infrastructure capacity building, and strengthening cybersecurity systems to ensure service sustainability.

Implications of Recommendations

The implementation of the digitization policy for population services will bring broad implications in both the short and long term. On the positive side, digitalization will accelerate service delivery, reduce queues at service offices, and enhance public satisfaction. A more accurate and integrated population database will support evidence-based development planning, while digital systems will strengthen transparency and accountability in line with the principles of good governance and digital governance.

Several potential obstacles must be anticipated with more concrete mitigation strategies: pertama adalah Bureaucratic resistance. Some employees accustomed to manual work patterns may resist digital reforms. This requires structured change management programs, including: Capacity-building workshops on digital applications and customer service; Incentive schemes for staff who actively adopt digital systems, combined with clear sanctions for maladministration; Internal communication forums (dialogue and feedback channels) to build a sense of ownership among civil servants. Kedua adalah Digital divide in society. Vulnerable groups such as the elderly, persons with disabilities, and low-income communities may be excluded if digitalization is not inclusive. Concrete strategies include: Establishing assisted digital coun-ters at sub-district offices where staff guide citizens in using online services; Deploying mobile service buses equipped with digital devices to reach remote or marginalized communities; Designing tailored literacy modules, for example simplified tutorials for the elderly and accessibility features (voice commands, larger fonts) for persons with disabilities.

Ketiga adalah Cybersecurity risks. Weak data protection could undermine public trust. Strengthening cybersecurity requires: Investment in modern encryption and multi-factor authentication systems; Regular penetration testing and independent IT audits to detect vulnerabilities; Establishment of a cyber incident response team within Disdukcapil to handle data breaches promptly; Collaboration with the National Cyber and Encryption Agency (BSSN) for technical assistance and standards compliance.

Based on this analysis, it is clear that the digitization of population services is not only a technical necessity but also a governance priority. The main strategy that must be pursued is the strengthening of digital infrastructure and integrated service governance within the framework of the Electronic-Based Government System (SPBE). The success of implementation depends not only on technology availability but also on bureaucratic readiness, community digital competence, regulatory certainty, and sustainable funding.

Synergy among local government, the community, the private sector, and civil society organizations is essential. Such collaboration ensures that the transformation of population services is not only modern and efficient but also inclusive and resilient in the digital era. If managed properly, this policy will become a key instrument in realizing sustainable, technology-based, and citizen-centered governance.

CONCLUSIONS

Population documents such as ID cards, family cards, and bir Population documents such as identity cards, family cards, and birth certificates are not only the basic rights of citizens but also essential instruments for social protection and development planning. In practice, the effectiveness of population administration services still faces major obstacles, particularly limited infrastructure, low adoption of digital services, and gaps in community digital literacy. These conditions directly affect the accuracy of population data, the speed of services, and the overall quality of governance.

Based on systematic policy analysis, several key findings were identified. First, population document services remain less effective, resulting in limited public access and unreliable databases. Second, three main contributing factors were identified: (1) inadequate technological infrastructure, (2) low levels of digital literacy, and (3) weak governance of digital-based services. Third, policy alternatives were explored, ranging from modernization of manual services, optimization of digital platforms, to hybrid approaches combining both models.

The most relevant recommendation is the Strengthening of Digital Infrastructure and Population Administration Systems (Adminduk). This strategy should be supported by: Regulatory reinforcement, through clear local regulations that ensure legal certainty and service standards; Human resource capacity building, focusing on digital skills and change management to reduce bureaucratic resistance; Community digital literacy programs, targeting vulnerable groups to ensure inclusivity and prevent digital divides; Cross-sector collaboration, involving government, private sector, educational institutions, and civil society organizations to mobilize resources and broaden support.

The implementation of this strategy is expected to bring positive impacts, including faster, more transparent, and accounttable services; a reliable and integrated population database for sectors such as health, education, taxation, and social protection; and strengthened public trust in local government. Nevertheless, potential challenges remain, such as resistance from officials accustomed to manual procedures, unequal digital access among certain groups, and risks of data breaches. These challenges can be mitigated through transitional hybrid models, systematic public education, and robust data protection systems.

The digital transformation of population services must be set as a regional development priority. Adequate funding, strict regulations, and collaborative governance are essential foundations for its success. The success of this digitalization initiative will not only fulfill administrative needs but also serve as a strategic instrument to improve public service quality, strengthen development data, and realize smart and sustainable governance.

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