



Digital Public Service Innovation: A Comparative Study of Thailand and Indonesia

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ABSTRACT

General Background: Digital transformation has become a strategic instrument for bureaucratic reform and public service innovation. However, local governments adopt different approaches shaped by their institutional capacities and governance arrangements. **Specific Background** Chonburi Province, Thailand, emphasizes horizontally integrated smart city services, whereas Sidoarjo Regency, Indonesia, prioritizes vertically integrated administrative services. **Knowledge gap:** Despite these developments, comparative evidence explaining how different integration models influence innovation sustainability remains limited. **Aims:** This study compares digital public service innovation in Chonburi and Sidoarjo to identify lessons for strengthening digital governance in Indonesian local governments. Using a descriptive qualitative comparative case study, the research analyzes secondary data from government documents, institutional publications, media coverage, and scholarly literature through thematic and comparative analysis, guided by the e-government stage model, diffusion of innovation theory, and institutional capacity. **Result:** The findings show that Chonburi integrates smart city initiatives, including data analytics, environmental risk mitigation, healthcare, waste management, and digital tourism, supported by public-private partnerships. Sidoarjo focuses on digital platforms that simplify licensing and population administration down to the village level. Chonburi demonstrates advantages in cross-sector collaboration and tourism innovation, while Sidoarjo benefits from compatibility with existing institutional structures. Nevertheless, fragmented applications, limited trialability, digital literacy gaps, unequal access, and data security concerns challenge sustainability. **Novelty:** This study's novelty lies in explaining how horizontal and vertical integration models interact with institutional capacity to shape digital innovation sustainability. **Implication:** It recommends strengthening cross-sector data integration, public-private partnerships, phased testing, digital inclusion, and data governance to promote sustainable local digital public services.

Keywords: digital governance, innovation diffusion, institutional capacity, smart city, local government

OPEN ACCESS

ISSN 2338-445X (online)

ISSN 2527-9246 (print)

Edited by:

Noviyanti

Reviewed by:

Dhea Candra Dewi and Rutiana Dwi Wahyunengseh

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Received: September 01, 2026

Accepted: September 30, 2026

Published: October 16, 2026

Citation:

Sukmana, H., Phoungpha, N., Anantanathorn, A., Choiriyah, I. U., & Oktavia, S. D. (2026).

Digital Public Service

Innovation: A Comparative

Study of Thailand and

Indonesia.

JKMP (Jurnal Kebijakan dan

Manajemen Publik). 14:2.

doi: 10.21070/jkmp.v14i2.2125

INTRODUCTION

Over the past two decades, bureaucratic reform has increasingly emphasized the development of governance that is responsive, transparent, efficient, and oriented toward public needs. One important component of this transformation is the use of digital technology in public service delivery. Digitalization enables governments to replace manual and fragmented administrative procedures with services that are more accessible, integrated, and supported by data-driven decision-making. However, the adoption of digital technology does not automatically guarantee improvements in service quality or administrative efficiency. Its effectiveness depends on institutional capacity, infrastructure readiness, organizational arrangements, digital literacy, and the extent to which technological solutions correspond to the needs of service users. Consequently, digital public service innovation should be understood not merely as the adoption of technological tools but as a broader process of adapting public institutions and service delivery mechanisms to changing societal expectations (Arman et al., 2024; Caplanova & Szakadatova, 2025; Sangaji & Irianto, 2025; Zamzani et al., 2025).

These challenges are particularly evident at the local government level, where public institutions must translate national digitalization policies into services that address diverse regional conditions. In Indonesia, the transformation of digital public services is supported by Law No. 25 of 2009 on Public Services and Presidential Regulation No. 95 of 2018 on the Electronic-Based Government System (*Sistem Pemerintahan Berbasis Elektronik/SPBE*). These regulations encourage government institutions to utilize information technology in administrative processes and improve service integration (Arman et al., 2024; Cahya Ningtyas & Angin, 2023; Hartanti & Safrizal Wildan, 2026; Rosita Sekar Sari & Fifiandina Yudha Ramdhanty, 2025; Wawan Sugianto et al., 2025). In response, the Sidoarjo Regency Government has developed several initiatives, including the Public Service Mall (*Mal Pelayanan Publik/MPP*), the SIPRAJA application, Sidoarjo SuperApps, PASAR JAGO, My Retribusi, and PLAVON Dukcapil. These initiatives reflect efforts to simplify administrative procedures, expand service accessibility, and facilitate the delivery of public services through physical and digital channels (Maulidah & Rodiyah, 2026; Mursyidah et al., 2026; Rizky Dwi Sulisty Rahayu et al., 2026; Syahronny et al., 2024). Nevertheless, the existence of multiple digital initiatives raises important questions about how different service models generate practical benefits, correspond to institutional and community needs, and support more integrated public service delivery.

A different approach can be observed in Chonburi Province, Thailand, particularly in Pattaya and Saensuk, where digital innovation has developed within a broader smart city ecosystem. Rather than focusing exclusively on administrative digitalization, initiatives in this region encompass data platforms for decision-making, digital twin technology for environmental monitoring and risk mitigation, smart healthcare, digital infrastructure supporting security and tourism, and facilities for technological innovation and experimentation. The Thongthin Dee Dee application also represents an effort to consolidate various community-oriented services, including welfare, emergency response, security, service queues, public communication, and administration, within a digital platform (Sirivadhanawaravachara, 2025). These initiatives indicate that local digital public service innovation can follow different development pathways according to regional priorities, institutional arrangements, technological resources, and community needs. Chonburi emphasizes the integration of digital technology into urban management and a wider service ecosystem, whereas Sidoarjo places considerable emphasis on administrative simplification and the accessibility of public services. The distinction provides a basis for comparative analysis without presupposing that either approach is inherently superior.

Despite the growing development of digital public services, comparative research examining how local governments in different national contexts develop and implement innovation remains limited, particularly in comparisons between Indonesia and Thailand. Existing studies commonly focus on digitalization within a single locality or national administrative context, making it difficult to identify how differences in regional characteristics, institutional capacity, technological infrastructure, and service priorities shape local innovation pathways. In particular, a comparison between Chonburi and Sidoarjo can extend understanding of how different forms of digital innovation respond to local

governance challenges. This gap is important because the presence of advanced technology or multiple digital applications alone does not establish whether an innovation offers clear advantages, fits existing organizational practices, is sufficiently easy to use, can be tested before wider implementation, or produces observable benefits for its users. Rogers' (2003) Diffusion of Innovations theory provides a useful analytical framework for addressing these questions through five attributes: relative advantage, compatibility, complexity, trialability, and observability (Overbye-Thompson & Hamilton, 2025). Applying these attributes to a cross-national comparison can move the analysis beyond describing technological initiatives toward examining the characteristics that may facilitate or constrain their adoption and implementation. Nevertheless, because this study is based on a comparative assessment of the two cases, its findings should be interpreted as context-specific analytical insights rather than as evidence that one model is universally more effective.

Accordingly, this study aims to compare digital public service innovation in Chonburi, Thailand, and Sidoarjo Regency, Indonesia, through Rogers' (2003) Diffusion of Innovations perspective. Specifically, it seeks to: (1) describe the profiles and principal characteristics of digital public service innovations in the two regions; (2) analyze their similarities and differences based on relative advantage, compatibility, complexity, trialability, and observability; and (3) identify lessons and formulate strategic recommendations that Sidoarjo Regency could adopt or adapt in accordance with its institutional capacity and local needs. The study contributes to the literature by offering a cross-national, local-government comparison that uses innovation attributes to examine differences in digital public service development. Practically, it is expected to inform policy and administrative decisions concerning the design, implementation, and improvement of digital public services, particularly in strengthening service integration, institutional responsiveness, and the alignment of technological innovation with community needs.

RESEARCH METHODS

This study employed a descriptive qualitative approach with a comparative case study design to examine digital public service innovation in Chonburi, Thailand, particularly Pattaya and Saensuk, and Sidoarjo Regency, Indonesia. The study used secondary data collected through document analysis and a literature review, including official government websites and documents, institutional reports, media publications, and relevant scientific articles. Data were collected by identifying, selecting, verifying, and cross-checking information from multiple sources. The data were analyzed thematically using a comparative approach, focusing on the characteristics of digital public service innovations in each location. The analysis was guided by Rogers' (2003) five attributes of innovation diffusion: relative advantage, compatibility, complexity, trialability, and observability (Overbye-Thompson & Hamilton, 2025). The findings were then compared to identify similarities, differences, and strategic lessons for strengthening digital public service innovation in Sidoarjo Regency.

RESULT AND DISCUSSION

Profile of Digital Public Service Innovation in Chonburi, Thailand

The document analysis identified a digital public service innovation model in Chonburi that extends beyond administrative digitalization toward smart city development. The initiatives identified in the reviewed sources cover six areas: data-driven urban management, environmental monitoring and security, waste management, smart healthcare, tourism infrastructure, and technological experimentation. Together, these initiatives illustrate an approach that connects digital technology with broader urban management and community needs.

First, the City Data Platform supports data-based decision-making by consolidating information from sensors and citizen-reporting systems into a dashboard accessible to policymakers across agencies. Second, digital twin technology is used to support environmental monitoring and disaster mitigation, including flood-risk mapping, air pollution monitoring, and fire detection. Third, Pattaya's waste management system involves private-

sector service provision and citizen participation through service payments and waste sorting, although the reviewed study identifies continuing sustainability challenges associated with increasing waste volumes (Sirivadhanawaravachara, 2025).

Fourth, Saensuk's smart healthcare initiatives include wearable devices for monitoring elderly residents and patients with chronic illnesses, alongside telemedicine and online consultation services. Fifth, digital infrastructure in Pattaya includes public internet access and AI-based CCTV systems intended to support public safety and tourism. Sixth, Digital Park Thailand provides an innovation-oriented environment for developing and testing digital technologies. These initiatives are supported by the region's position within Thailand's Eastern Economic Corridor, which prioritizes digital innovation and smart city development (Sirivadhanawaravachara, 2025; Suksaroj et al., 2024; Zhang et al., 2025).

The reviewed sources also identify Thongthin Dee Dee as a digital service platform integrating welfare assistance, emergency response, security-related services, public information, service queues, and administrative services. This integration illustrates an effort to provide multiple public services through a single access point (Caplanova & Szakadotova, 2025). However, the sources also identify challenges involving unequal technology adoption between urban and peripheral areas and concerns about personal data protection in digital registration systems (Sivakorn et al., 2026; Worakittimalee et al., 2024).

Overall, the findings indicate that Chonburi's digital innovation profile is characterized by the integration of technology into several policy sectors, supported by institutional partnerships and an innovation-oriented ecosystem. At the same time, its implementation requires substantial technical capacity and attention to digital inclusion and data security.

Profile of Digital Public Service Innovation in Sidoarjo Regency, Indonesia

The analysis identified five principal instruments in Sidoarjo Regency: the Public Service Mall (MPP), SIPRAJA, Sidoarjo SuperApps, PASAR JAGO and My Retribusi, and PLAVON Dukcapil. These initiatives primarily aim to simplify administrative procedures, improve access to public services, and facilitate digital transactions.

The Public Service Mall consolidates different public services, including licensing and population administration, within a single physical location. SIPRAJA provides digital access to administrative and licensing services from the village to the regency level, allowing residents to process various documents without visiting government offices directly. Meanwhile, Sidoarjo SuperApps represents an initiative to centralize access to different regional public services within a single digital platform (Maulidah & Rodiyah, 2026).

In addition, PASAR JAGO and My Retribusi support the digitalization of traditional market activities and regional levy payments through digital transactions, including QRIS-based payments. These initiatives involve collaboration with Bank Indonesia and Bank Jatim. PLAVON Dukcapil, meanwhile, focuses on improving the accessibility and delivery of population administration and civil registration services (Rahayu et al., 2026).

The findings suggest that Sidoarjo's innovation model emphasizes practical improvements in administrative service delivery and the accessibility of transactions. Compared with Chonburi's broader smart city orientation, the initiatives identified in Sidoarjo are more directly connected to routine administrative needs. The coexistence of several applications also indicates a sector-specific development approach alongside efforts to centralize service access through SuperApps. However, the available documents do not establish the extent to which these platforms have achieved full technical interoperability or demonstrate their comparative effects on service performance.

Comparative Findings Based on Rogers' Diffusion of Innovations

The comparison reveals differences in the scope and orientation of the two innovation models. Chonburi's initiatives extend across multiple urban policy sectors, whereas Sidoarjo's initiatives concentrate more strongly on administrative services and digital transactions. Chonburi's technological arrangements also appear more complex and require broader cross-sector coordination. In contrast, Sidoarjo's platforms are more directly aligned with

established administrative tasks.

The cases also differ in their innovation-testing arrangements. Digital Park Thailand provides an identifiable environment for technology development and experimentation, while the reviewed sources do not identify an equivalent dedicated mechanism in Sidoarjo. Regarding observability, both regions pursue benefits that are relevant to citizens, but these benefits differ according to their respective service priorities. Importantly, the comparison describes the intended functions and documented characteristics of the innovations; it does not constitute a direct measurement of their effectiveness or prove that one region delivers better outcomes than the other. The two cases were compared using Rogers' (2003) five attributes of innovation diffusion: relative advantage, compatibility, complexity, trialability, and observability. The results are summarized in Table 1.

Table 1. Comparison of Digital Public Service Innovation in Chonburi and Sidoarjo

Innovation attribute	Chonburi, Thailand	Sidoarjo Regency, Indonesia
Relative advantage	Supports urban management, tourism, public safety, environmental monitoring, and healthcare.	Simplifies administrative procedures, improves access to population and licensing services, and facilitates digital transactions.
Compatibility	Requires coordination across policy sectors and adaptation to more complex technological systems.	Closely aligned with existing administrative processes and routine public service needs.
Complexity	Involves technically demanding systems, including data platforms, digital twins, sensors, and smart healthcare technologies.	Primarily involves service applications and digital transaction systems designed to facilitate administrative processes.
Trialability	Digital Park Thailand provides an innovation-oriented environment for technology development and testing.	The reviewed sources do not establish the existence of an equivalent, dedicated innovation-testing environment.
Observability	Intended benefits include improved urban management, public safety, environmental monitoring, and service accessibility.	Intended benefits include easier access to services, simplified procedures, and more convenient administrative transactions.

Source: Authors' analysis (2026)

The comparative findings reveal two distinct pathways of digital public service innovation. Chonburi, Thailand, integrates digital technologies into urban management, environmental monitoring, public safety, healthcare, and tourism, whereas Sidoarjo Regency, Indonesia, prioritizes administrative simplification, service accessibility, and digital transactions through SIPRAJA, Public Service Mall (MPP), SuperApps, and PLAVON Dukcapil. Viewed through Rogers' (2003) five attributes of innovation diffusion, these differences reflect variations in relative advantage, compatibility, complexity, trialability, and observability. This finding aligns with Epstein (2022), who demonstrates that e-government diffusion varies across local and institutional contexts. Similarly, Twizeyimana & Andersson (2019) emphasize that the public value of e-government depends on its contribution to service quality, administrative performance, and social outcomes. Thus, neither model is universally superior; its value depends on local needs and institutional capacities.

Regarding compatibility and complexity, Sidoarjo's digital services align closely with established administrative functions, facilitating their incorporation into existing workflows. Conversely, Chonburi's cross-sector initiatives require greater technical expertise and inter-agency coordination. However, compatibility with administrative routines does not necessarily indicate technical interoperability. Although Sidoarjo has developed SuperApps, the available evidence does not establish the extent of integration among underlying systems. Mergel et al. (2019) explain that digital transformation involves organizational and service-

delivery changes beyond technology adoption. Similarly, Ningtias & Mursyidah (2024) identify communication, resources, implementation attitudes, and bureaucratic structures as relevant to SiPraja implementation. These findings underscore the need for stronger inter-agency coordination, clear data governance, and systematic interoperability assessments to reduce duplication and improve service consistency.

Trialability and institutional partnerships further distinguish the two cases. Digital Park Thailand provides an environment for technological development and experimentation, illustrating Rogers' (2003) concept of trialability. The available evidence does not establish whether Sidoarjo has an equivalent institutionalized testing mechanism, although this does not mean that application testing never occurs. Structured pilot projects with clear objectives and evaluation criteria could help assess feasibility and organizational readiness before wider implementation. Chonburi's technology-related partnerships and Sidoarjo's digital financial transaction initiatives also demonstrate different forms of collaboration. Nevertheless, neither partnerships nor unified application interfaces automatically guarantee sustainability or interoperability. (Ratnawati & Putranto, 2023) highlights the importance of enabling separate e-government systems to exchange information and support coordinated processes. Sidoarjo should therefore evaluate existing platforms, strengthen strategic partnerships, and expand integration based on demonstrated performance.

Beyond technological and institutional considerations, both cases face challenges involving digital inclusion, citizen participation, and data security. Research on Sidoarjo identifies concerns regarding digital literacy, network reliability, maintenance resources, and information dissemination (Betari Rus Maylita & Lailul mursyidah, 2025; Nasichuddin Nasichuddin et al., 2025; Zahra & Calvin Edo Wahyudi, 2026). Djatmiko et al. (2025) similarly highlight digital literacy and infrastructure disparities as barriers to inclusive public services. Consequently, service availability should be complemented by accessible guidance, user assistance, and systematic feedback mechanisms. Community participation in Pattaya's waste management initiatives also illustrates the importance of engaging citizens in sustaining public services, although the transferability of this experience to digital administration requires further assessment. For Sidoarjo, satisfaction surveys, complaint monitoring, public consultation, and robust personal data governance should become integral components of digital service development.

Overall, Sidoarjo should prioritize cross-sector data integration, institutional capacity building, and inclusive, secure digital governance. Implementation should progress from platform evaluation and pilot projects to cross-agency integration and a coordinated roadmap. Progress should be measured through accessibility, processing time, user satisfaction, system reliability, interoperability, and data protection. These priorities are strategic implications of the comparative findings, not empirically validated interventions.

CONCLUSION

This study concludes that digital public service innovation in Chonburi, Thailand, and Sidoarjo Regency, Indonesia, reflects two complementary approaches: horizontal smart city integration in Chonburi and vertical administrative service integration in Sidoarjo. The comparison demonstrates that innovation sustainability depends not only on technological availability but also on institutional capacity, strategic partnerships, and citizen participation. To strengthen its digital governance, Sidoarjo can adopt Chonburi's cross-sector data integration, public-private partnerships, and participatory service development while addressing application fragmentation, digital literacy gaps, unequal access, and personal data security. However, this study is limited by its reliance on secondary data, which restricts its ability to assess users' experiences, citizen satisfaction, and the actual effectiveness of application integration. Future research should incorporate interviews with service managers and users, alongside quantitative assessments of application fragmentation, integration effectiveness, and the impacts of digital innovation on citizen satisfaction and empowerment.

ORIGINALITY STATEMENT

The author[s] declare that this article is their own work and to the best of their knowledge it contains no materials previously published or written by another person, or substantial proportions of material which have been accepted for the published of any other published materials, except where due acknowledgement is made in the article. Any contribution made to the research by others, with whom author[s] have work, is explicitly acknowledged in the article.

ACKNOWLEDGMENTS

The authors acknowledge the use of ChatGPT (OpenAI) as an AI-assisted tool to support language editing and improve the clarity of the manuscript. The authors reviewed and verified all AI-assisted outputs and take full responsibility for the accuracy, originality, and integrity of the published work.

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Conflict of Interest Statement: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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