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ANALYSIS OF SMART URBAN GOVERNANCE FROM THE PERSPECTIVE OF DYNAMIC GOVERNANCE IN THE CITY OF SURABAYA

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ABSTRACT

The transformation of urban governance toward smart governance has become a strategic agenda for building responsive, transparent, and inclusive cities. Surabaya, as one of Indonesia's leading smart cities, has demonstrated various digital innovations that require in-depth analysis from an institutional and adaptive governance perspective. This study aims to analyze the implementation of Smart Urban Governance in Surabaya using the Dynamic Governance framework, which emphasizes the principles of *Thinking Ahead*, *Thinking Again*, and *Thinking Across. A qualitative research approach was employed, utilizing in-depth interviews, field observations, and document analysis. The study examined seven key indicators of smart governance: inclusiveness, responsiveness, transparency and accountability, data governance, collaborative governance, digital infrastructure and capacity, and institutional adaptability. The findings reveal that Surabaya has successfully implemented most of these indicators through various innovations such as the WargaKu application, e-Peken platform, Command Center 112, and a paperless bureaucracy system. However, challenges remain in ensuring the inclusion of vulnerable groups and in addressing complex complaints across sectors. The study concludes that the principles of Dynamic Governance are reflected in Surabaya's digital policies, although improvements are still needed in citizen participation and cross-sectoral integration. This research recommends expanding digital literacy, conducting continuous evaluations of digital platform performance, and undertaking comparative studies with other cities to strengthen smart governance policies in Indonesia.*

INTRODUCTION

The rapid growth of urban populations and technological innovation has transformed cities into complex socio-technical systems that require governance models capable of ensuring efficiency, transparency, and inclusiveness. According to (Jiang, 2021), digital transformation in urban governance is not merely about adopting technology, but should be understood as a change in values, processes, and principles that are oriented towards social needs, inclusiveness, transparency, and institutional adaptability. The concept of Smart Urban Governance emerges as a strategic response to

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urban challenges, integrating digital technologies with participatory governance to improve public service delivery. For Surabaya, one of Indonesia's most prominent metropolitan areas, the adoption of smart city principles is not merely an option but a necessity to address issues such as rapid urbanization, environmental pressures, and rising public expectations for transparent and responsive governance.

Surabaya's digital transformation agenda has gained momentum in the past decade, supported by policies that integrate technological innovation with public participation. Flagship programs such as WargaKu, Surabaya Single Window (SSW), and the Command Center 112 have significantly transformed the way the local government interacts with citizens. These initiatives aim to make public services more accessible, efficient, and accountable. However, despite notable achievements, the city still faces structural challenges, including digital inequality among vulnerable groups, data integration gaps across sectors, and limited institutional adaptability in responding to complex, cross-sectoral problems.

The urgency of this research lies in the need to critically evaluate whether Surabaya's smart governance practices have advanced beyond mere technological deployment toward fostering genuine inclusiveness, responsiveness, and collaborative governance. While existing studies on smart cities in Indonesia often focus on infrastructure development or service efficiency, few comprehensively examines governance quality through a multidimensional lens, particularly one that integrates the Smart Urban Governance framework with Dynamic Governance theory. Such a perspective is crucial for understanding how institutional adaptability, future-oriented thinking, and engagement capacity influence the practical success of smart city initiatives.

The choice of Surabaya as the case study is based on its reputation as a pioneer of smart city implementation in Indonesia and its consistent high performance in the national Smart City Index. The city's governance approach provides a rich context for examining both achievements and limitations, offering insights relevant to other urban centers facing similar socio-political and technological challenges. By situating Surabaya's experience within the broader global discourse on smart governance, this research not only contributes to local policy evaluation but also advances the broader academic understanding of how cities can adapt governance structures to an increasingly digital and interconnected world.

Therefore, this study analyzes the application of Smart Urban Governance in Surabaya through the lens of Dynamic Governance, focusing on seven key dimensions: Inclusiveness, Responsiveness, Transparency and Accountability, Data Governance, Collaborative Governance, Digital Infrastructure and Capacity, and Institutional Adaptability. Dynamic Governance complements these indicators by embedding institutional adaptability through its principles of Thinking Ahead, which

anticipates future needs in digital infrastructure, Thinking Again, which ensures transparency and accountability through continuous evaluation, and Thinking Across, which strengthens inclusiveness and collaboration across government, private sector, and civil society. Through this integrated perspective, the study seeks to reveal how the interplay of technology, institutional reform, and citizen engagement shapes Surabaya's path toward becoming a truly smart.

Table 1. Digital Public Services In Surabaya

Digital Service Name	Main Function	Additional Notes
***WargaKu* (Citizens' Aspiration and Complaint Platform)**	Provides a digital platform for citizens to submit aspirations and complaints	Enhances public participation and government responsiveness
GRMS (Government Resources Management System)	Manages personnel data, financial records, assets, and regional planning	Supports bureaucratic efficiency and internal transparency
e-Health Surabaya	Digital registration, medical records, and queue system for health services	Improves healthcare accessibility and operational efficiency
SSW (Surabaya Single Window)	Offers online licensing and civil administration services	Simplifies public administration and integrated permit services
e-SAPAWARGA	Two-way communication platform for government policy dissemination	Empowers communities in policy communication and engagement
e-Peken	Digital market platform for local MSMEs	Promotes economic digitalization and empowers micro-enterprises
SIGAP (Integrated Emergency Information System)	Emergency response system for fires, crime, and disasters	Integrates emergency services into a centralized information system
Command Center 112	24/7 centralized control and emergency response center	Integrates emergency response and urban surveillance using smart tech
Si Jari (Healthcare Referral Information System)	Online referral system among health facilities	Speeds up patient referral processes and improves information accuracy
e-Musrenbang	Digital platform for community-based development planning	Increases public involvement in planning and budget allocation

Source: Processed Primary Data, 2025

Micozzi & Yigitcanlar (2022) highlight the importance of integrating Smart City policies both nationally and locally. A research conducted by Priyowidodo et al. (2024) on the digital transformation of public services in Surabaya shows that digital transformation, encompassing service platforms, institutional capabilities, and citizen participation, is a historical necessity and drives radical changes in urban governance. This study uses a phenomenographic method to understand the experiences of various stakeholders and concludes that the evolution towards smart governance is no longer an option but a necessity for modern urban communities.

Qonita (2024) research on bureaucratic reform at the Department of Population and Civil Registration of Surabaya City using Dynamic Governance theory provides a novel contribution by applying the "Thinking Ahead, Thinking Again, Thinking Across" approach in the context of digital administrative services. This study demonstrates that public institutions in Surabaya have developed adaptive capacities to address technological changes and the diverse needs of city residents inclusively. This discussion serves as a strong theoretical foundation for this research.

A study by Hidayat (2024) on integrated information systems in Surabaya emphasizes the strengthening of accountability and transparency through the implementation of digital systems that

connect various public service units. Enabling factors such as strong political leadership, multi-actor collaboration, and investment in digital infrastructure are cited as key to the success of local governance transformation. These findings reinforce the relevance of indicators such as data governance, transparency, and collaborative governance within the theoretical framework.

Referring to the five journals, the novelty of this research lies in the integration of the Smart Urban Governance indicators proposed by Jiang (2021) with real implementation in Surabaya, examined within the framework of Dynamic Governance theory. Thus, this research serves as a bridge between global theory and local empiricism, demonstrating how aspects of inclusiveness, responsiveness, institutional adaptability, and data governance can be realized in a city that is already quite advanced in the digitalization of public services. This holistic approach has not been extensively explored in local studies.

This research aims to analyze the implementation of Smart Urban Governance in Surabaya through the perspective of Dynamic Governance, highlighting how the principles of smart city governance such as inclusivity, responsiveness, collaboration, transparency, and institutional adaptability are implemented in public policy and service practices. In addition, this research seeks to assess the extent to which the institutional capacity of the Surabaya City Government responds to the challenges of digital governance and adapts policies dynamically in the context of technological advancements and increasing public participation demands.

Finally, the reason for choosing the title "Analysis of Smart Urban Governance from the Perspective of Dynamic Governance in the City of Surabaya" is because it reflects the combination of theory (dynamic governance), empirical indicators from Jiang (2021), and concrete case studies (Surabaya). This title is not only academic in structure, but also strategic in contribution because it presents an applicable and replicable analysis model for other cities in Indonesia that are developing smart cities.

LITERATURE REVIEW

The concept of smart urban governance serves as a strategic and adaptive approach to address the complexity of urban governance in the digital era. Jiang (2021) outlines seven main indicators that can be used to analyze the success of digital-based urban governance: inclusiveness, responsiveness, transparency and accountability, data governance, collaborative governance, digital infrastructure and capacity, and institutional adaptability. Each indicator represents an important dimension in ensuring that urban digital transformation is not just about implementing technology, but also about strengthening inclusive and citizen-oriented governance.

These dimensions include inclusiveness, which emphasizes the involvement of all community groups, particularly vulnerable populations, in decision-making and access to digital services; responsiveness, which relates to the speed and accuracy of government action in addressing citizen needs; and transparency and accountability, which ensure that governance processes remain open and traceable to minimize abuse of power. In addition, data governance highlights the secure, transparent, and ethical management of citizen data, while collaborative governance stresses the importance of multi-actor synergy between government, private sector, and civil society in shaping smart city ecosystems. The framework is further supported by digital infrastructure and capacity, referring to the readiness of ICT facilities and institutional capability to sustain digital transformation, and institutional adaptability, which underlines the ability of bureaucratic structures to adjust in line with technological and social changes. Together, these seven indicators provide an analytical foundation for assessing how cities operationalize smart governance not only through technology, but also through institutional reform, inclusiveness, and collaboration.

Previous research results also show the urgency of a smart urban governance approach. For example, the study by Secinaro et al. (2022) examined community involvement in e-government and found that digital platforms increase citizen participation in Madrid (Spain). A research by Manullang et al. (2024) shows the role of local government responsiveness in app-based digital services in Semarang as a key to successful digital governance. Lyu (2022) emphasizes the importance of cross-sector collaboration in realizing citizen-oriented smart cities. Lee et al. (2023) emphasizes the importance of data governance in supporting urban digital policies in an inclusive and transparent manner.

From the elaboration above, this study builds an integrated theoretical framework based on Jiang's (2021) concept, mapping the practices and challenges faced by the city of Surabaya in implementing the principles of smart urban governance. The novelty of this study lies in the application of the Dynamic Governance approach to explain how institutional adaptability, bureaucratic responsiveness, and multi-actor collaboration in Surabaya are operationalized in the pursuit of inclusive and sustainable digital governance.

The Dynamic Governance theory as developed by Neo & Chen (2010) offers a conceptual framework that emphasizes the importance of flexibility and adaptability in the governance process. There are three main principles in this theory: Thinking Ahead (the ability to predict changes), Thinking Again (the ability to evaluate and adjust policies), and Thinking Across (the ability to build cross-sector and actor collaboration). These three principles are interactive and dynamic, allowing governance to respond proactively, participatively, and integratively to changes.

When related to the seven indicators of Smart Urban Governance proposed by Jiang (2021), the principles of Dynamic Governance provide a framework that strengthens the implementation dimension of these indicators. For example, the indicator of Institutional Adaptability is directly aligned with the principle of Thinking Again, which requires the government to reflect on and revise policies or digital systems periodically to remain relevant to the needs of the community and technological developments. This is evident from how the City of Surabaya has reformed its service system from manual to digital, as seen in the *WargaKu* and GRMS platforms.

The Collaborative Governance indicator closely aligns with the principle of Thinking Across, which emphasizes synergy not only with the central government but also horizontally with the private sector, civil society, and academia. Surabaya applies this through the e-Peken platform, a collaboration between the city government and MSMEs that accelerates digital trade while ensuring equitable benefits from digital transformation.

The Thinking Ahead principle reinforces the indicators of Digital Infrastructure and Capacity, as visionary governance requires continuous investment in technology and human resources. Surabaya's development of the Command Center 112 and the expansion of public Wi-Fi networks illustrate its anticipation of increasingly complex, technology-based public service demands.

Meanwhile, the indicators of Data Governance,Transparency, and Accountability demand institutional mechanisms that are both open and controlled. These conditions can only be achieved through policy flexibility and the political will to "think again", by periodically evaluating data management and transparency practices to ensure accountability.

In this regard, Dynamic Governance serves not only as a theoretical lens but also as an explanatory framework for Surabaya's adaptive digital transformation. It captures how local digital policies operate responsively, collaboratively, and sustainably while strengthening institutional capacity to address evolving social and technological challenges.

RESEARCH METHODS

This research uses a descriptive qualitative approach aimed at gaining an in-depth understanding Bazen et al. (2021) of the implementation of Smart Urban Governance in the context of urban governance in the city of Surabaya, as well as how the principles of Dynamic Governance are applied to support the digital transformation of government. A qualitative approach was chosen because it can explain social phenomena and policies comprehensively through the interpretation of meanings, processes, and the dynamics of relationships among the actors involved in smart city governance practices (Fischer et al., 2021).

The research uses case study as its research design, with the City of Surabaya as a single unit of analysis. The selection of this case study is based on the characteristics of Surabaya as one of the metropolitan cities that has initiated various policies for the digitalization of public services and has a national reputation in smart city development. Case studies allow researchers to examine in depth the process of policy implementation, institutional capacity, and the involvement of various stakeholders in supporting the principles of smart city governance.

The data in this study consists of both primary and secondary data. Primary data is obtained through in-depth interviews with key informants from various agencies, including the Communication and Informatics Office (Diskominfo) of Surabaya City, the Population and Civil Registration Office, developers of city digital platforms such as *WargaKu* and SSW (Surabaya Single Window), as well as community leaders and users of city digital services. The selection of informants is done purposively, considering their involvement in the formulation and implementation of digital policies (Rukin, 2019). In addition, non-participatory observation of the use of several digital services in the field is conducted.

Secondary data were collected through the analysis of policy documents such as the Mayor's Regulation, reports on the achievements of Electronic-Based Government System (SPBE), official publications from government websites, as well as news articles, NGO reports, and relevant academic publications. These sources were used to support data triangulation and strengthen the validity of the analysis.

The primary data collection technique is semi-structured in-depth interviews, which provide flexibility in exploring respondents' answers (Adeoye-Olatunde & Olenik, 2021; Mannan & Afni, 2020) while still adhering to the framework of Smart Urban Governance indicators outlined by Jiang (2021). Additionally, documentation was conducted on digital service tools and online public service interactions to trace aspects of transparency, responsiveness, and citizen engagement.

The collected data were analyzed using thematic analysis techniques, with open coding and axial coding processes to identify patterns and themes relevant to the study (Alhassan et al., 2023; Braun et al., 2019) and mapped against the seven indicators of Smart Urban Governance, namely inclusiveness, responsiveness, transparency and accountability, data governance, collaborative governance, digital infrastructure and capacity, and institutional adaptability. Furthermore, the analysis results were linked to the Dynamic Governance framework to assess the extent to which urban governance demonstrates the ability to think ahead, learn from experience, and be flexible in engaging various actors.

To maintain the validity and reliability of the data, both source and method triangulation techniques were employed. Validation was conducted through member checking with several

informants, as well as peer debriefing to assess the consistency of the researcher's interpretation of field findings (Motulsky, 2021). This procedure was carried out to ensure that the findings accurately reflect empirical conditions objectively and are academically justified.

RESEARCH RESULT

Inclusiveness – The Involvement Of All Community Groups

The Surabaya City Government has shown a consistent commitment to inclusivity in developing digital public services, as reflected in the creation of various platforms, such as WargaKu, Surabaya Single Window, and SP4N-Lapor. These platforms aim to reach diverse community groups, including vulnerable segments of society. Interviews with members of the disability community and low-income residents suggest that while awareness of these services exists, actual usage varies, indicating that accessibility is not yet evenly distributed.

This challenge is also evident in the city's efforts to transition the development planning deliberation forum (*musrenbang*) into online platforms. While such initiatives signal progress toward inclusivity, participation from marginalized groups remains limited due to gaps in digital literacy and the lack of sustained support. Although the city provides free WiFi in many public spaces, residents in slum areas or those with limited access to devices are still unable to fully benefit from these facilities.

To address this gap, Surabaya has introduced the Broadband Learning Centre (BLC) program, which specifically targets communities with low levels of access to technology. By offering training in basic digital skills and expanding opportunities to engage with online services, the BLC program helps residents, including neighborhood leaders (RT/RW), to independently access and utilize public information. This demonstrates that inclusivity is not only about providing technology but also about strengthening human capacity.

The importance of inclusivity is also emphasized in the city's Voluntary Local Review (VLR) document of 2021, which highlights efforts to integrate community voices into decision-making through online *musrenbang* forums. Nevertheless, the effectiveness of these forums depends heavily on the technological readiness of participants and the availability of local facilitators, indicating that structural barriers still hinder equal participation.

A further step toward inclusivity is evident in the *Smart Kampung* program, where digital services for population administration and licensing are decentralized to the sub-district level. While this initiative brings services closer to residents, its effectiveness varies across locations, depending on the technological infrastructure and human resources available in each sub-district. In some areas, limited devices and unstable networks remain obstacles that weaken the program's impact.

Overall, the findings indicate that while Surabaya has established key instruments for inclusive digital governance, outcomes remain limited by structural and social constraints. Bridging the digital divide requires not only *thinking ahead* through the expansion of digital infrastructure but also *thinking again* by continuously evaluating gaps in digital literacy and accessibility. Most importantly, inclusivity depends on *thinking across* sustained collaboration between the city government, civil society, and private actors to empower marginalized groups and ensure that no one is left behind in the digital transformation.

Responsiveness – The Government's Ability To Respond Quickly

The responsiveness of the Surabaya City Government is most clearly reflected through the WargaKu application, which functions as an interactive channel connecting citizens directly with the administration. This platform enables residents to submit complaints, suggestions, and service requests in real time, facilitating faster and more visible government response. Data from the Surabaya City Communications and Information Office indicate that in 2023–2024 the platform handled more than 1,000 citizen reports per month on average, a notable increase compared to previous years. This growth reflects rising public awareness and trust in digital services as a means to engage with the government.

Beyond the quantity of reports, the quality of government responses has also improved. Field data indicate that the average response time to citizen complaints is now under 24 hours, with many issues resolved on the same day. This efficiency is made possible by integrating the *WargaKu* system with sub-district offices and related agencies, each equipped with real-time dashboards to track and respond to incoming reports. The availability of these digital tools ensures that service delivery becomes not only faster but also more coordinated across institutions.

Community testimonies further reinforce this development. Interviewees highlighted that prior to WargaKu, reporting issues such as damaged streetlights, waste buildup, or minor flooding often required days or even weeks without any follow-up. Now, residents note that many of these problems can be resolved within hours, signaling a cultural shift in the bureaucracy toward greater adaptability and responsiveness. Such experiences illustrate how digital governance is transforming citizen-government relations by creating a sense of being genuinely heard and attended to.

The city’s achievements in digital responsiveness have also been recognized at the national level. In 2024, Surabaya was awarded the highest ranking for its Electronic-Based Government System (SPBE), assessed across 42 indicators including planning, service quality, and technology audits. The 2023 SPBE evaluation specifically praised Surabaya’s dashboard-based response management, which allows each local agency to receive automated notifications of citizen complaints and to document their follow-up actions transparently. This system not only ensures accountability

but also allows the public to monitor service progress online, strengthening institutional legitimacy and trust.

Ultimately, responsiveness in Surabaya's smart governance is not only about adopting technology but also about fostering adaptive bureaucratic practices. This reflects *thinking ahead* through continuous investment in infrastructure and human resource capacity, *thinking again* by evaluating how quickly and effectively complaints are resolved, and *thinking across* by promoting collaboration between government agencies and the community to maintain trust. Without these elements, digital responsiveness risks becoming symbolic rather than substantive. The challenge, therefore, is to consolidate a responsive ecosystem where technological innovation consistently translates into tangible improvements in public trust and service quality.

Transparency & Accountability – Open And Accountable Governance

Transparency and accountability are fundamental in digital city governance, requiring systems that are open to public oversight and institutional responsibility. The Surabaya Single Window (SSW) has become a strategic tool to enhance transparent governance, used by more than 30 government agencies to deliver over 150 public services. This system allows citizens and businesses to track licensing processes online, from submission to final approval, reducing ambiguity and increasing procedural clarity.

Field observations and interviews confirm that SSW has contributed to lowering complaints about bureaucratic inefficiency. Citizens reported that real-time tracking reduces reliance on unofficial channels or personal lobbying. By recording and auditing every transaction, SSW enables performance evaluation across departments and fosters a culture of measurable accountability within public administration.

The e-Performance system provides real-time monitoring of civil servants' daily activities, attendance, and target achievements. This Performance Management Information System prevents data manipulation and ensures that performance bonuses are linked to transparent metrics. Employees can access their assessments, challenge discrepancies, and view comparative data, promoting internal accountability and professionalism.

The implementation of e-Performance has reshaped leadership culture in Surabaya's government. Officials who fail to log daily activities risk losing performance incentives and facing administrative sanctions. Such strict adherence to digital recording practices contributed to Surabaya's "A" rating in the national SAKIP evaluation for 2023 and 2024, affirming the city's commitment to transparent planning, budgeting, and performance reporting.

SSW and e-Performance have played a critical role in strengthening transparency and accountability in Surabaya's smart governance framework. These systems have reduced opportunities

for corruption, accelerated service delivery, and institutionalized public oversight. However, their further development should focus on deepening public involvement in strategic decision-making, thereby reinforcing trust through more inclusive and substantive transparency.

Overall, the indicators of transparency and accountability in Surabaya are reinforced by digital systems such as SSW and e-Performance, which enhance service openness and establish an auditable foundation for institutional accountability. These development illustrate *thinking ahead* through proactive investment in digital platforms, *thinking again* by enabling continuous monitoring and evaluation of bureaucratic performance, and *thinking across* by fostering public trust and encouraging citizen participation in oversight. Nonetheless, further improvement is required to ensure that transparency extends beyond efficiency toward more substantive inclusion in strategic decision-making.

Data Governance – Secure, Transparent, And Ethical Data Management

Data governance in Surabaya has advanced in response to the growing need for integrated and responsive data management to support evidence-based policymaking. The implementation of the Command Center 112 illustrates the city's strategic move toward centralizing information from citizens, agencies, and regional units for real-time response. This platform serves as a control hub for various reports ranging from emergencies to environmental monitoring while also enabling swift and contextual decision-making.

The command center also integrates visual data through city-wide CCTV networks, enhancing information accuracy and reliability. However, challenges persist, particularly in the standardization and interoperability of sectoral information systems. Several services, such as those in the education and health sectors, still operate independently, limiting data synchronization and coordination between departments.

Surabaya has also adopted personal data protection policies aligned with Indonesia's Personal Data Protection Law (UU No. 27/2022). Despite this regulatory framework, concerns about data security and ethical use remain, especially as digital services continue to expand. These conditions highlight the need for stronger mechanisms to ensure data integrity while safeguarding citizen privacy.

To strengthen internal capacity, the Surabaya City Government has introduced data literacy training for civil servants. These programs focus on ethical data use, protection, and analytics to support adaptive planning in public services. Targeted at key agencies, the training fosters a culture of data-driven governance and improves decision-making effectiveness across government sectors.

As part of its transparency agenda, Surabaya has launched an Open Data Portal that provides public access to non-personal datasets, such as development indicators and performance statistics.

However, citizen engagement with the platform remains limited, revealing a gap in public data literacy that must be addressed to foster civic participation in digital governance.

In general, Surabaya's data governance reflects progressive efforts to manage the data ecosystem comprehensively, inclusively, and responsibly. This demonstrates *thinking ahead* through investments in secure and integrated systems, *thinking again* by continuously evaluating interoperability and privacy practices, and *thinking across* by linking multiple agencies and stakeholders to maximize data use for public services. The interconnection of technology, regulation, and human resource capacity remains central, yet sustained integrative policies are still required to guarantee data security, fairness, and foster broader innovation in policy and service delivery.

Collaborative Governance – Collaboration Among Actors: Government, Private Sector, Society

Collaborative governance emphasizes synergies between government, private sector, and civil society in driving smart urban development. In Surabaya, this approach underpins many digital transformation policies, recognizing that the success of a smart city depends not solely on state action but also on active stakeholder participation. Policies are thus designed to foster structured, multi-actor collaboration grounded in shared goals and resources.

A prominent example is the e-Peken platform, a digital marketplace developed through collaboration among the Cooperatives and SMEs Office, the Communications and Informatics Office, and local MSMEs. Targeting civil servants as its primary consumers, e-Peken supports the economic empowerment of small businesses by integrating them into the digital economy. This initiative reflects a shift in governance from administrative control to a facilitative partnership, where the government acts as both a regulator and an enabler.

Field data shows that this collaborative model accelerates digital adoption among MSMEs, many of whom were previously unfamiliar with digital tools. Government-supported training, mentoring, and promotion play critical roles in strengthening their business capacity. This inclusive ecosystem reflects a transformation in bureaucratic function, where value-based partnerships foster resilience and stimulate innovation in the local economy.

Supporting this, Ernawati et al. (2024) found that Surabaya's public-private collaborations are participatory and responsive to field needs. Success factors include open information, feedback mechanisms, and technological flexibility. These partnerships are not symbolic, but rather operational and outcome-driven, strengthening governance legitimacy and service relevance.

Beyond economics, collaborative governance in Surabaya extends to digital literacy programs that engage libraries, universities, communities, and technology providers. This reflects *thinking across* by fostering cross-sector partnerships where citizens act not only as users but also as co-

designers of digital services. The co-creation model has generated flexible and responsive innovations, while *thinking again* is evident in efforts to evaluate and adapt collaboration mechanisms for greater inclusivity. Looking forward, *thinking ahead* requires institutionalizing these partnerships through adaptive policies and sustained support for local actors, ensuring that collaborative governance becomes a scalable and sustainable foundation of smart urban development.

Digital Infrastructure & Capacity – Infrastructure Readiness And Institutional Capacity

This indicator assesses the extent of readiness of information and communication technology (ICT) infrastructure and institutional capacity to support the digital transformation process in urban environments. In this context, the City of Surabaya has shown significant progress through the massive development of digital infrastructure and the strengthening of supporting institutions. The Surabaya City Government has provided more than 4,000 free WiFi points distributed in public spaces such as city parks, schools, sub-district offices, and other public service facilities. These initiatives aim to reduce the digital divide and expand public access to online-based services.

Surabaya has developed a fiber optic network that reaches almost all areas of the city to ensure fast and stable internet connections. The availability of this infrastructure forms a crucial foundation in supporting the digitalization of public services, education, and the digital economy sector. The existence of the Surabaya Command Center is also a significant achievement in data-driven urban management. This command center not only serves as a control center for security, traffic, and disaster mitigation but also acts as an integration hub for various service systems such as *WargaKu*, SSW, e-Peken, and others.

Institutional capacity is also strengthened through the establishment of ICT management units in each Local Government Agency (OPD), training of civil state apparatus (ASN) in mastering digital technology, and the development of internal platforms such as e-Satpol PP, e-Performance, and e-Budgeting. This commitment demonstrates that Surabaya is not only investing in digital hardware but also building an institutional ecosystem that can optimally manage and utilize that infrastructure for the benefit of smart city governance.

Based on the Decision Of The Mayor Of Surabaya Number: 100.3.3.3/282/436.1.2/2023 regarding the Smart City Masterplan of Surabaya City, the section on Digital Infrastructure and Capacity is explained in detail. The Surabaya City Government positions digital infrastructure as a key component in supporting sustainable smart city development. The strategy for developing digital infrastructure focuses on providing equitable, reliable, and sustainable ICT facilities and infrastructure. This includes the construction of fiber optic networks that have reached all sub-districts, the installation of thousands of public WiFi hotspots, and the provision of hardware and software to supports system integration among government agencies.

The aspect of institutional capacity is also strengthened through the development of civil servants' (ASN) digital literacy capacity in addition to physical infrastructure. The Surabaya City Government has implemented training and ICT competency certification programs to support the use of Electronic-Based Government Systems (SPBE), as well as to encourage the creation of a digital work culture within the bureaucracy. This capacity enhancement is aimed at strengthening digital-based public services and the responsiveness of government agencies.

Surabaya's investment in thousands of public Wi-Fi spots, fiber-optic networks, and Command Center 112 illustrates *thinking ahead* by anticipating future service demands. Capacity-building programs for civil servants reflect *thinking again*, ensuring continuous adaptation to technological change. Meanwhile, partnerships with private providers show *thinking across*, strengthening the city's ability to sustain digital infrastructure and institutional readiness for long-term smart governance.

Institutional Adaptability – Institutional Ability to Adapt to Technology & Change

The Surabaya City Government illustrates strong institutional adaptability through comprehensive restructuring of its digital service ecosystem. Previously, more than 322 fragmented applications were used across different agencies, often creating inefficiencies and confusion for citizens. This complex system was gradually simplified into two core platforms: WargaKu for external public services and KantorKu for internal administration. Such consolidation not only streamlined access for users but also reduced duplication, representing a strategic shift toward efficiency and organizational flexibility in managing digital transformation.

The policy of system integration required significant institutional adjustments. Hundreds of inactive or redundant applications were eliminated, while service domains were consolidated from 110 into 65 and embedded within the WargaKu platform. This restructuring demonstrates that the government is not merely adopting digital tools but actively reorganizing its institutional framework to ensure inclusivity, accessibility, and long-term sustainability of digital policies. The approach reflects an understanding that adaptability requires structural transformation as much as technological innovation.

A notable example of this adaptability is the introduction of the *Sistem Informasi Pertanggungjawaban Keuangan dan Arsip* (Financial Accountability and Archiving Information System) or SiJaka . Implemented since 2022, SiJaka promotes a paperless bureaucracy by automating financial accountability and administrative reporting. Its integration with other platforms, such as e-Delivery and Teko Cak, underscores how the city government harmonizes internal systems to support transparency, operational efficiency, and reduced reliance on manual processes. These innovations

are framed within a broader commitment to a "clean, dynamic, and agile digital-based bureaucracy," as emphasized by the mayor.

Institutional adaptability in Surabaya also relies on proactive governance directives. A Circular issued in 2023 mandated all agencies to abandon manual procedures, replacing them with fully digital workflows, including electronic signatures at every level of administration. This regulatory shift illustrates the government's resolve to institutionalize reform and to embed adaptability into bureaucratic routines, ensuring that reforms are not temporary but part of a long-term sustained digital culture.

The use of monitoring tools such as Command Center 112 and the Sayang Warga SuperApp further reflects adaptive practices. These systems enable real-time oversight of public service delivery, urban conditions, and social dynamics, providing decision-makers with the capacity to act responsively. For agencies, this requires continuous system updates, integration, and training, reinforcing the notion that adaptability is an ongoing process rather than a one-time adjustment.

The consolidation of Surabaya's Electronic-Based Government System (SPBE) is another manifestation of institutional adaptability. By merging overlapping services and aligning programs into coherent platforms, the city demonstrates its willingness to revise policies in response to evaluations and community feedback. Such adjustments reveal a governance style that is neither rigid nor resistant but oriented toward continuous learning and improvement.

Surabaya's institutional adaptability demonstrates *thinking ahead* through investments in human resource development, *thinking again* by restructuring bureaucratic processes and consolidating digital platforms, and *thinking across* by integrating collaboration with multiple stakeholders. This shows that adaptability is not merely about adopting digital tools but about embedding reforms into governance structures, ensuring resilience amid technological and social change.

DISCUSSION

This research examines the implementation of Smart Urban Governance in the City of Surabaya using the Dynamic Governance perspective as an analytical framework. The results show that the Surabaya City Government has adopted seven key indicators of smart governance: inclusiveness, responsiveness, transparency and accountability, data governance, collaboration, digital infrastructure, and institutional adaptability. All these indicators have been implemented gradually, with varying levels of depth and sustainability. Several innovative practices were found, such as the integration of public service applications in the *WargaKu* platform, involvement of local MSMEs in e-Peken, and the development of a zero-paper system through SiJaka. These findings demonstrate

how urban governance is not only undergoing digitalization but also experiencing fundamental institutional transformation (Pratiwi et al., 2023).

If analyzed more deeply, the success of implementing the indicators is closely related to the ability of the Surabaya City Government to apply the principles of Dynamic Governance, namely anticipatory thinking, thinking ahead, and thinking again. For example, the restructuring of 322 public service applications into only two main platforms reflects anticipatory thinking towards overlapping systems that burden users and bureaucracy. Meanwhile, citizen involvement in decision-making through *WargaKu* reflects adaptive thinking a key feature of dynamic governance that is oriented towards feedback. According to the theory proposed by dynamic governance is governance that is not only reactive but also able to continuously reform itself based on needs and external environmental conditions.

This research reinforces the findings of Jiang (2021), which stated that dimensions of smart urban governance such as inclusivity, transparency, and collaboration are essential prerequisites for realizing a just smart city. Jiang's study found that open information and digital-based public participation strengthen social trust between citizens and the government. A similar finding was observed in this study, where the reporting features of *WargaKu* and the integration of the Command Center support openness and accountability. In contrast, these results differ somewhat from Lyu (2022) findings, which indicate that digital collaboration in major US cities is often hindered by fragmented policies across different levels of government, whereas in Surabaya, a more integrated government structure facilitates multi-actor collaboration.

Additionally, this research is consistent with the study results of Lee et al. (2023) who argue that smart cities will be more successful if social dimensions, such as the involvement of SMEs and local communities, are made a focus in digitalization. Innovations like e-Peken serve as evidence that digitalization is not merely a technology agenda, but a strategy for socio-economic empowerment. On the other hand, research by Secinaro et al. (2022) critiques that digital platforms often tend to be exclusive due to their lack of adaptability to elderly residents and people with disabilities. This is also seen in Surabaya, where digital inclusivity remains a challenge, although initial steps have been taken through digital literacy training in several sub-districts.

The practical implication of this finding is the importance of designing participatory digital systems that are continuously evaluated for its effectiveness based on the needs of end users. Programs like service integration through *WargaKu* need to be further developed with user-friendly interfaces and automatic feedback mechanisms. Meanwhile, theoretically, this research contributes to strengthening the Dynamic Governance model in the context of local Indonesia, particularly regarding the adaptation of regional bureaucracy to technology-based modernization pressures.

Institutional adaptability involves not only structural reforms but also a mindset shift within the bureaucracy itself.

Nevertheless, this research has several limitations. First, the qualitative methods based on interviews and field observations are vulnerable to subjective interpretative bias. Second, access to internal government data, especially regarding the effectiveness of digital complaint processing, is still limited because not all data is open to the public. Third, the limited duration of the research does not allow for in-depth long-term observation of institutional changes. These limitations may impact the generalization and depth of analysis regarding the effectiveness of certain digital programs.

CONCLUSION

This study analyzes the implementation of Smart Urban Governance in Surabaya through the lens of Dynamic Governance. The findings show that the city has applied seven key indicators of smart governance inclusiveness, responsiveness, transparency and accountability, data governance, collaboration, digital infrastructure, and institutional adaptability—through various innovations such as WargaKu, e-Peken, Command Center 112, and a paperless bureaucracy system.

Surabaya's achievements reflect the principles of Dynamic Governance: Thinking Ahead in preparing infrastructure and human resources, Thinking Again in restructuring services and evaluating digital platforms, and Thinking Across in fostering cross-sector collaboration and citizen participation. These efforts demonstrate that the city's digital transformation is not only technological but also institutional and cultural.

Nonetheless, challenges remain in ensuring digital inclusion for vulnerable groups, addressing complex cross-sectoral issues, and strengthening system interoperability. Recommendations include expanding digital literacy, enhancing inter-agency integration, and sustaining participatory approaches in policy design.

This research contributes to the theoretical development of Dynamic Governance in the smart city context while offering practical guidance for policymakers to build adaptive, participatory, and sustainable urban governance.

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