The Eastasouth Management and Business
Vol. 4, No. 03, May 2026, pp. 722 – 735
ISSN: 2985-7120, DOI: 10.58812/esmb.v4i03

Synergy between Digital Transformation and Collaborative Governance: A Systematic Review of Local Government Performance

Novly Wowiling[1], Magdalena Wullur[2], Jessy J. Pondaag[3], Indrie D. Palandeng[4], Arrazin Bn Hasan Jan[5], Fitty Valdi Arie[6]
[1,2,3,4,5,6] Fakultas ekonomi dan Bisnis, Universitas Sam Ratulangi Manado

Article Info

Article history:

Received May, 2026
Revised May, 2026
Accepted May, 2026

Keywords:

Collaborative Governance;
Digital Transformation;
Local Government;
Public Organization;
Performance;
Systematic Literature Review

ABSTRACT

Post-pandemic, local governments face dual pressures to enhance public service performance through technology adoption and collaborative mechanisms. However, implementation is often hampered by system fragmentation (silos) and non-technical barriers. Objective: This study aims to synthesize recent empirical evidence regarding the interaction between digital transformation and collaborative governance, and its impact on public organization performance at the local level. Method: This study employs a Systematic Literature Review (SLR) method following PRISMA 2020 guidelines. The search was conducted on Scopus, Google Scholar, and Garuda databases covering the 2021–2025 period. Out of 128 identified articles, 16 final articles were selected after quality appraisal using the Mixed Methods Appraisal Tool (MMAT) 2018. Results: Findings indicate a shift in transformation forms from single-purpose applications to integrated platform ecosystems. Thematically, internal collaboration (G2G) is effective for service standardization, while external (multi-stakeholder) collaboration excels in driving innovation. The primary barriers identified are not technical, but rather human factors and organizational culture, such as sectoral egos. Conclusion: Digital technology functions merely as an enabler, not a sole solution. Significant performance improvement is achieved only when supported by cross-agency data integration (interoperability) and external pressures that force governance reform.

Corresponding Author:

Name: Novly Wowiling
Institution: Fakultas ekonomi dan Bisnis, Universitas Sam Ratulangi Manado
Email: wowilingnovly@gmail.com

1. INTRODUCTION

In the post-COVID-19 era, demands on the performance of public organizations, particularly local governments, have undergone a significant paradigm shift. The public no longer merely expects the availability of basic services, but also demands services that are fast, transparent, and integrated, comparable to service standards in the private sector. Responses to these demands have generally taken the form of massive digital transformation. Local governments are competing to adopt information technology, ranging from the

digitalization of administrative processes to the development of the Smart City concept.

However, empirical phenomena show that technology adoption alone does not automatically guarantee performance improvement. Many digital initiatives at the local level eventually become disconnected "system islands" or digital silos. Instead of increasing efficiency, this type of application fragmentation often creates new administrative burdens and confusion for service users. This indicates that, to be effective, digital transformation requires another prerequisite, namely collaborative governance.

This issue has become increasingly relevant during the 2021–2025 period, when the dynamics of public administration began to shift from merely "implementing technology" toward a "platform ecosystem" approach. The synergy between digital capability and cross-sector collaboration capacity involving government, the private sector, and society is believed to be the key to resolving bureaucratic deadlock and improving public service performance. Nevertheless, literature that specifically discusses the intersection of digital transformation, collaborative governance, and local government performance in the post-pandemic context remains scattered and has not been comprehensively synthesized. Therefore, this study is urgent in mapping recent empirical evidence on how these two elements interact in improving public-sector performance. Based on the above background, this study formulates the following research questions:

1. What forms of digital transformation and collaboration models have been implemented by local governments in recent literature (2023–2025)?
2. How does the synergy between digital transformation and collaborative governance affect public organization performance?
3. What are the main challenges and barriers in implementing digital-based collaborative governance at the local level?

The main objectives of this Systematic Literature Review (SLR) are:

1. To identify and categorize trends in digital transformation and collaboration models in local governments based on recent empirical studies.
2. To analyze the impact of technology implementation and collaborative mechanisms on government performance outcomes, including efficiency, service quality, and innovation.
3. To synthesize implementation challenges in order to provide evidence-based recommendations for policymakers.

This study is expected to enrich the literature on Public Service Management and Public Administration, particularly by updating the conceptual framework of Digital Governance, which focuses not only on instruments such as technology but also on processes such as collaboration. Practically, the significance of this study is directed toward regional heads and leaders of Regional Government Organizations (OPD). The findings are expected to provide strategic guidance on the importance of data integration and system interoperability rather than merely creating new applications, as well as guidance on using cross-sector collaboration to overcome resource limitations.

2. METHODS

This study applies the Systematic Literature Review (SLR) method guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines to ensure transparency and replicability. The literature search protocol was conducted comprehensively across three main databases: Scopus, Google Scholar, and Garuda (Garba Rujukan Digital), in order to capture reputable international literature as well as contextual national studies. The search strategy used Boolean operators (AND/OR) with search strings formulated to capture

three core concepts: digital transformation, collaborative governance, and public organization performance.

The keywords used included: ("Digital Transformation" OR "E-Government" OR "Smart Governance") AND ("Collaborative Governance" OR "Cross-sector Collaboration" OR "Co-creation") AND ("Performance" OR "Public Service Quality" OR "Efficiency") AND ("Local Government" OR "Municipality" OR "Pemerintah Daerah"). The publication period was strictly limited to 2021–2025 to ensure the novelty of the data and the relevance of the findings to post-pandemic dynamics.

The article selection process was conducted through two screening stages using Rayyan software to minimize subjectivity bias. The inclusion criteria were set as follows: (1) the article was an empirical study, either qualitative, quantitative, or mixed-methods, published in English or Indonesian; (2) the unit of analysis was specifically local government, including provincial, regency/city, or village governments; and (3) the study explicitly discussed the intersection between the application of digital technology and collaboration mechanisms in relation to performance outcomes. Exclusion criteria were applied to remove literature reviews, book chapters, editorial opinions, or studies whose locus was purely in the private sector without implications for the public sector.

To ensure the validity and reliability of the data synthesis, all articles that passed the full-text screening were evaluated for methodological quality using the Mixed Methods Appraisal Tool (MMAT) 2018. This instrument was selected because of its ability to evaluate studies with diverse designs, including qualitative, quantitative, and mixed-methods studies, within an integrated framework. The assessment focused on the clarity of the research question, the alignment between data and interpretation, and the coherence between methodology and findings. Only studies that met the methodological quality threshold were included in the final synthesis to ensure that the resulting policy recommendations were based on strong evidence.

Based on the initial search protocol, 128 potential articles were identified. After removing duplicates, 122 unique articles remained for further processing. The initial screening of titles and abstracts resulted in the exclusion of 94 articles that were not relevant to the topic. Subsequently, 28 articles were assessed through full-text reading, of which 12 were excluded due to methodological reasons or contextual mismatch. This rigorous selection process produced 16 final articles that met the requirements for analysis. The final sample of 16 articles resulted from the application of strict inclusion and exclusion criteria designed to ensure the validity of the intersection among the three core concepts: Digital Transformation, Collaborative Governance, and Organizational Performance.

During the second screening stage, namely full-text assessment, a large number of articles were excluded because they failed to meet the triadic criteria, even though their titles appeared relevant. The exclusion analysis revealed a significant pattern of literature fragmentation. Many studies provided in-depth analyses of collaborative governance but neglected the digital dimension. For example, [1] discussed the penta-helix model in tourism development, but focused purely on manual policy processes without addressing digital transformation. Conversely, other studies focused strongly on the implementation of digital transformation at the local level but failed to discuss collaborative mechanisms as a main variable, instead centering on administrative and resource constraints, as seen in the work of [2].

Several articles discussed the conceptual architecture of technology, but focused on technical system design rather than field-based evaluation of organizational collaboration performance. For example, [3] was excluded because it focused purely on identifying technical design factors for Digital Accountability using mathematical structural modelling (TISM), without empirically examining inter-agency collaboration

mechanisms. Similarly, although [4] examined environmental performance driven by public attention, they did not analyze the inter-agency collaboration mechanisms required for governance reform. To maintain a high standard of empirical evidence, this review excluded articles that relied solely on library research or literature review without field data, such as the study by [5]. Furthermore, the strict time boundary of 2021–2025 required the exclusion of relevant studies published before the post-pandemic era, such as [6], to ensure that the findings reflected the most current governance dynamics. Consequently, the 16 selected articles represent the best available evidence that explicitly discusses synergy, rather than merely partial elements, between technology and collaboration and its subsequent impact on performance.

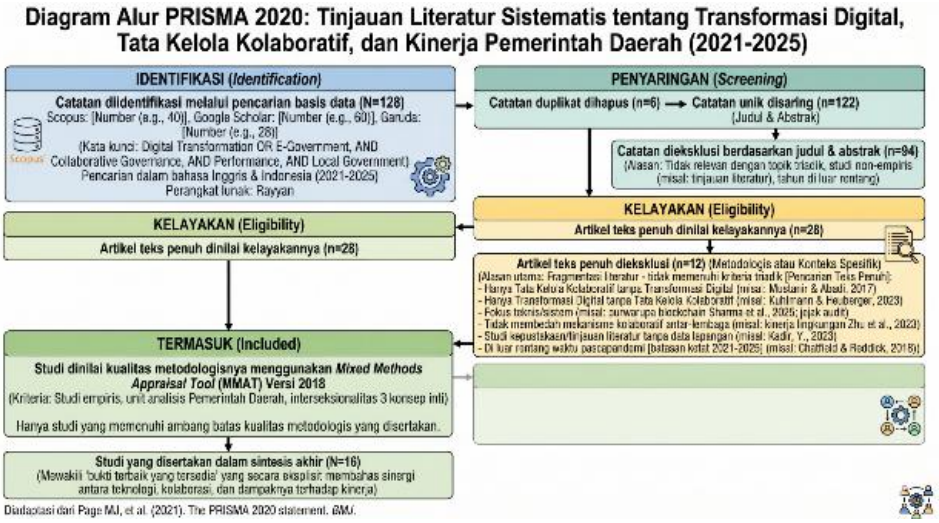

Figure 1. PRISMA 2020 Flow Diagram for Article Selection

3. RESULTS AND DISCUSSION

Chronologically, the dataset in this study reflects the rapid acceleration of digital governance. Although most studies focused on the post-pandemic recovery phase (2021–2025), several significant foundational studies from 2021 and 2022, such as [7] and [8], highlighted the early shift toward multi-stakeholder collaborative governance models. Geographically, the inclusion of studies from Finland [9] and France [10] balances the existing narrative by providing a mature European perspective on platform ecosystems alongside the rapid, state-driven transformation model observed in China [11], as well as developing-country contexts in Indonesia [12]–[14].

Table 1. Summary of the 16 Final Articles Included in the Systematic Literature Review

No.	Author(s) / Year	Country	Methodology	Main Variable(s)	Main Finding(s)
1	[15]	Spain	Quantitative	Open Government Initiatives; Transparency	Transparency initiatives often remain one-way and do not necessarily increase meaningful citizen participation.
2	[8]	Multinational / Europe	Quantitative / Regression	Smart City; Collaboration; Organizational Learning	The success or failure of smart city initiatives is strongly influenced by intersectoral collaboration and institutional learning.

No.	Author(s) / Year	Country	Methodology	Main Variable(s)	Main Finding(s)
3	[11]	China	Qualitative / fsQCA / Multiple QCA	Government–Digital Logistics Partnership	Partnership success is driven by complex configurations between institutional logic and market demand, rather than by technology alone.
4	[16]	Indonesia	Case Study	Public Value; Co-creation; Digital Village	Digital service innovation can strengthen public value creation and improve village-level service capacity.
5	[10]	France	Quantitative / PLS	IoT Adoption; Trust; Efficiency	Trust and perceived efficiency are important factors influencing IoT adoption by local authorities.
6	[13]	Indonesia	Case Study	Multi-level Collaboration; Regional Tax Data	Digital innovation combined with multi-level collaboration improves regional tax data collection and verification.
7	[17]	United Kingdom	Qualitative / Multiple Case Study	CIO Leadership; Digital Transformation	CIO leadership must integrate technical and managerial competencies to lead digital transformation effectively.
8	[12]	Indonesia	Qualitative	Digital Transformation; Local Economic Empowerment	Regional government involvement is crucial in supporting MSME digitalization through training, infrastructure, and market access.
9	[14]	Indonesia	Qualitative	SiCantik Cloud Application; Public Service	Digital licensing platforms require infrastructure readiness and alignment between national systems and local service conditions.
10	[7]	Indonesia	Qualitative	Gerbang Hebat Program; Penta-Helix	The Smart Society initiative in Semarang was supported by ABCGM collaboration involving academia, business, community, government, and media.
11	[9]	Finland	Multiple Case Study	Platform Ecosystem; Local Actors	Local governments must act as facilitators in digital platforms and manage relationships among ecosystem actors.
12	[18]	Indonesia	Quantitative / CPM & PERT	Business Process Re-engineering; BAPPEDA	Business process re-engineering improves efficiency and reduces planning service time in local government.

No.	Author(s) / Year	Country	Methodology	Main Variable(s)	Main Finding(s)
13	[19]	Switzerland	Quantitative / Survey	Collaborative Capacity; Citizen Demand	Citizen demand and stakeholder pressure are more decisive in driving digital collaboration than internal administrative capacity alone.
14	[20]	China	Qualitative / fsQCA	Social Governance Innovation	High governance performance can be achieved through different configurations of social governance innovation policy mechanisms.
15	[21]	China	Quantitative / Panel Data	Digital Transformation; Government Efficiency	Digital government transformation significantly improves public service efficiency through better matching between service supply and public demand.
16	[22]	Global / Cross-country	Quantitative / Panel Data	E-Government; Governance Indicators	E-government has long-term positive effects on governance effectiveness, although its impact varies across countries and institutional contexts.

From the perspective of geographical distribution, the literature is divided into international and national contexts. Globally, China contributes significant studies, reflecting its position as a key benchmark in data-based e-government implementation [11], [23], [24], followed by studies from Spain [15] and Switzerland [19], [25]. In the Indonesian context, consisting of five articles, the distribution of study locations shows a positive shift away from Java-centric bias [26] with research coverage extending to North Sumatra [16], [27], West Sulawesi [28], and Central Sulawesi [29].

In terms of methodology, there is a balance among qualitative approaches (4 articles), quantitative approaches (4 articles), and mixed methods (3 articles). Interestingly, international studies tend to use advanced analytical methods such as Fuzzy Set Qualitative Comparative Analysis (fsQCA) and panel data to map complex causality, while national studies are dominated by in-depth case studies. Based on the Mixed Methods Appraisal Tool (MMAT) assessment, the majority of articles (63%) were categorized as high quality because they were published in reputable global journals (Q1/Q2), thereby providing a strong evidentiary foundation for this review. The narrative synthesis of the literature produced four main themes that explain how digital transformation and collaboration interact to improve local government performance.

3.1 Forms of Digital Transformation: A Shift Toward Platform Ecosystems

The literature analysis shows a significant evolution in technology adoption by government. Most high-quality studies found a paradigm shift from the use of single-purpose applications toward Integrated Government Service Platforms and the use of Big Data [11], [23], [24]. Studies in China consistently show that high performance is achieved through platform ecosystems that connect data across agencies and regions, not merely through partial service digitalization. However, there remains a gap in technological maturity at the local level, particularly in Indonesia. Local studies

report the use of more specific technologies, such as Hospital Management Information Systems (SIMRS) [29], Village Information Systems [16], and transparency applications [28]. Although the concept of integration has been adopted, technical implementation in local governments remains vulnerable to infrastructure instability, such as dependence on central servers that often experience technical problems, ultimately hindering service effectiveness.

3.2 Collaborative Governance Models: Internal and External Dynamics

This review identifies two main patterns in collaborative governance. First, the Internal Model (G2G), which focuses on vertical integration between central and local governments and horizontal integration among agencies. This model has proven effective for bureaucratic efficiency and service standardization, but its success depends heavily on political will from higher levels of government to dismantle data silos [19], [29]. Second, the External or Multi-stakeholder Model, which involves the private sector, communities, and change agents. Various studies show that this model is more dynamic and innovation-oriented [26], [27]. Its success is often driven by market logic and stakeholder demands. Comparatively, the external model is superior in producing service innovation or co-creation, while the internal model is stronger in ensuring equitable service standards.

3.3 Impact on Performance: Efficiency, Equity, and Paradox

The implementation of digital collaboration produces multidimensional positive impacts. In terms of efficiency, data integration and the use of structured project management methods, such as CPM/PERT, have been shown to significantly reduce service time and increase productivity. In terms of quality, digitalization is positively correlated with the creation of public value and citizen satisfaction. Nevertheless, the literature also records negative and paradoxical findings. A study in Spain found that transparency initiatives often remain one-way push strategies without meaningfully increasing citizen participation [15]. A unique finding from Switzerland shows a satisfaction paradox, in which high citizen trust in the government's digital competence actually reduces the government's motivation to collaborate, creating complacency that may hinder long-term innovation [25].

3.4 Implementation Challenges: The Dominance of Non-Technical Factors

Cross-study findings confirm that the main obstacles in digital transformation lie not in technology, but in human factors and organizational culture. Non-technical challenges such as sectoral egos, resistance to change among senior staff, and a lack of leadership competence are consistently reported as the main barriers to inter-agency data integration [16], [28]. Meanwhile, technical challenges such as central server instability and digital infrastructure gaps in local areas remain present, but their impact is often worsened by policy misalignment and poor data governance.

WHY DOES DIGITAL TRANSFORMATION SUCCEED IN ONE PLACE BUT FAIL IN ANOTHER?

The synthesis of empirical evidence from the 16 selected articles reveals a crucial and somewhat counter-intuitive reality: digital technology is not a "magic pill" that automatically cures bureaucratic inefficiency. While global narratives often frame digital transformation as a technological inevitability, the findings of this systematic review indicate that technology merely functions as an enabler, not as a determinant. The success or failure of digital transformation in improving local government performance depends heavily on a complex configuration of policy frameworks, institutional capacity, and external pressures, rather than merely on

budget availability or the procurement of advanced infrastructure. This discussion examines the dichotomy between success and failure by analyzing the interaction among state logic, market logic, and latent challenges related to data silos.

1. **Beyond Technocentrism: The Primacy of Institutional and Political Configuration**

A recurring theme across the high-quality studies in this review is the rejection of technological determinism. The adoption of digital tools alone does not guarantee performance improvement; instead, what matters more is the configuration of these tools within governance structures. [23], using Fuzzy-Set Qualitative Comparative Analysis (fsQCA) on local governments in China, provide a detailed explanation of why some regions succeed while others stagnate. They argue that digital transformation performance results from a configuration of conditions, rather than from a single variable. They identify that high performance is achieved when there is synergy between state logic, namely top-down political mandates and vertical pressure, and market logic, namely bottom-up pressure from citizens and businesses.

In the context of local government, internal motivation is often low due to bureaucratic inertia. Therefore, strong mandates from higher levels of government act as a crucial coercive force that compels local agencies to break down institutional barriers and adopt new standards. However, state pressure alone is insufficient. Mao and Zhu found that the most successful transformation occurs when there is also strong market demand from the public and private sector for better services, which forces government to become more responsive and efficient.

Complementing this finding, [11] emphasize that the engine of this transformation is Data Governance Capacity. Their research highlights that simply possessing data is useless if local governments do not have the institutional capacity to manage, integrate, and utilize it. They identify five core dimensions of this capacity: strategic data planning, organizational structure, data management systems, data application capability, and data security assurance. A crucial finding of their study is that a holistic data governance system significantly improves the business environment, a key performance indicator for local governments, by reducing transaction costs and information asymmetry. This shows that success in digital transformation is fundamentally a managerial and institutional achievement, where government succeeds in treating data as a strategic asset rather than merely a technical by-product.

Interestingly, [19] offer a nuanced view that challenges the assumption that greater IT capacity equals greater collaboration. Their study of public administration in Switzerland reveals that internal administrative capacity, such as having abundant IT resources or staff, is not sufficient to predict civil servants' willingness to co-create or collaborate digitally. Instead, they found that crisis pressure and direct citizen demand are the main catalysts for breaking down bureaucratic walls. Without external urgency, resource-rich bureaucracies may become trapped in complacency. This aligns with the findings of Mao and Zhu and reinforces the idea that bureaucratic comfort zones are rarely disrupted by internal will alone; external friction is necessary to push the digital collaborative agenda.

2. **The Anatomy of Failure: Data Silos and Pseudo-Digitalization**

Conversely, this review identifies that implementation failure, particularly in the Indonesian context, is rooted in pseudo-digitalization, where manual processes are merely transferred to computers without re-engineering the underlying workflow or integrating data. The most pervasive obstacle identified is the presence of sectoral ego, which manifests as data silos. [18] illustrate this clearly in their analysis of planning document preparation at BAPPEDA Central Sulawesi Province. They found that although digitalization was pursued, the actual business process remained inefficient if it was not preceded by cross-functional re-engineering through activity evaluation to remove non-value-added steps. This study emphasizes that Business Process Re-engineering (BPR) must precede digitalization; otherwise, technology will only accelerate poor processes or create bottlenecks where digital input still requires manual verification across departments.

Similarly, [14], in their study of the SiCantik Cloud application in Majene, highlight technical fragility. They report that the effectiveness of digital services is severely disrupted by the instability of central servers and the lack of local control over such infrastructure. However, the deeper issue is the lack of synchronization between national standards and local realities, resulting in a situation where digital tools become an administrative burden rather than a solution. [16] further confirm that, in village governance, the absence of integrated data management causes fragmented services, where village potential in the form of data cannot be utilized for economic development because it is not connected to broader regional systems.

Failure is not always technical; it can also be relational. [19] introduced the Satisfaction Paradox of Digital Government. Their empirical analysis suggests that high citizen satisfaction with existing digital services can actually dampen the government's motivation to further involve or collaborate with citizens. When citizens implicitly trust the government's digital competence, their level of participation may decline, and government feels less pressure to innovate, eventually leading to stagnation. [15], in the context of municipal governments in Andalusia, Spain, found that many Open Government initiatives fail to transform governance because they are designed only as transparency portals or push strategies, rather than as interactive platforms. They argue that strategic alignment is often absent; tools are launched merely to appear modern or meet minimum regulatory standards, without a genuine strategy to involve citizens in decision-making, resulting in low public value creation.

3. **The Imperative of Collaborative Governance: From a Government-Centric Approach to the Penta-Helix**

The literature strongly indicates that the solution to these failures lies in a paradigm shift from mere Government-to-Government (G2G) coordination toward a broader Collaborative Governance model. [26] provide strong evidence from the Smart City context in Indonesia that successful digital governance requires a Penta-Helix model involving government, academia, business actors, society, and the media. Their research indicates that local governments cannot manage the complexity of urban problems, such as congestion, waste, or energy, solely with internal resources. Private-sector involvement brings investment

and technology, academics provide data-based insights, and communities ensure that solutions are truly user-centric.

The need for collaboration becomes increasingly apparent in fiscal governance and local administrative services. [13], who studied rural and urban land and building tax (PBB-P2) data collection in Jombang Regency, highlighted that digital innovation, such as the E-SPOP application and spatial/GIS mapping, cannot reach its full potential without multi-level collaborative action among the Regional Revenue Agency, subdistrict governments, and village governments. They identified that improvements in tax object database expansion and revenue realization occurred not merely because of the application itself, but because of the convergence of data collection and verification actions from multiple agencies guided by a shared data system.

[30] add a macroeconomic perspective from China, showing that Digital Government Construction improves public service efficiency by optimizing the fit between service supply and public demand. Digital platforms enable government to collect fragmented demand information and allocate resources more accurately. However, this efficiency depends heavily on the government's ability to coordinate across departments in order to dismantle information islands, which essentially confirms that internal collaboration is a prerequisite for external efficiency.

In the European context, [9] emphasize that digital platforms fundamentally redefine the roles of actors: citizens shift from passive service recipients to active data donors and co-developers, while business actors evolve from mere vendors into ecosystem partners. In the Indonesian local context, [7] found that the Gerbang Hebat program in Semarang City succeeded in reducing poverty and realizing a Smart Society cluster because it was supported by a Penta-Helix collaboration model that they refer to as ABCGM, namely Academics, Business, Community, Government, and Media. The success of digital governance in Semarang facilitated integration between local digital service applications and Corporate Social Responsibility (CSR) contributions from banks and private companies for the community. Regarding outcomes, [31] provide strong quantitative evidence that digital governance significantly increases urban innovation capacity. They found that by reducing transaction costs and solving information asymmetry, integrated platforms can stimulate innovation spillover effects from the public sector to the private sector.

4. Strategic Implications for Local Government Leaders

Based on these systematic findings, the way forward for regional heads and leaders of Regional Government Organizations (OPD) requires a fundamental strategic shift. The focus must move from mere IT procurement toward Institutional Reform.

a. Recommendation 1: Prioritizing Interoperability and Business Process Re-engineering (BPR)

Local leaders must stop the trend of "one innovation, one application," which only worsens fragmentation. As shown by [18], digitizing a chaotic process only creates faster chaos. Before building any new application, leaders must mandate a Business Process Re-engineering audit to simplify workflows. Budget priorities should shift from

purchasing new servers or applications toward developing Application Programming Interfaces (APIs) and middleware that enable data exchange across existing systems, in order to address the capacity gaps identified by [11]. The goal is to create a Whole-of-Government data architecture in which citizens provide their data only once and the data can then be shared across all relevant agencies.

b. Recommendation 2: Using External Pressure as a Change Management Strategy

Considering the findings of [19] on bureaucratic inertia and [11] on market logic, leaders should not shield their agencies from public pressure. However, [30] argue that before these logics can operate, the bureaucracy must possess organizational mindfulness to detect environmental changes. Furthermore, [32], in their study of municipal governments in Denmark, warn that technology often creates an illusion of collaboration. They found that genuine co-production occurs only when government is willing to relinquish some control and allow external stakeholders to influence the design of digital services, not merely their use.

Local leaders must actively use external momentum, such as public complaints on social media, low rankings in national indices, or regulatory mandates from central government, as strategic tools to force internal collaboration. Constructive friction is necessary. Leaders must create open feedback loops, as suggested by the limitations of one-way transparency in the findings of [15], so that public demand can drive the innovation agenda and prevent the trap of complacency.

c. Recommendation 3: Adopting the Penta-Helix Model Substantively

Collaboration must not stop at inter-agency coordination (G2G). In the more specific context of local economic empowerment, [12] found that digital transformation cannot operate independently without cross-sector synergy. Their study of MSMEs in Labuan Bajo shows that local government must take a strong collaborative role in addressing infrastructure limitations and low digital literacy at the grassroots level. The success of digital transformation in this sector depends heavily on the creation of a creative ecosystem, the provision of human resource capacity training, and collaboration with the private sector to expand market access through the adoption of digital payment platforms, such as QRIS, and e-marketplaces. In the sectors of public administration and fiscal governance, as shown by [13], local governments need to empower local-level actors, such as village officials and hamlet heads, with digital tools, for example mobile-based data collection applications, and treat them as collaborative partners who serve as extensions of central or district governments in field-based data verification.

5. Limitations and Directions for Future Research

This study has several limitations that need to be acknowledged in order to properly contextualize its findings. First, the literature time span was strictly limited to the 2021–2025 period.

Although this maintains the novelty of findings relevant to the post-pandemic new normal, the review may not capture the long-term sustainability of digital initiatives after urgent crisis pressures have subsided. Second, with a final sample size of 16 articles, the generalization of findings must be made carefully. Nevertheless, the inclusion of studies from Northern Europe, including Finland and Denmark, alongside Spain and Switzerland, provides a more balanced comparison between the state-driven models common in China and Indonesia and the co-production models characteristic of Western democracies.

Third, although recent studies such as [22] and [21] introduce quantitative rigor in measuring efficiency and digital governance, direct nominal cost-benefit analysis remains highly limited. Claims regarding budget efficiency in the broader literature remain largely qualitative and perceptual. Future research should focus on quantitative financial audits to determine the actual Return on Investment (ROI) of digital collaborative platforms in local governments.

In conclusion, digital transformation in local government is a governance project, not merely an Information Technology (IT) project. Success is determined by leadership capacity to align political mandates, or state logic, with public needs, or market logic, and to execute this alignment through strict data governance and participatory co-production. Without these elements, digital tools will become costly monuments to inefficiency; with them, such tools can transform into powerful engines for public value creation.

4. CONCLUSION

This Systematic Literature Review (SLR) was conducted to investigate the synergy between digital transformation and collaborative governance in improving local government performance over the extended period of 2021–2025. Based on the synthesis of 16 empirical studies from various contexts, ranging from state-driven ecosystems in China and co-production models in Northern Europe to the digital landscape of developing countries such as Indonesia, this study draws several critical conclusions that redefine the relationship among technology, bureaucracy, and public value.

First and foremost, this review concludes that although the use of digital platforms in cross-sector collaboration has proven highly effective, this effectiveness is highly conditional. Digital transformation is not a monolithic solution, but a configurational one. As demonstrated by comparative analyses across regions, technology functions only as an enabler, not as a determinant of success. High performance, including efficiency, service quality, and urban innovation capacity, will only materialize when digital tools are embedded in a strong Data Governance Capacity framework. Without institutional capacity to plan, secure, and apply data strategically, as highlighted by [11], digital investment will fail to improve the business environment or reduce administrative costs.

The most pervasive barrier to performance identified in this review is the phenomenon of pseudo-digitalization, where manual fragmentation is merely replicated in digital form. This study concludes that the future of local government performance depends heavily on interoperability. Findings from Indonesia serve as a cautionary tale: creating new applications without Business Process Re-engineering (BPR) leads to the creation of digital silos that burden administrative officials. Therefore, the metric of success must shift from the number of applications launched to the quality of data integration achieved across agencies.

This review definitively moves the discourse beyond mere Government-to-Government (G2G) coordination. The most innovative outcomes are observed in regions that adopt Penta-Helix collaborative models. Whether in the context of Smart Cities in Indonesia or participatory platforms in Finland, the involvement of the private sector, academia, and society is essential. European studies confirm that digital platforms fundamentally redefine the role of citizens from passive recipients into active co-producers. Consequently, digital platforms must be designed not only as instruments of administrative control, but also as open ecosystems that facilitate co-creation with the public.

A critical and nuanced conclusion of this study is the existence of the Satisfaction Paradox. High-quality digital services can unintentionally reduce citizen engagement and generate bureaucratic complacency if they are not managed through an active engagement strategy. Government must remain vigilant, recognizing that high trust must not become a reason to stop innovating. Continuous external pressure, whether from higher-level state-logic mandates or direct citizen feedback, is necessary to sustain the momentum of transformation.

Ultimately, this research confirms that successful digital transformation is, at its core, governance transformation. It requires a shift from a culture of sectoral ego and asset ownership toward a culture of data sharing and open collaboration. The future of local government does not lie in a race to possess the most advanced technology, but in the political will to build an inclusive data ecosystem that connects the supply of government services with the dynamics of public demand. Leaders who recognize that programming code cannot fix culture, and that algorithms cannot replace collaboration, will be the ones who succeed in the digital era.

REFERENCES

[1] L. O. S. Islamy, Alwi, M. T. Haning, and A. I. Allorante, "The model of collaborative governance in tourism development at Buton District," *Int. J. Acad. Res. Reflect.*, vol. 5, no. 2, pp. 1–12, 2017, [Online]. Available: http://www.idpublications.org/wp-content/uploads/2017/03/Full-Paper-The-Model-Of-Collaborative-Governance-In-Tourism-Development-At-Buton-District.pdf

[2] S. Kuhlmann and M. Heuberger, "Digital transformation going local: Implementation, impacts and constraints from a German perspective," *Public Money Manag.*, vol. 43, no. 2, pp. 147–155, 2023, doi: 10.1080/09540962.2021.1939584.

[3] S. Sharma, A. K. Kar, and M. P. Gupta, "Building Accountability in e-government Services: Inputs for Policy," *Australas. J. Inf. Syst.*, vol. 29, 2025, doi: 10.3127/ajis.v29.5175.

[4] Z. Zhu, Y. Liu, and H. Zhang, "Digital government, public attention, and environmental governance performance: Empirical evidence from China," *J. Environ. Manage.*, vol. 345, 2023, doi: 10.1016/j.jenvman.2023.118837.

[5] Y. Kadir, "Peran pemerintah daerah terhadap transformasi digital pasar rakyat: Studi pustaka," *J. Ilm. Ekon. Bisnis*, vol. 9, no. 1, pp. 12–25, 2023, [Online]. Available: https://scholar.google.com/scholar?q=%22Peran+pemerintah+daerah+terhadap+transformasi+digital+pasar+rakyat%22

[6] A. T. Chatfield and C. G. Reddick, "Collaborative governance in smart cities: The role of institutional work," *Inf. Polity*, vol. 23, no. 4, pp. 339–354, 2018, [Online]. Available: https://content.iospress.com/journals/information-polity/23/4

[7] A. Rahmawati and H. S. Nugroho, "Analisis Implementasi Smart Society melalui Program Gerbang Hebat di Kota Semarang," *J. Public Policy*, vol. 7, no. 1, pp. 61–68, 2021, [Online]. Available: https://scholar.google.com/scholar?q=%22Analisis+Implementasi+Smart+Society+melalui+Program+Gerbang+Hebat+di+Kota+Semarang%22

[8] J. Clement, M. Manjon, and N. Crutzen, "Factors for success and failure in smart city initiatives: Evidence from a survey of smart city managers," *Gov. Inf. Q.*, vol. 39, no. 4, 2022, doi: 10.1016/j.giq.2022.101746.

[9] K. Sahamies, A. Haveri, and A.-V. Anttiroiko, "Local Governance Platforms: Roles and Relations of City Governments, Citizens, and Businesses," *Adm. Soc.*, vol. 54, no. 9, pp. 1710–1735, 2022, doi: 10.1177/00953997211072531.

[10] E. Leroux and P.-C. Pupion, "Smart territories and IoT adoption by local authorities: A question of trust, efficiency, and relationship with the citizen-user-taxpayer," *Technol. Forecast. Soc. Change*, vol. 174, 2022, doi: 10.1016/j.techfore.2021.121195.

[11] Y. Gong and Y. Yang, "Analyzing digital government partnerships: An institutional logics perspective," *Gov. Inf. Q.*, vol. 42, no. 1, 2025, doi: 10.1016/j.giq.2024.101987.

[12] C. M. Putri, E. Nirma, A. A. Sihddiqi, and M. S. Romaulina, "Peran Pemerintah Daerah Terhadap Transformasi

Digital Pada UMKM Di Labuan Bajo," *Holistik Anal. Nexus*, vol. 2, no. 5, pp. 43–51, 2025, doi: 10.62504/nexus1252.

[13] F. Nisa and M. H. Tamrin, "Digital Transformation and Multi-Level Collaboration in Regional Tax Data Collection: A Case Study of Local Governments in Indonesia," *JKMP (Jurnal Kebijak. dan Manaj. Publik)*, vol. 13, no. 1, 2025, doi: 10.21070/jkmp.v13i1.1824.

[14] S. A. Rachmini and D. M. Sari, "Analisis Transformasi Digital Pelayanan Publik Menggunakan Metode Gartner Analytic Ascendancy," *J. Komput. Terap.*, vol. 9, no. 2, pp. 111–121, 2023, [Online]. Available: https://jurnal.pcr.ac.id/index.php/jkt/search/search?query=Analisis Transformasi Digital Pelayanan Publik Menggunakan Metode Gartner Analytic Ascendancy

[15] L. Alcaide-Muñoz, M. P. Rodríguez-Bolívar, and R. Garde-Sánchez, "Strategic alignment of open government initiatives in Andalusia municipalities," *Int. Rev. Adm. Sci.*, vol. 89, no. 3, pp. 685–702, 2022, doi: 10.1177/00208523221086125.

[16] S. Hajar and N. A. Arma, "Co-creating public value into digital-based public service innovation in the village governance," *Otoritas J. Ilmu Pemerintah.*, vol. 14, no. 3, pp. 516–538, 2024, doi: 10.26618/ojip.v14i3.15891.

[17] J. J. Pittaway and A. R. Montazemi, "Know-how to lead digital transformation: The case of local governments," *Gov. Inf. Q.*, vol. 37, no. 4, 2020, doi: 10.1016/j.giq.2020.101474.

[18] M. Sayuti, B. Syairudin, and I. K. Gunarta, "Enhancement of business processes through re-engineering to optimize the performance of local government in Central Sulawesi province," *Cogent Soc. Sci.*, vol. 11, no. 1, 2025, doi: 10.1080/23311886.2025.2542922.

[19] K. S. Weißmüller, A. Ritz, and S. Yerramsetti, "Collaborating and co-creating the digital transformation: Empirical evidence on the crucial role of stakeholder demand from Swiss municipalities," *Public Policy Adm.*, 2023, doi: 10.1177/09520767231170100.

[20] Q. Wu, X. Li, J. Cifuentes-Faura, and Y. Wang, "Evaluating social governance innovation policy in China: A study based on fuzzy set qualitative comparative analysis," *Eval. Program Plann.*, vol. 106, 2024, doi: 10.1016/j.evalprogplan.2024.102460.

[21] C. Yang, M. Gu, and K. Albitar, "Government in the digital age: Exploring the impact of digital transformation on governmental efficiency," *Technol. Forecast. Soc. Change*, vol. 208, 2024, doi: 10.1016/j.techfore.2024.123722.

[22] W. Zhou, Z. Lyu, and S. Chen, "Mechanisms Influencing the Digital Transformation Performance of Local Governments: Evidence from China," *Systems*, vol. 12, no. 1, 2024, doi: 10.3390/systems12010030.

[23] Q. Zou, Z. Mao, R. Yan, S. Liu, and Z. Duan, "The vision and reality of e-government for governance improvement: Evidence from global cross-country panel data," *Technol. Forecast. Soc. Change*, vol. 194, 2023, doi: 10.1016/j.techfore.2023.122667.

[24] B. Fan and T. Pan, "Does information technology–organizational resource interaction affect e-government performance? Moderating roles of environmental uncertainty," *Gov. Inf. Q.*, vol. 40, no. 3, 2023, doi: 10.1016/j.giq.2023.101830.

[25] K. S. Weißmüller, A. Ritz, and S. Yerramsetti, "The satisfaction paradox of digital government: Citizen satisfaction, trust, and co-creation incentives," *Public Adm. Rev.*, 2024, [Online]. Available: https://scholar.google.com/scholar?q=%22satisfaction+paradox%22+%22digital+government%22+Weißmüller

[26] Purwadhi and et al., "Digital governance and Penta-Helix collaboration in Indonesian Smart City implementation," *Unkn. / to be Verif.*, 2025, [Online]. Available: https://scholar.google.com/scholar?q=Purwadhi+2025+Penta-Helix+Smart+City+digital+governance+Indonesia

[27] M. H. Tamrin and Astuti, "Collaborative governance and digital public service innovation in North Sumatra," *Unkn. / to be Verif.*, 2024, [Online]. Available: https://scholar.google.com/scholar?q=%22Tamrin%22+%22Astuti%22+2024+digital+governance+local+government

[28] Hamid and et al., "Digital transparency and collaborative governance in West Sulawesi local government," *Unkn. / to be Verif.*, 2024, [Online]. Available: https://scholar.google.com/scholar?q=Hamid+2024+digital+transparency+West+Sulawesi+local+government

[29] Annas and et al., "Digital transformation of hospital management information systems in local public service," *Unkn. / to be Verif.*, 2024, [Online]. Available: https://scholar.google.com/scholar?q=Annas+2024+SIMRS+digital+transformation+local+government

[30] Yang and et al., "Organizational mindfulness and digital transformation," *Unkn. / to be Verif.*, 2021, [Online]. Available: https://scholar.google.com/scholar?q=Yang+2021+organizational+mindfulness+digital+transformation

[31] Li and Shang, "Digital governance and urban innovation capacity," *Unkn. / to be Verif.*, 2023, [Online]. Available: https://scholar.google.com/scholar?q=%22digital+governance%22+%22urban+innovation+capacity%22+%22Li%22+%22Shang%22+2023

[32] A. Scupola and I. Mergel, "Co-production in digital transformation of public services: Evidence from Danish municipalities," *Unkn. / to be Verif.*, 2022, [Online]. Available: https://scholar.google.com/scholar?q=Scupola+Mergel+2022+Danish+municipalities+co-production+digital+transformation