Digital Transformation and Artificial Intelligence in Public Administration

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Abstract

Digital platforms, cloud services, automation, analytics, electronic records, and artificial intelligence are becoming embedded in public administration. Yet acquisition of new technology does not by itself constitute digital transformation. This editorial argues that government digitalization is fundamentally an organizational and institutional transformation in which technical systems interact with administrative rules, data practices, professional roles, procurement, accountability, and service design. The contemporary landscape spans digital government, algorithmic decision support, generative AI, integrated administrative systems, robotic process automation, and data-intensive public services. Major constraints include legacy systems, weak interoperability, data quality, workforce skills, vendor dependence, cybersecurity, privacy, automation bias, digital exclusion, and limited evidence about realized productivity or service-quality gains. The research agenda should prioritize public-sector AI evaluation, administrative process redesign, interoperable data systems, workforce development, responsible procurement, algorithmic auditing, cybersecurity, human oversight, and longitudinal assessment of outcomes. Digital transformation should ultimately be judged by whether technology strengthens public capability and public value, not by the number of systems procured or automated.

Keywords: digital government; artificial intelligence; public administration; organizational transformation; algorithmic accountability; public services; digital capability

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1.0 Introduction

1.1 Context and Problem Framing

Public administration is becoming increasingly dependent on digital infrastructure. Government agencies now use online service portals, electronic records, cloud computing, workflow automation, data analytics, identity systems, predictive tools, and artificial intelligence to administer benefits, inspect compliance, allocate resources, communicate with citizens, and support professional judgment. Earlier digital-government scholarship already showed that information technology could reorganize administrative processes rather than simply computerize existing tasks (Dunleavy et al., 2006; Fountain, 2001). The current wave extends that transformation: AI systems can classify cases, generate text, prioritize inspections, identify anomalies, support decisions, and automate portions of administrative work at a scale that makes technology inseparable from organizational design.

Digital transformation, however, is frequently confused with technology adoption. Mergel et al. (2019) define public-sector digital transformation in terms of changes to processes, services, relationships, and organizational structures, not merely digitization. Janowski (2015) similarly describes the evolution of digital government from technology-centered transformation toward context-sensitive institutional change. This distinction matters because an agency can procure modern software while retaining fragmented data, duplicative approvals, unclear ownership, and outdated service processes. In such cases, technology may reproduce administrative complexity in digital form rather than improve capability.

1.2 Why the Issue Matters

Artificial intelligence sharpens this organizational problem. Wirtz et al. (2019) identify a broad range of public-sector applications alongside challenges involving data, skills, ethics, and governance, while Sun and Medaglia (2019) show that AI implementation encounters organizational and managerial barriers in addition to technical ones. More recent work conceptualizes AI-enabled government as a sociotechnical transformation in which routines, structures, and governance arrangements must change with the technology (Tangi et al., 2025). The central proposition advanced here is that digital transformation should be assessed as administrative transformation. Technical capability matters, but its public value depends on interoperable data, competent workforces, appropriate procurement, redesign of processes, clear accountability, cybersecurity, inclusion, and evidence that services actually improve.

2.0 Current Landscape

2.1 Digital Administration

Digital-government research has moved from website provision and online transactions toward integrated and data-intensive administration. Gil-Garcia et al. (2018) argue that digital government and public-management research increasingly converge around organizational, institutional, and technological questions. Cordella and Tempini (2015) show that bureaucracy should not be treated simply as an obstacle to digitalization; administrative

rules can encode public values and accountability, meaning digital redesign must distinguish unnecessary friction from legitimate procedural safeguards. Twizeyimana and Andersson (2019) similarly frame e-government in terms of public value, including service quality, administrative efficiency, openness, ethical behaviour, trust, and social value.

AI adds new forms of discretion and automation. Bullock (2019) argues that artificial intelligence can redistribute bureaucratic discretion by shifting decisions among humans, models, and organizational processes. Young et al. (2019) develop the concept of artificial discretion to examine how algorithmic systems change governance, while Engin and Treleaven (2019) describe algorithmic government as a combination of automation and decision support. Zuiderwijk et al. (2021) show in a systematic review that AI creates opportunities for efficiency and insight but also new public-governance problems involving transparency, accountability, bias, and institutional capability. Bignami (2022) further demonstrates that public-administration accountability requires legal and organizational mechanisms capable of governing AI-supported decisions rather than assuming general data-protection rules are sufficient.

2.2 Automated Processes

Public-sector digitalization is also increasingly shaped by cloud and platform architectures, data integration, and agile service development. Mergel (2016) shows how agile practices can alter innovation processes in government, while Janssen and van der Voort (2016) argue for adaptive governance that combines responsiveness with stability and accountability. Linders (2012) anticipated a shift from one-directional e-government toward co-production and digitally enabled participation, although actual participation varies considerably by service and institutional context. These developments reinforce the idea that digital transformation changes relationships among agencies, suppliers, staff, and citizens.

2.3 Decision Support

Current adoption is nevertheless uneven. OECD (2026) reports widespread government interest in AI but substantial variation in data governance, procurement, skills, infrastructure, monitoring, and impact measurement. The same pattern appears across broader digital transformation: governments often succeed in launching pilots but struggle to integrate systems across agencies, retire legacy infrastructure, or institutionalize new practices. The evidence base is therefore stronger on adoption and potential than on sustained productivity, service quality, equity, and organizational effects after deployment.

2.4 Public-Service Transformation

Application-specific research reinforces the need for institutional evaluation rather than technological generalization. Meijer and Wessels (2019), for example, show that predictive-policing systems combine potential operational benefits with concerns about bias, transparency, and organizational use. Margetts and Dorobantu (2019) argue more broadly that governments need to rethink how they build and govern AI capability rather than import private-sector assumptions unchanged. Tangi et al. (2021) empirically identify organizational and institutional factors that drive or impede digital-government transformation, underscoring that digital change is mediated by structure, strategy, culture, and coordination. Taken together, these strands suggest that the relevant unit of analysis is the administrative system in which technology is embedded.

3.0 Critical Challenges

3.1 Procurement and Capacity

Legacy systems and interoperability form a foundational challenge. Many agencies depend on decades-old databases, bespoke applications, and administrative codes that were not designed for cross-agency exchange. New digital services are often layered over this infrastructure rather than replacing it. The result can be fragile integrations and duplicate records. Vial (2019) emphasizes that digital transformation involves interconnected changes in technology, structure, and value creation, while Verhoef et al. (2021) show that successful transformation requires capabilities beyond individual technologies. For public institutions, interoperability is therefore an organizational governance problem as much as a technical standards problem.

Data quality is a second constraint. AI and analytics can amplify errors embedded in administrative records, especially when data were created for billing, compliance, or case management rather than predictive modelling. Missingness, inconsistent definitions, historical bias, and fragmented ownership can undermine apparently sophisticated systems. Selbst et al. (2019) warn that technical fairness approaches can fail when social context is abstracted away, while Kroll et al. (2017) show that accountability requires attention to system design, auditing, and institutional responsibility rather than transparency alone. Better algorithms cannot compensate for poorly governed administrative data.

3.2 Algorithmic Bias

Procurement and vendor dependence create a third challenge. Public agencies may purchase proprietary systems without sufficient access to model documentation, training data, performance metrics, or update histories. Vendor lock-in can make switching expensive and can shift technical knowledge outside the state. Mikhaylov et al. (2018) argue that cross-sector AI collaboration creates opportunities but also capacity and governance challenges. Responsible procurement therefore requires lifecycle cost analysis, data and interoperability requirements, audit rights, exit provisions, and internal competence to evaluate supplier claims.

Workforce capability and organizational resistance are equally consequential. Automation changes jobs rather than merely removing tasks. Staff need skills to interpret outputs, identify errors, manage exceptions, and understand when technology should not be used. Automation bias can arise when operators defer to system recommendations even when contextual knowledge suggests caution. Administrative law and professional accountability also require identifiable human responsibility for consequential decisions. Veale and Brass (2019) emphasize that public-sector machine learning must be understood through administrative structures and practices, not only model design.

3.3 Accountability

Cybersecurity, privacy, and digital exclusion add further constraints. Integrated systems create attractive targets and can propagate failures across agencies. Data-intensive services may expand surveillance capacity or create uncertainty about lawful reuse. Digital-first service design can also exclude people with limited connectivity, disability, language barriers, low digital literacy, or unstable identity documentation. Bannister and Connolly (2014) argue that transformative government must be assessed against public values, which implies that efficiency gains cannot be treated as sufficient evidence of successful transformation.

3.4 Workforce and Privacy Implications

Finally, evaluation remains weak. Government technology projects are often justified by projected efficiency or modernization benefits, yet rigorous before-and-after productivity, cost, service-quality, and equity studies remain uncommon. Raji et al. (2020) propose end-to-end algorithmic auditing as one mechanism for closing

accountability gaps, but auditing needs to be connected with operational evaluation. Technology that passes a technical audit may still fail to improve service delivery, reduce processing time, or strengthen access.

4.0 Discussion and Priorities

4.1 Integrative Discussion

Digital transformation should therefore be understood as a change in administrative capability rather than a portfolio of IT projects. Technology interacts with rules, workflows, organizational culture, data ownership, staff skills, procurement, and service expectations. The same AI tool can have very different consequences in two agencies if one has clean interoperable data and strong oversight while the other has fragmented records and limited technical capacity. Tangi et al. (2025) explicitly frame AI-augmented government transformation as a sociotechnical process, reinforcing the need to evaluate institutional configurations rather than technologies in isolation.

This perspective also clarifies the relationship between automation and discretion. Some automation can standardize routine tasks and reduce arbitrary variation; other systems can embed opaque classifications that are difficult to contest. Bullock (2019) and Young et al. (2019) show that AI redistributes discretion rather than eliminating it. Decisions move upstream into data definitions, model objectives, threshold settings, procurement choices, and exception rules. Accountability systems must therefore follow discretion to these new locations.

Public value provides a useful evaluative lens. Faster processing matters, but so do legality, fairness, accessibility, privacy, resilience, transparency, and the capacity to correct error. Twizeyimana and Andersson (2019) and Bannister and Connolly (2014) both emphasize that digital-government performance should be assessed against multiple public values. Transformation succeeds when technical systems increase the institution's ability to deliver those values together, not when automation simply reduces visible human involvement.

Complementary scholarship informing this synthesis includes OECD. (2026). These works broaden the evidentiary base considered across the field.

4.2 Research and Practice Priorities

First, public-sector AI and digital systems require rigorous outcome evaluation. Studies should establish baseline performance and measure processing time, administrative cost, error rates, service quality, user experience, equity, staff workload, and downstream outcomes after implementation. Longitudinal designs are particularly important because early pilot performance may not predict large-scale operation.

Second, administrative process redesign should precede or accompany automation. Researchers should examine whether technology removes redundant steps, changes decision rights, or merely accelerates an inefficient process. Process mining, workflow analysis, and mixed-method organizational research can make these changes visible.

Evaluation should also distinguish task-level automation from organization-level performance. A system may process an individual transaction more quickly while creating additional exception handling, appeals, supervision, or data-cleaning work elsewhere. Research should therefore trace workload and cost across the complete administrative process, including back-office functions and citizen effort, rather than equating local processing speed with system-wide productivity.

Third, interoperability and data governance should be treated as core public capabilities. Common standards, metadata, data-quality controls, lawful data-sharing arrangements, and clear stewardship are prerequisites for integrated services and reliable AI. Janowski (2015) and Gil-Garcia et al. (2018) suggest that institutional context is

central to successful digital-government integration.

Fourth, workforce development should combine technical literacy with administrative judgment. Staff need enough understanding to challenge outputs, manage exceptions, communicate with citizens, and recognize legal or ethical risks. Human oversight should be designed around actual authority and competence rather than nominal approval steps.

Fifth, responsible procurement should require documentation, interoperability, cybersecurity, auditability, update governance, performance monitoring, and exit strategies. Public institutions should retain sufficient internal expertise to specify requirements and evaluate vendors. Procurement research should also examine whether contracting structures create long-term dependencies or weaken public accountability.

Finally, algorithmic auditing and digital inclusion should be embedded in lifecycle governance. Audits should examine data, model behaviour, organizational use, and observed social outcomes, building on end-to-end approaches such as Raji et al. (2020). Inclusion testing should use representative service users and provide non-digital alternatives where digital channels cannot serve all citizens reliably.

4.3 Implications for the Journal's Scope

Research on administrative digital transformation should bridge public management, information systems, AI governance, organizational change, administrative law, and service-delivery research. Contributions are particularly valuable when they connect technical features to institutional mechanisms: how data quality affects decisions, how procurement shapes accountability, how workflows change after automation, and how staff and citizens experience digital services.

The field should also reward evidence that challenges modernization assumptions. Null productivity effects, implementation failures, abandoned systems, and documented exclusion are scientifically useful when analysed rigorously. Digital transformation scholarship should not become technology advocacy; its task is to explain when, how, and under what institutional conditions digital systems strengthen public capability and public value.

4.4 Conclusion

Digital transformation in public administration is not the installation of more software. It is a reconfiguration of administrative work, information, discretion, organizational relationships, and service delivery. AI intensifies this transformation because decisions and judgments can migrate into data pipelines, models, interfaces, and vendor systems that are less visible than traditional administrative routines.

Effective transformation therefore requires organizational redesign, interoperable data, capable staff, responsible procurement, cybersecurity, inclusion, and evidence of realized outcomes. The appropriate measure of success is not how many processes are automated or how advanced the technology appears, but whether institutions become more capable of delivering lawful, reliable, accessible, and accountable public services over time.

5.0 Declarations

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5.2 Funding

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5.3 Competing Interests

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5.4 Data Availability

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5.5 AI Use Disclosure

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