



Data-Driven Governance: Conceptualizing Evidence-Based Decision Making in the Public Sector

Herman¹, Putra Lesmana²

¹Universiti Muhammadiyah Malaysia, Malaysia

²Universitas Cenderawasih, Papua, Indonesia

Corresponding author: herman7854@gmail.com

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ABSTRACT

The increasing complexity of public governance requires governments to adopt decision-making approaches that are adaptive, transparent, and evidence-based. The rapid development of big data, artificial intelligence, and digital government has accelerated the emergence of data-driven governance, where data become a strategic asset for improving policy quality and public service performance. This study aims to conceptualize data-driven governance as a comprehensive framework for evidence-based decision-making in the public sector. Using a conceptual review approach, the study synthesizes contemporary literature on digital government, evidence-based policymaking, artificial intelligence, data governance, and public administration to identify the key dimensions that shape effective governance. The analysis reveals that successful data-driven governance depends on the interaction of five strategic dimensions: data quality, analytical capability, organizational readiness, ethical and accountable governance, and collaborative governance. These dimensions collectively support governments in transforming data into actionable evidence for more responsive, transparent, and accountable public policies. The study proposes an integrated conceptual framework that connects these dimensions within a unified governance model, providing a broader perspective than previous studies that generally examined them separately. The proposed framework contributes theoretically by enriching the literature on public governance and digital transformation while offering practical guidance for policymakers in strengthening evidence-based governance initiatives. Future studies are encouraged to validate the framework empirically across different governmental contexts to enhance its applicability and explanatory power.

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1. INTRODUCTION

Digital transformation is fundamentally changing how governments generate information, formulate policies, deliver public services, and make administrative decisions. As public problems become increasingly complex, interconnected, and uncertain, governments are expected to develop decision-making processes that are not only efficient but also responsive, adaptive, transparent, and accountable. In this context, data-driven governance has emerged as an increasingly important approach in which data, analytics, and empirical evidence become strategic resources for public decision-making (Charles et al., 2022; Hossin et al., 2023; Di Vaio et al., 2022; van Ooijen et al., n.d.). This transformation shifts the role of data from an administrative by-product toward a strategic resource for identifying public problems, assessing policy alternatives, allocating resources, monitoring implementation, and evaluating policy outcomes (Hossin et al., 2023; Suryadi & Ibrahim, 2026; van Ooijen et al., n.d.).

The emergence of data-driven governance is closely connected to the established traditions of evidence-based policymaking and evidence-informed decision-making. However, digital transformation has substantially expanded the nature, scale, and timeliness of the evidence available to governments. The contemporary evidence base increasingly extends beyond conventional research reports and policy evaluations to include administrative transactions, digital platforms, sensors, social media, and integrated information systems that generate continuous information about social conditions, citizen behavior, and public service processes (Suryadi & Ibrahim, 2026; Papadakis et al., 2024; van Ooijen et al., n.d.). The increasing volume, variety, and velocity of these data create opportunities for governments to move beyond predominantly reactive decision-making toward more proactive, predictive, and adaptive governance arrangements (Al-Inizi, 2025; Suryadi & Ibrahim, 2026; Hossin et al., 2023; van Ooijen et al., n.d.).

This transformation is further accelerated by artificial intelligence (AI), big data analytics, machine learning, and digital decision-support technologies. These technologies expand governments' capacity to detect patterns, identify risks, forecast needs, support planning, improve service delivery, and strengthen policy evaluation across multiple sectors (Charles et al., 2022; Hossin et al., 2023; Al-Inizi, 2025; Papadakis et al., 2024; Supriyanto & Saputra, 2022). Nevertheless, technological capability alone does not guarantee better governance outcomes. Fragmented information systems, weak standardization, poor interoperability, limited automation, infrastructure constraints, shortages of skilled personnel, and weak data governance can prevent governments from converting available data into reliable and actionable policy intelligence (Silva et al., 2025; Mudzunga et al., 2025; Cretu, 2025; Mutiarin et al., 2024; Oumkaltoum et al., 2021). The critical issue, therefore, is not simply whether governments have sufficient data or advanced technologies, but whether they possess the institutional capacity to transform data into valid, interpretable, and actionable evidence for public decision-making.

This distinction is particularly important in the public sector because data-driven decisions can affect citizens' rights, access to services, regulatory treatment, and the distribution of public resources. The use of AI and algorithmic systems in high-stakes governmental domains introduces additional concerns related to accountability, bias, privacy, explainability, transparency, and public trust (Busuioc, 2020; Papadakis et al., 2024; Al-Inizi, 2025; Nazelin & Silalahi, 2026). Data-driven decision-making therefore cannot be regarded as a purely technical or value-neutral process. Decisions concerning what data are collected, which indicators are prioritized, how analytical models are designed, and how results are interpreted inevitably involve institutional and normative choices. Accordingly, the effectiveness of data-driven governance must be evaluated not only

through analytical accuracy and administrative efficiency but also through fairness, legitimacy, accountability, inclusion, trust, and public value (Haug et al., 2023; Cretu, 2025; Suryadi & Ibrahim, 2026; van Ooijen et al., n.d.).

These conditions indicate that data-driven governance should be understood as a multidimensional institutional capability, rather than merely as the adoption of digital technologies. Digital transformation changes leadership practices, organizational cultures, work routines, coordination structures, internal processes, and relationships between governments and external stakeholders. Its effectiveness depends on political support, managerial capacity, digital infrastructure, organizational capabilities, digital skills, and the perceived usefulness of technological innovations (Moser-Plautz & Schmidhuber, 2023; Zalizniuk, 2026; Di Giulio & Vecchi, 2021; Hanelt et al., 2020). Organizational readiness is therefore critical because even high-quality data and sophisticated analytical tools have limited policy value when public institutions lack the capacity to embed evidence use into routine decision-making, organizational learning, and policy improvement (Cretu, 2025; Nazelin & Silalahi, 2026; Suryadi & Ibrahim, 2026).

Moreover, data-driven governance cannot be sustained through internal government capabilities alone. Digital transformation increasingly requires interorganizational integration, information sharing, co-production, and engagement with external actors, including private organizations, experts, universities, civil society, and citizens (Moser-Plautz & Schmidhuber, 2023; Di Giulio & Vecchi, 2021; Suryadi & Ibrahim, 2026). These relationships can expand the evidence base, provide alternative forms of expertise, improve the interpretation of data, and strengthen the legitimacy of public decisions. Public value is also influenced by transparency, participation, stakeholder relationships, and trust, which develop through sustained institutional processes rather than emerging automatically from technology adoption (Haug et al., 2023; van Ooijen et al., n.d.). Data-driven governance is therefore better understood as a governance ecosystem in which technical, organizational, ethical, and collaborative capabilities interact.

Despite the expanding literature on digital government, data governance, artificial intelligence, big data analytics, and smart governance, the existing literature remains analytically fragmented. Some studies emphasize data intelligence and analytical capabilities, others focus on data quality and interoperability, while another stream examines digital transformation and organizational change (Di Vaio et al., 2022; Silva et al., 2025; Haug et al., 2023; Charles et al., 2022). Other studies highlight algorithmic accountability, ethical governance, or institutional transformation (Busuioc, 2020; Cretu, 2025). Although these studies provide important insights into individual aspects of data-driven governance, they do not sufficiently explain how these dimensions can be integrated into a single conceptual framework that connects the quality of data, capacity to analyze data, organizational ability to institutionalize data use, ethical and accountable governance, and collaboration among governance actors.

The resulting research gap is therefore not the absence of studies on data, artificial intelligence, analytics, digital transformation, or evidence-based decision-making individually. Rather, the gap concerns the limited conceptual integration of the conditions through which data can be transformed into evidence and subsequently used to generate legitimate and valuable public decisions. A government may possess high-quality data but lack analytical capability; it may possess sophisticated analytical technologies but lack organizational readiness; it may have strong technological and organizational capabilities but inadequate mechanisms for accountability and ethical oversight; and it may possess these internal capabilities without sufficient collaboration to

incorporate diverse knowledge, perspectives, and sources of evidence. These possibilities demonstrate that the effectiveness of data-driven governance cannot be explained by a single technological or organizational factor. It requires an integrated perspective in which multiple capabilities operate as mutually reinforcing components.

Addressing this gap, this study develops an integrated framework of data-driven governance for evidence-based decision-making in the public sector. The framework brings together five mutually reinforcing dimensions: (1) data quality, (2) analytical capability, (3) organizational readiness, (4) ethical and accountable governance, and (5) collaborative governance. Data quality provides the reliability of the underlying evidence base; analytical capability enables governments to transform data into meaningful policy intelligence; organizational readiness enables the institutionalization of data use; ethical and accountable governance ensures that data-informed decisions remain transparent, fair, legitimate, and responsible; while collaborative governance expands the evidence base and strengthens the inclusiveness and legitimacy of decision-making. The framework therefore conceptualizes data-driven governance not as technological adoption alone, but as an integrated institutional capability for converting data into evidence and evidence into public value (Charles et al., 2022; Busuioc, 2020; Cretu, 2025; Di Giulio & Vecchi, 2021; van Ooijen et al., n.d.).

The novelty of this study does not lie in claiming that data quality, analytical capability, organizational readiness, ethics, or collaboration are individually new concepts. Rather, its contribution lies in integrating these previously differentiated dimensions into a unified conceptual framework that explains the institutional conditions required for data-driven governance to support evidence-based public decision-making and public value creation. This positioning extends existing discussions that tend to emphasize technological adoption, data management, or individual organizational capabilities by placing these elements within a broader governance architecture that simultaneously addresses analytical capacity, organizational readiness, ethical accountability, and collaborative arrangements.

Accordingly, this study aims to develop and conceptually explain an integrated framework of data-driven governance for evidence-based decision-making in the public sector. The study contributes theoretically by synthesizing perspectives from data governance, digital government, artificial intelligence, analytics, organizational transformation, accountability, and collaborative governance into a coherent conceptual model. Practically, the framework provides a reference for public organizations seeking to strengthen data-informed decision-making while ensuring transparency, accountability, public trust, inclusion, and public value. As a conceptual study, the framework also provides a foundation for future empirical research to operationalize the five dimensions and examine their relationships across different governmental and institutional contexts.

2. METHODS

This study employs a conceptual research approach (conceptual paper) using a literature-based review design. This approach was selected because the primary objective of the study is not to empirically test hypotheses but to construct and clarify the concept of *data-driven governance* as a framework for evidence-based decision-making in the public sector. In conceptual research, scholars interpret, categorize, and synthesize ideas developed in the scientific literature to generate a more integrated conceptual understanding with theoretical value.

The data sources consist of relevant secondary literature addressing data-driven governance, evidence-based decision-making, artificial intelligence in the public sector, big data analytics, digital government, and governance ethics. The literature primarily consists of articles published in reputable academic journals, particularly those published between 2020 and 2026, supplemented by several seminal references considered fundamental to establishing the theoretical foundation. The literature was selected systematically based on thematic relevance, journal quality, recency, and conceptual contribution to the development of the study's arguments.

The review process was conducted in four stages. First, relevant literature was identified by searching for studies addressing *data-driven governance*, *evidence-based policymaking*, *public sector decision-making*, *artificial intelligence in public administration*, and *big data for governance*. Second, the literature was screened based on its substantive relevance to the research focus, particularly studies examining the relationships among data, evidence, public value, and policy decision-making. Third, thematic synthesis was conducted to identify recurring patterns, differences, and conceptual gaps within the existing literature. Fourth, the synthesized findings were used to formulate a conceptual framework explaining the principal dimensions of *data-driven governance* in the public sector.

The analysis was conducted qualitatively using a thematic interpretation technique, which involved interpreting major themes emerging from the literature and logically connecting them into an integrated conceptual framework. The themes examined included data infrastructure quality, analytical capacity, organizational readiness, ethics and accountability, and interstakeholder collaboration. Through this process, the study not only summarizes previous findings but also reorganizes fragmented knowledge into a clearer and more practically applicable conceptual structure.

The primary outcome of this methodological approach is a conceptual model explaining how data can be transformed into a foundation for more rational, adaptive, and accountable decision-making in the public sector. Accordingly, this approach is appropriate for an early-stage conceptual journal article because it provides a strong theoretical foundation for subsequent empirical research and validation.

3. RESULTS AND DISCUSSION

Data-Driven Governance as a Logical Evolution of Evidence-Based Decision-Making

The conceptual synthesis indicates that *data-driven governance* is not merely a new term in the discourse on digital government, but rather a more advanced stage in the evolution of *evidence-based decision-making* in the public sector. Whereas evidence-based approaches emphasize the use of data, research, and evaluation to improve policy quality, *data-driven governance* extends this logic by integrating operational data, administrative data, real-time data, and digital analytics throughout the entire governance process (Charles et al., 2022; Hossin et al., 2023). In other words, public decisions are no longer based solely on evidence collected after policies have been formulated, but are continuously informed by streams of data generated throughout governmental processes.

This conceptual finding is important because it demonstrates a shift from reactive decision-making toward more predictive and adaptive forms of decision-making. Under traditional governance arrangements, governments generally respond to problems after visible symptoms have emerged. By contrast, data-driven governance enables governments to identify patterns,

anomalies, and risks at an early stage through predictive analytics and artificial intelligence (Kitchin, 2021; Wirtz et al., 2019). Accordingly, *data-driven governance* can be understood as a new form of administrative rationality that is faster, more precise, and more measurable.

However, this evolution also carries important implications. Data should not be treated as neutral facts that automatically produce correct decisions. As Hwang et al. (2021) demonstrate, data-driven administration inevitably involves a value dimension. Data can clarify problems, but decision-making still requires normative judgments concerning public priorities, distributive justice, and policy legitimacy. Therefore, effective *data-driven governance* is not simply characterized by data abundance but by the ability to balance data-driven insights with public values.

Data Quality as a Fundamental Prerequisite for Evidence-Based Decision-Making

The second key finding emphasizes that data quality constitutes the foundation of the entire architecture of *data-driven governance*. Inaccurate, incomplete, outdated, or non-interoperable data can lead to erroneous decisions, even when analyzed using the most sophisticated technologies. Janssen et al. (2017) emphasize that the quality of big data-driven decisions depends heavily on data quality, organizational readiness, and information system integration. Thus, the strategic value of data lies not in its volume but in its quality, connectivity, and usefulness for decision-making.

In the public sector, data quality problems frequently arise because information is dispersed across multiple organizational units, data recording formats are inconsistent, and strong data exchange standards between agencies are lacking. These conditions make it difficult for governments to develop a comprehensive understanding of public problems. Consequently, policies may be formulated based on fragmented information. This is where *data governance* becomes particularly important: its role is not merely to manage data as administrative records but also to ensure data integrity, interoperability, accessibility, and accuracy for policy purposes (OECD, 2020, 2023).

Conceptually, these findings demonstrate that *data-driven governance* cannot be built upon fragile data infrastructure. Governments need to develop standardized and interconnected data ecosystems so that analytical processes can generate more comprehensive insights. Without such a foundation, data-driven decision-making may instead reinforce policy errors systematically.

Analytical Capability as the Bridge Between Data and Decision-Making

The synthesis further indicates that data does not acquire policy meaning until it is processed through adequate analytical capabilities. Analytics transform raw data into information and information into policy knowledge. Charles et al. (2022) emphasize that AI in the public sector can strengthen decision-making when used to identify patterns, predict risks, and generate actionable recommendations. Similarly, Hossin et al. (2023) demonstrate that big data analytics can support governments throughout the policy cycle, including planning, design, implementation, and evaluation.

However, analytical capability is not solely a matter of tools or software. It also encompasses the ability of public officials to critically interpret data, understand analytical outputs, and translate them into relevant policy alternatives. In many cases, the failure to utilize data effectively in the public sector results not from a lack of data but from insufficient analytical competencies to use data strategically. This implies that digital transformation in government must be accompanied by the transformation of human resource capabilities.

A key conceptual contribution emerging from this discussion is that analytical capability should be positioned as a decision mediation layer between data and decision-making. This layer connects the technical and administrative dimensions of governance. Thus, *data-driven governance* depends not only on technological intelligence but also on organizational intelligence the capacity to understand what data mean for complex public problems.

Organizational Readiness Determines Whether Data Are Actually Used

One of the most important findings is that public organizations often fail not because they lack technology but because their institutional readiness remains underdeveloped. Mergel et al. (2019) demonstrate that digital transformation is fundamentally organizational change rather than merely technology adoption. Accordingly, the success of *data-driven governance* depends substantially on leadership, organizational culture, coordination structures, and decision-making practices within public institutions.

The OECD (2020, 2023) likewise emphasizes that digitally mature public sectors are those capable of integrating data into organizational processes rather than simply collecting it. This requires leadership that supports innovation, strong interorganizational governance, and public officials equipped with data literacy. When organizations are not prepared, available data remain passive assets. Conversely, when organizations possess a learning culture and evidence-oriented approach, data can become a driver of policy change.

From the perspective of conceptual novelty, these findings suggest that *data-driven governance* should not be understood as an information technology project but as a form of institutional governance reform. Its conceptual contribution lies in emphasizing that successful data-driven decision-making depends on the compatibility between data systems and organizational systems.

Ethics and Accountability as Both Constraints and Guiding Principles

The next dimension concerns the fact that the stronger the role of data and AI in government, the greater the need for ethics and accountability. Sun and Medaglia (2019) demonstrate that the use of AI in the public sector raises serious concerns regarding bias, privacy, and public trust. When data-driven systems are implemented without adequate ethical safeguards, public decisions may become unfair, opaque, or discriminatory.

Charles et al. (2022) similarly emphasize that AI adoption in government must be accompanied by responsible governance principles to ensure that technological innovation does not undermine democratic values. In this context, accountability is not merely a reporting mechanism but also the government's ability to explain the basis of decisions, the sources of data used, and the limitations of analytical models. This is essential for maintaining public legitimacy.

The conceptual contribution of this discussion is that ethics should not be positioned merely as a constraint on *data-driven governance* but as a guiding component that ensures data-driven decisions remain aligned with the public interest. In other words, mature *data-driven governance* is not only intelligent but also fair and accountable.

Cross-Actor Collaboration Strengthens the Public Value of Data

Beyond technology and organizational capacity, the findings indicate that data-driven governance requires a collaborative ecosystem. Government data are often insufficient to provide a comprehensive understanding of complex public problems. Collaboration with universities, the

private sector, civil society organizations, and international institutions is therefore important for expanding evidence sources and improving the quality of policy interpretation (OECD, 2020; UN, 2024). From this perspective, *data-driven governance* is the product of interaction among multiple actors rather than a monopoly of government bureaucracy.

Such collaboration also strengthens policy legitimacy. When data and analytical processes are developed openly through multi-stakeholder cooperation, public decisions are more likely to gain acceptance because the process becomes more transparent and participatory. Collaboration also enriches the perspectives through which data are interpreted, ensuring that policies are not merely technocratic but also responsive to social needs.

The theoretical contribution of this finding is the need to conceptualize *data-driven governance* as a form of networked governance. Data are not merely internal government instruments but also a medium for coordinating multiple actors to create broader public value.

Proposed Conceptual Framework of Data-Driven Governance for Evidence-Based Decision-Making

Based on the synthesis of the literature, this study proposes an integrated conceptual framework positioning evidence-based decision-making as the outcome of the interaction among five strategic dimensions of *data-driven governance*. Unlike previous studies that often examine these dimensions separately, the proposed framework conceptualizes them as an interconnected governance ecosystem in which each dimension reinforces the others to produce adaptive, transparent, accountable, and data-informed public decisions.

The framework begins with Data Quality, which represents the foundation of data-driven governance. Accurate, integrated, timely, interoperable, and secure data provide reliable inputs for subsequent analytical processes. However, high-quality data alone cannot improve governance unless they are transformed into meaningful information through Analytical Capability. This dimension encompasses statistical analysis, artificial intelligence, machine learning, predictive analytics, and decision-support systems that enable governments to generate policy intelligence from complex datasets.

The effectiveness of analytical outputs depends on Organizational Readiness, including leadership commitment, digital competencies, organizational culture, change management, and institutional learning. Organizations with strong digital readiness are better positioned to embed evidence into routine policy processes. Nevertheless, organizational capability must be balanced with Ethical and Accountable Governance, ensuring that data utilization complies with principles of transparency, fairness, privacy protection, explainable artificial intelligence, and public accountability.

The final enabling dimension is Collaborative Governance, reflecting cooperation among government institutions, academia, private organizations, civil society, and citizens. Collaborative ecosystems expand data availability, enrich analytical perspectives, improve policy legitimacy, and strengthen public trust. The interaction among these five dimensions ultimately generates Evidence-Based Decision-Making, which subsequently contributes to Public Value Creation, reflected in improved policy quality, more responsive public services, institutional effectiveness, transparency, and sustainable governance.

Accordingly, this study argues that data-driven governance should be understood as an integrated governance ecosystem rather than merely a technological capability. Sustainable

evidence-based governance can only be achieved when technological resources, organizational capacity, ethical principles, and collaborative institutions develop simultaneously.



Figure 1. Proposed Conceptual Framework of Data-Driven Governance

Source: Developed by the authors based on the synthesis of Charles et al. (2022), Hossin et al. (2023), Kitchin (2021), Wirtz et al. (2019), OECD (2020, 2023), Hwang et al. (2021), Sun and Medaglia (2019), and related literature.

Based on the conceptual synthesis, this study offers a novel contribution through an integrative framework that positions *data-driven governance* as the product of interactions among five core dimensions: data quality, analytical capability, organizational readiness, ethics and accountability, and cross-actor collaboration. These dimensions do not operate independently but mutually reinforce one another. High-quality data without analytical capability are of limited value; analytical capability without organizational readiness cannot be effectively institutionalized; organizational capacity without ethical safeguards may generate problematic outcomes; and all of these dimensions without collaboration may lack broader legitimacy.

This framework contributes to public administration scholarship in two principal ways. First, theoretically, it integrates strands of literature that have largely developed separately across digital government, evidence-based policymaking, artificial intelligence, and data governance. Second, practically, the framework can provide governments with a foundation for designing digital transformation strategies that extend beyond service digitalization toward genuinely evidence-based public decision-making.

The principal implication of this discussion is that the success of data-driven governance cannot be measured solely by the number of digital systems established. More substantive indicators include the extent to which data improve decision quality, reduce policy uncertainty, accelerate government responsiveness, and strengthen public trust. Future research should therefore empirically examine the proposed framework across different levels of government, including national and local contexts, to determine which dimensions exert the strongest influence under particular institutional conditions.

For government practice, these findings underscore the need for balanced investment in data infrastructure, analytical training, governance reform, and digital ethics. Transformation that focuses exclusively on technology without addressing organizational capacity is likely to produce superficial digitalization. Conversely, when data, organizational capabilities, and public values are designed and developed in an integrated manner, *data-driven governance* can become an important foundation for governments that are more intelligent, responsive, transparent, and accountable.

4. CONCLUSION

This conceptual study demonstrates that data-driven governance represents a new paradigm of public governance in which evidence-based decision making is supported by the integration of high-quality data, analytical capability, organizational readiness, ethical governance, and collaborative networks. Rather than viewing digital technologies solely as operational tools, this study argues that their greatest value lies in enabling governments to transform data into reliable evidence for producing more adaptive, transparent, accountable, and citizen-centered public policies. Consequently, effective data-driven governance requires a balanced interaction among technological, organizational, and institutional dimensions.

The primary contribution of this study is the development of an integrated conceptual framework that connects five strategic dimensions data quality, analytical capability, organizational readiness, ethical and accountable governance, and collaborative governance within a unified model of evidence-based decision making in the public sector. This framework extends previous studies that have largely examined these dimensions separately, offering a more comprehensive perspective on how governments can create sustainable public value through data-informed governance. Practically, the framework provides a strategic reference for policymakers to strengthen digital transformation initiatives while ensuring transparency, accountability, and responsible data governance.

Despite these contributions, this study is conceptual in nature and therefore requires empirical validation across different governmental contexts. Future research is encouraged to operationalize the proposed framework by developing measurable indicators for each dimension and testing their relationships using quantitative, qualitative, or mixed-method approaches. Such studies will enrich the theoretical understanding of data-driven governance while providing stronger empirical evidence to support evidence-based public sector decision making.

DECLARATIONS

Author Contributions

H.H: Literature review and synthesis, analysis and interpretation, writing original draft, and writing review and editing.

P.L: Conceptualization, methodology, visualization, writing, review and editing, supervision, and project administration.

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Conflict of Interest

The authors declare no conflict of interest.

Ethical Approval

Ethical approval was not required because this study is a conceptual research based on systematic literature review and conceptual synthesis and did not involve human participants, animals, or the collection of primary data.

Data Availability

No new primary data were generated or analyzed in this study. The study was based on the analysis and synthesis of published literature and publicly available scholarly sources.

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AI-Assisted Tools Disclosure

The authors used AI-assisted tools to support the preparation of Figure 1 and limited language refinement of the manuscript. All AI-assisted outputs were reviewed, edited, and verified by the authors, who remain fully responsible for the accuracy, originality, interpretation, and final content of the manuscript.

REFERENCES

- AL-Inizi, M. S. M. (2025). Enhancing governmental decision-making through predictive analytics with machine learning-based data-driven framework. *Babylonian Journal of Machine Learning*, 2025, 86-96. <https://doi.org/10.58496/BJML/2025/007>
- Aydin, M. (2026). Smart Public Administration and Data-Driven Decision-Making: Opportunities and Risks for Modern Governance. *Journal of Public Administration Research*, 2(2), 18-36. <https://doi.org/10.67171/b61pns81>
- Busuioc, M. (2021). Accountable artificial intelligence: Holding algorithms to account. *Public administration review*, 81(5), 825-836. <https://doi.org/10.1111/puar.13293>
- Charles, V., Rana, N. P., & Carter, L. (2022). Artificial Intelligence for data-driven decision-making and governance in public affairs. *Government Information Quarterly*, 39(4), 101742. <https://doi.org/10.1016/j.giq.2022.101742>
- Cretu, V. (2025). Future-ready public institutions: rethinking data governance through maturity assessment. *Economy and Sociology*, (1), 43-59. <https://doi.org/10.36004/nier.es.2025.1-04>
- Department of Economic. (2024). *United Nations E-Government Survey 2024: Accelerating Digital Transformation for Sustainable Development-With the addendum on Artificial Intelligence*. Stylus Publishing, LLC.
- Di Giulio, M., & Vecchi, G. (2023). Implementing digitalization in the public sector. Technologies, agency, and governance. *Public Policy and Administration*, 38(2), 133-158. <https://doi.org/10.1177/09520767211023283>
- Di Vaio, A., Hassan, R., & Alavoine, C. (2022). Data intelligence and analytics: A bibliometric analysis of human–Artificial intelligence in public sector decision-making effectiveness. *Technological forecasting and social change*, 174, 121201. <https://doi.org/10.1016/j.techfore.2021.121201>
- Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: Insights and implications for strategy and organizational change. *Journal of management studies*, 58(5), 1159-1197. <https://doi.org/10.1111/joms.12639>

- Haug, N., Dan, S., & Mergel, I. (2024). Digitally-induced change in the public sector: a systematic review and research agenda. *Public Management Review*, 26(7), 1963-1987. <https://doi.org/10.1080/14719037.2023.2234917>
- Head, B. W. (2016). Toward more “evidence-informed” policy making?. *Public administration review*, 76(3), 472-484. <https://doi.org/10.1111/puar.12475>
- Hossin, M. A., Du, J., Mu, L., & Asante, I. O. (2023). Big data-driven public policy decisions: Transformation toward smart governance. *Sage Open*, 13(4), 21582440231215123. <https://doi.org/10.1177/21582440231215123>
- Hwang, S., Nam, T., & Ha, H. (2021). From evidence-based policy making to data-driven administration: proposing the data vs. value framework. *International Review of Public Administration*, 26(3), 291-307. <https://doi.org/10.1080/12294659.2021.1974176>
- Janssen, M., Van Der Voort, H., & Wahyudi, A. (2017). Factors influencing big data decision-making quality. *Journal of business research*, 70, 338-345. <https://doi.org/10.1016/j.jbusres.2016.08.007>
- Janssen, M., Van Der Voort, H., & Wahyudi, A. (2017). Factors influencing big data decision-making quality. *Journal of business research*, 70, 338-345. <https://doi.org/10.1016/j.jbusres.2016.08.007>
- Kitchin, R. (2021). *Data lives: How data are made and shape our world*. Bristol University Press.
- Mergel, I., Edelmann, N., & Haug, N. (2019). Defining digital transformation: Results from expert interviews. *Government information quarterly*, 36(4), 101385. <https://doi.org/10.1016/j.giq.2019.06.002>
- Moser-Plautz, B., & Schmidhuber, L. (2023). Digital government transformation as an organizational response to the COVID-19 pandemic. *Government Information Quarterly*, 40(3), 101815. <https://doi.org/10.1016/j.giq.2023.101815>
- Mudzunga, P. P., Adeyelu, T. S., & Kalema, B. M. (2025). Factors influencing Big Data governance in enhanced service delivery in South African public sector. *South African Journal of Information Management*, 27(1), 1931. https://hdl.handle.net/10520/ejc-info_v27_n1_a1931
- Mutiarin, D., Padma Eldo, D. H. A., Sarofah, R., & Habibullah, A. (2024). DATA INTEROPERABILITY IN SUPPORTING ELECTRONIC-BASED GOVERNANCE SYSTEMS IN THE LOCAL GOVERNMENT. *Corporate Law & Governance Review*, 6(4), 43. <https://doi.org/10.1016/10.22495/clgrv6i4p4>
- OECD. (2020). *The path to becoming a data-driven public sector*. OECD Publishing.
- Oumkaltoum, B., Aris, O., & Loqman, C. (2021). Hybrid e-government framework based on datawarehousing and MAS for data interoperability. *International Journal of Advanced Computer Science and Applications*, 12(10).
- Papadakis, T., Christou, I. T., Ipektsidis, C., Soldatos, J., & Amicone, A. (2024). Explainable and transparent artificial intelligence for public policymaking. *Data & Policy*, 6, e10. <https://doi.org/10.1017/dap.2024.3>

- Parkhurst, J. (2016). *The politics of evidence: from evidence-based policy to the good governance of evidence* (p. 196). Taylor & Francis.
- Silva, M. I. V., Luna, R. N. G., Cavalcante, A. K., Lelli, V., de Castro Andrade, R. M., Monteiro, J. M., & de Sousa Santos, I. (2025, November). Systematic Mapping of Data Quality in the Public Sector: Dimensions, Metrics and Practices. In *Simpósio Brasileiro de Qualidade de Software (SBQS)* (pp. 153-164). SBC. <https://doi.org/10.5753/sbqs.2025.15065>
- Sun, T. Q., & Medaglia, R. (2019). Mapping the challenges of Artificial Intelligence in the public sector: Evidence from public healthcare. *Government information quarterly*, 36(2), 368-383. <https://doi.org/10.1016/j.giq.2018.09.008>
- Supriyanto, E. E., & Saputra, J. (2022). Big data and artificial intelligence in policy making: A mini-review approach. *International Journal of Advances in Social Sciences and Humanities*, 1(2), 58-65.
- UN, E. (2024). Government Survey 2024/United Nations. URL: <https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2024>.
- Van Ooijen, C., Ubaldi, B., & Welby, B. (2019). A data-driven public sector: Enabling the strategic use of data for productive, inclusive and trustworthy governance. <https://dx.doi.org/10.1787/09ab162c-en>
- Wirtz, B. W., Weyerer, J. C., & Geyer, C. (2019). Artificial intelligence and the public sector—applications and challenges. *International journal of public administration*, 42(7), 596-615. <https://doi.org/10.1080/01900692.2018.1498103>
- Zalizniuk, V. (2026). Managing Organizational Change During Digital Transformation Of Public Administration: The Development Of E-Democracy In Ukraine. *Public Management and Policy*, 1(1 (17)). <https://doi.org/10.70651/3041-2498/2026.1.10>