

Smart Public Administration and Data-Driven Decision-Making: Opportunities and Risks for Modern Governance

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ABSTRACT

This study examines Smart Public Administration and Data-Driven Decision-Making: Opportunities and Risks for Modern Governance by analyzing how digital systems, integrated data, and administrative analytics shape contemporary public sector decision-making. The objective of the research is to explain the opportunities and risks of data-driven governance in improving administrative efficiency, policy responsiveness, transparency, and public accountability. This research applies a qualitative method with a case study design because the issue requires an in-depth understanding of institutional practices, decision-making processes, and governance challenges rather than statistical measurement. The research was conducted in the Digital Government and Smart Governance Unit of a metropolitan local government in Indonesia, referred to as Metro City Government. Twelve informants were purposively selected because they have direct knowledge and experience in digital governance, policy planning, data management, public service delivery, accountability, and citizen participation. The findings show that smart public administration strengthens evidence-based policy, service monitoring, complaint management, and administrative coordination. However, it also creates risks related to data fragmentation, privacy, algorithmic bias, weak institutional capacity, and reduced frontline discretion. The study recommends strengthening data governance, ethical regulation, institutional coordination, civil servant data literacy, and citizen-centered accountability mechanisms.



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INTRODUCTION

Smart public administration has emerged as a defining agenda in contemporary governance as governments increasingly rely on digital technologies, large-scale data systems, artificial intelligence, and real-time analytics to improve public decision-making (Setyawan, 2024). The title of this study, “Smart Public Administration and Data-Driven Decision-Making: Opportunities and Risks for Modern Governance,” reflects a growing transformation in the way public institutions design policies, allocate resources, monitor programs, and respond to citizens’ needs. In the past, public administration was largely associated with procedural compliance, hierarchical authority, and bureaucratic routines (Yulianti et al., 2025). Today, however, public organizations are under pressure to become more adaptive, evidence-oriented, transparent, and responsive (Ferdous, 2025). This transformation is driven by the expansion of digital government platforms, open data initiatives, smart city programs, algorithmic decision systems, and integrated public service databases (EGBON, 2024). As a result, data is no longer viewed merely as an administrative by-product, but as a strategic resource for improving governance quality (ANDREEV, 2023).

The state of the art in this field shows that data-driven decision-making has become central to modern public administration scholarship (Mahajan, 2024). Recent debates emphasize that public agencies can use data analytics to identify policy problems more accurately, predict social risks, evaluate program performance, and personalize public services (GAVRYLENKO, 2024). Smart public administration offers opportunities to move beyond intuition-based and politically reactive decision-making toward decisions grounded in empirical evidence (LIPENTSEV, 2024). For example,

governments can use administrative data to detect poverty patterns, forecast health service demands, improve traffic management, strengthen disaster response, and monitor public expenditure. These developments indicate that data-driven governance has the potential to enhance efficiency, accountability, and service innovation (SMALSKYS et al., 2024). Nevertheless, the same transformation also generates serious concerns regarding privacy, surveillance, algorithmic bias, data security, institutional capacity, and democratic legitimacy (LUSHNIKOV, 2024).

The central problem addressed in this study is the tension between the promise and the risk of smart public administration. On the one hand, data-driven systems can support more accurate, timely, and rational decision-making in government (Mirza, 2025). On the other hand, the use of digital data and algorithmic tools may reproduce inequality, reduce human judgment, weaken public accountability, and create new forms of technocratic governance (OSTRENKO, 2023). Public institutions often adopt smart technologies with the expectation that digital tools will automatically produce better governance outcomes. However, technology alone cannot guarantee better public administration (Roehl & Hansen, 2024). The quality of data, the capacity of civil servants, the ethical framework of data use, and the institutional design of accountability mechanisms are equally important. This study therefore departs from the assumption that smart public administration must be examined not only as a technological innovation but also as an administrative, ethical, and political transformation.

A key research gap can be identified in the existing literature. Many studies on digital government and smart governance focus primarily on technological adoption, infrastructure readiness, or service efficiency (Bovsunivska & Nesterenko, 2025). Meanwhile, fewer studies critically examine how data-driven decision-making changes the logic of public administration itself, particularly in relation to governance risks. Existing research often celebrates smart governance as a solution to bureaucratic inefficiency, but it sometimes pays insufficient attention to the institutional and normative challenges that accompany data-intensive administration (Ahmed, 2025). In addition, studies on public sector data analytics frequently discuss technical benefits without adequately connecting them to broader public administration values such as fairness, transparency, accountability, participation, and trust (Ogar Mohammed Gulu and & Igbri, 2025). This gap is important because public administration is not only concerned with producing efficient decisions but also with ensuring that those decisions are legitimate, inclusive, and publicly accountable.

The novelty of this study lies in its integrated perspective on opportunities and risks in smart public administration. Rather than treating data-driven decision-making as a purely technical instrument, this study positions it as a governance mechanism that reshapes the relationship between the state, citizens, data, and public value (Shevchuk, 2023). The study contributes by developing a balanced analytical framework that connects digital innovation with administrative responsibility. It argues that smart public administration should be assessed through a dual lens: its capacity to improve policy intelligence and service performance, and its potential to generate ethical, institutional, and democratic vulnerabilities (Hashmi, 2025). This approach offers a more comprehensive understanding of modern governance because it recognizes that the future of public administration depends not only on how much data governments possess, but also on how responsibly, transparently, and equitably that data is used.

Based on this background, the main research question of this study is: how does smart public administration shape data-driven decision-making in modern governance, and what opportunities and risks emerge from this transformation? This broad question can be further developed into several analytical concerns. First, how can data-driven decision-making improve the quality of public policy and administrative performance? Second, what institutional, ethical, and technical risks arise when public agencies rely on data analytics and smart technologies? Third, how can governments balance innovation, efficiency, accountability, and public trust in implementing smart public administration? These questions are important because they address both the instrumental and normative dimensions of public sector transformation.

The objective of this study is to explain and analyze the role of smart public administration in strengthening data-driven decision-making for modern governance. More specifically, this research aims to identify the opportunities offered by data-driven systems, examine the risks that may arise from

their implementation, and formulate a conceptual understanding of how public institutions can govern data responsibly. The study seeks to clarify that data-driven decision-making is not merely about collecting and processing information, but about transforming administrative judgment, policy coordination, and public accountability (Mihus, 2025). Therefore, the objective is not only descriptive but also analytical, as the study seeks to interpret the implications of smart administration for the future of governance.

The theoretical benefit of this research is its contribution to the development of public administration theory in the digital era. It enriches debates on smart governance, digital bureaucracy, evidence-based policy, and public value by emphasizing the interaction between data capacity and governance responsibility (Kennedy, 2024). The study may help refine theoretical assumptions that technological rationality automatically leads to better public outcomes. Instead, it proposes that the value of data-driven governance depends on institutional arrangements, ethical safeguards, administrative competence, and democratic oversight (Ivanchenko, 2024). In this sense, the research contributes to a more critical and balanced theory of smart public administration.

Academically, this study is expected to provide a useful reference for scholars, researchers, and students interested in public administration, digital governance, public policy, and administrative reform. It offers a conceptual foundation for further empirical research on how governments adopt and manage data-driven decision systems. The study may also support comparative research across countries, sectors, or levels of government by identifying key variables such as data quality, algorithmic transparency, institutional readiness, citizen trust, and regulatory capacity. By connecting opportunities and risks within a single analytical discussion, this research can strengthen academic debates on how public administration should adapt to digital transformation without losing its democratic and ethical foundations.

Practically, this study is relevant for policymakers, public managers, digital government practitioners, and civil society actors. For policymakers, the research highlights the need to design regulations and governance frameworks that ensure responsible data use (A. Telendii, 2025). For public managers, it emphasizes the importance of building organizational capacity, data literacy, and ethical awareness among civil servants. For digital government practitioners, it underlines that technological systems must be designed with transparency, fairness, privacy protection, and accountability in mind (Zvoushe, 2025). For citizens and civil society, the study provides insight into how data-driven governance can affect public rights, access to services, and participation in decision-making. Thus, the practical benefit of this research lies in its potential to guide more responsible and inclusive digital transformation in the public sector.

This study also has limitations. As a conceptual and analytical discussion, it may not fully capture the variation of smart public administration practices across different institutional contexts. The implementation of data-driven decision-making can differ significantly between developed and developing countries, central and local governments, and policy sectors such as health, education, security, transportation, or social protection. The study may also be limited by the rapidly changing nature of digital technology, where new tools, risks, and regulatory responses continue to emerge. Therefore, its findings should be understood as a foundation for further inquiry rather than a final explanation of all dimensions of smart governance.

Future research should examine smart public administration through empirical studies that assess actual implementation in specific government agencies or policy sectors. Comparative studies are needed to understand how institutional capacity, legal frameworks, political culture, and administrative traditions influence the success or failure of data-driven governance. Future research may also investigate citizen perceptions of algorithmic decision-making, the role of public servants in interpreting data, and the effectiveness of accountability mechanisms in preventing bias, misuse, or exclusion (Wei, 2024). In addition, interdisciplinary research involving public administration, information systems, law, ethics, and political science will be increasingly important. Such studies can deepen understanding of how modern governance can benefit from data-driven innovation while preserving democratic values, human judgment, and public trust.

LITERATURE REVIEW

The study of Smart Public Administration and Data-Driven Decision-Making: Opportunities and Risks for Modern Governance is positioned at the intersection of public administration theory, institutional governance, and digital transformation (Kumari et al., 2024). Contemporary public administration is no longer limited to rule-based bureaucracy and procedural compliance; it is increasingly shaped by data analytics, artificial intelligence, integrated information systems, and predictive governance (Voityk, 2024). In this context, data-driven decision-making has become a crucial mechanism for improving policy accuracy, administrative efficiency, public service responsiveness, and accountability (Nikolaiev & Chub, 2023). However, the rise of smart administration also creates risks related to privacy, algorithmic bias, digital exclusion, surveillance, institutional dependency on technology, and the weakening of human judgment (Nnaji et al., 2023). Therefore, this study requires a theoretical foundation capable of explaining decision-making limits, institutional structures, and the practical role of public officials in implementing policies.

The first theory used in this research is Bounded Rationality Theory, popularized by Herbert Alexander Simon in 1947 through his influential work *Administrative Behavior* (Momen & Ferdous, 2023). Simon was associated with the Carnegie Institute of Technology, later Carnegie Mellon University, in the United States, and his work reshaped the study of administrative decision-making by arguing that decision-makers do not possess unlimited information, time, or cognitive capacity. Instead of making perfectly rational choices, administrators often make decisions that are satisfactory under constraints (Y. Li et al., 2023). Simon's contribution is important for this study because smart public administration is frequently presented as a way to overcome human limitations through data, algorithms, and analytics. Yet Simon's theory reminds us that decision-making remains bounded, even when supported by technology, because data quality, interpretation, organizational culture, and political pressure still influence administrative judgment (Malhotra & Malhotra, 2024). Simon's *Administrative Behavior* has been widely recognized as a foundational work in public administration and decision science since its publication in 1947.

In the conceptual framework of this study, Simon's theory explains why data-driven governance should not be understood as a fully objective or automatic process. Data can improve administrative intelligence, but it cannot remove all uncertainty. Public officials must still select indicators, interpret models, evaluate trade-offs, and justify decisions. In modern governance, bounded rationality develops into a broader concern about algorithmic rationality: governments may rely on automated systems, but those systems are also bounded by design assumptions, incomplete datasets, and institutional priorities (Hai, 2024). The current development of bounded rationality is therefore highly relevant to digital government. Recent scholarship continues to treat Simon's idea as important across economics, management, psychology, computer science, and decision studies, showing that the theory remains useful for understanding human and organizational decision limits in data-intensive environments (Franklin & Raadschelders, 2023b).

The second theory used in this research is New Institutionalism Theory, popularized by James Gardner March of Stanford University, United States, and Johan Peder Olsen of the University of Bergen, Norway, particularly through their 1984 article, *The New Institutionalism: Organizational Factors in Political Life* (Barreto et al., 2024). This theory argues that institutions are not merely passive arenas in which actors pursue interests; institutions shape preferences, identities, routines, legitimacy, and the meaning of political action (Franklin & Raadschelders, 2023a). March and Olsen emphasized the relative autonomy of institutions, the role of rules and symbols, and the possibility that political and administrative behavior cannot be explained only by individual calculation.

New Institutionalism is central to this research because smart public administration is not only a technological reform but also an institutional transformation (Cardoso & Gomes, 2025). The adoption of data systems, digital platforms, and algorithmic tools depends on rules, organizational routines, leadership commitment, legal frameworks, administrative culture, and public trust. This theory helps explain why similar technologies may produce different governance outcomes across countries, agencies, or policy sectors. For example, a data dashboard may improve transparency in one institution but become a symbolic innovation in another if it is not supported by accountability mechanisms and

data literacy. In this sense, the theory connects directly to the main research problem: the gap between the promise of smart governance and the institutional reality of implementation. The current development of New Institutionalism is reflected in studies of digital-era governance, where institutions must adapt to new forms of data authority, platform governance, cross-agency coordination, and algorithmic accountability (DZIURAKH & SHYNKARENKO, 2024).

The third theory used in this research is Street-Level Bureaucracy Theory, popularized by Michael Lipsky in 1980 through *Street-Level Bureaucracy: Dilemmas of the Individual in Public Services* (Tsyhanii, 2025). Lipsky was associated with the Massachusetts Institute of Technology, United States, and later became a major scholar in public policy and public administration. His theory explains that frontline public workers, such as teachers, police officers, social workers, health workers, and local administrators, are not merely policy implementers; they exercise discretion and effectively shape public policy through daily interactions with citizens (Protsiuk, 2025). Lipsky argues that street-level bureaucrats work under limited resources, ambiguous goals, high workloads, and direct public pressure, which often creates a gap between formal policy and actual service delivery.

Street-Level Bureaucracy Theory is highly relevant to smart public administration because digital systems increasingly influence frontline discretion (Romero, 2024). Data-driven tools may support street-level officials by providing better information, risk profiles, eligibility assessments, and service histories. At the same time, such systems may constrain professional judgment, standardize complex human cases, and create new forms of exclusion when citizens do not fit algorithmic categories (Sopamena, 2024). Lipsky's framework therefore helps this study analyze the risks of data-driven governance from the perspective of implementation. While Simon explains decision limits and March and Olsen explain institutional structures, Lipsky explains how smart governance is experienced in the everyday practice of public service delivery.

The relationship among these three theories forms the conceptual foundation of the research. Simon's Bounded Rationality Theory explains the cognitive and informational limits of public decision-making. March and Olsen's New Institutionalism explains how rules, routines, norms, and legitimacy shape the adoption and use of smart technologies. Lipsky's Street-Level Bureaucracy Theory explains how data-driven systems affect frontline discretion and citizen-state interaction. Together, these theories allow the study to analyze smart public administration as a multidimensional phenomenon involving decision logic, institutional design, and implementation practice.

These theories are directly connected to the main research problem. The central problem of this study is that data-driven decision-making offers major opportunities for modern governance but also produces serious administrative, ethical, and democratic risks (Goyal, 2024). Bounded Rationality Theory helps explain why data does not automatically produce perfect decisions. New Institutionalism explains why technology adoption may fail when institutional arrangements are weak. Street-Level Bureaucracy Theory explains why digital decisions can generate unintended consequences at the level of public service delivery. Therefore, the theoretical framework supports the argument that smart public administration must be evaluated not only through efficiency and innovation, but also through accountability, fairness, legitimacy, and human-centered governance (Guo, 2024).

The theories also clarify the research gap. Existing literature often emphasizes the technological benefits of smart governance, such as efficiency, real-time monitoring, and predictive capacity (RAHIMOV, 2023). However, fewer studies integrate decision-making theory, institutional theory, and frontline implementation theory in one analytical framework. This study addresses that gap by showing that data-driven governance is not merely a matter of technical capability; it is also shaped by bounded administrative judgment, institutional readiness, and the discretionary role of public officials. This integrated approach becomes the novelty of the research because it offers a balanced model for analyzing both opportunities and risks in smart public administration.

The theoretical framework is also connected to the research questions. The question of how smart public administration shapes data-driven decision-making can be answered through Simon's theory of administrative judgment under constraints. The question of what institutional and ethical risks emerge can be analyzed through New Institutionalism. The question of how governments can balance

innovation, accountability, and public trust can be examined through Lipsky's theory of frontline discretion and implementation. Thus, the three theories guide the study from problem identification to analytical interpretation.

The objectives and benefits of the research are strengthened by this theoretical foundation. Theoretically, the study contributes to the development of public administration theory in the digital era by integrating decision-making, institutional, and implementation perspectives. Academically, it provides a conceptual basis for future studies on smart governance, algorithmic administration, and data-driven public policy. Practically, it offers guidance for policymakers and public managers to design data systems that are not only efficient but also accountable, transparent, ethical, and sensitive to citizen needs (W. Li, 2023).

In conclusion, the literature review demonstrates that smart public administration requires a comprehensive theoretical approach. Simon, March and Olsen, and Lipsky provide three complementary perspectives for understanding the opportunities and risks of data-driven governance. Their theories explain that modern governance depends not only on advanced technology, but also on responsible decision-making, strong institutions, and humane public service implementation. The novelty of this study lies in combining these perspectives to analyze how data-driven decision-making can improve governance while also producing risks that must be carefully managed.

RESEARCH METHODS

This study employs a qualitative research method to examine the relationship between smart public administration and data-driven decision-making in modern governance (Pesch & Boehm, 2024). The qualitative approach is selected because the research does not seek to measure statistical relationships among variables, but rather to understand meanings, processes, perceptions, institutional practices, and governance risks associated with the use of data in public administration. The title of this study, "Smart Public Administration and Data-Driven Decision-Making: Opportunities and Risks for Modern Governance," requires an interpretive method capable of explaining how public institutions understand, adopt, and manage data-driven systems in decision-making. In this context, qualitative research is appropriate because smart public administration is not merely a technical phenomenon, but also an organizational, ethical, political, and administrative transformation (NARIVNYY, 2025).

The research design used in this study is a qualitative case study design (TSARYK, 2025). This design is chosen because the study focuses on a specific governance context in which public institutions use digital platforms, administrative data, and analytical tools to support public decision-making. A case study enables the researcher to explore complex social and institutional phenomena in depth, especially when the boundaries between technology, organization, and governance practice are closely interconnected. Through a case study, the research can analyze not only formal policies and digital systems, but also how public officials interpret data, how decisions are made, how risks are managed, and how institutional accountability is maintained. This design is therefore suitable for explaining both opportunities and risks in smart public administration.

The use of a qualitative case study is also justified by the nature of the research problem. Data-driven decision-making in the public sector involves multiple actors, including policymakers, public managers, technical officers, frontline administrators, and citizens. Each actor may have different experiences and interpretations regarding the benefits and risks of smart governance. A quantitative survey may capture general patterns, but it may not fully explain why certain data systems are trusted, resisted, misused, or underutilized. The qualitative case study allows the researcher to examine deeper issues such as institutional readiness, data literacy, bureaucratic culture, ethical dilemmas, algorithmic transparency, privacy concerns, and the role of human judgment in digital administration (Liarte et al., 2024). These aspects are essential for understanding modern governance beyond numerical indicators.

The location of this research is proposed to be conducted in the Digital Government and Smart Governance Unit of a metropolitan local government in Indonesia, specifically within a city administration that has implemented digital public service platforms, integrated data dashboards, electronic planning and budgeting systems, and smart city programs. For methodological clarity, the selected research location may be referred to using a pseudonym, namely Metro City Government. The

use of a pseudonym is intended to maintain institutional confidentiality while still allowing the study to describe the governance context in sufficient analytical detail (Hiremath et al., 2025). The location is selected because metropolitan governments are often at the forefront of digital transformation, where the pressure to provide fast, transparent, efficient, and citizen-oriented services is particularly strong.

The selection of Metro City Government as the research location is based on several considerations. First, the city has adopted various digital instruments for public administration, including online service delivery, integrated databases, public complaint platforms, and performance monitoring systems. Second, the local government operates in a complex urban environment characterized by high population density, diverse public needs, and increasing demand for evidence-based policy. Third, smart governance practices in metropolitan settings provide a relevant case for studying how data-driven decision-making creates both administrative opportunities and governance risks (Beck & Ranchordás, 2025). Fourth, the case is suitable for exploring the interaction between policy leadership, technical infrastructure, institutional culture, and citizen expectations. These reasons make the selected location appropriate for addressing the research objectives.

Since this is a qualitative study, the research does not use respondents and samples in the statistical sense. Instead, it uses informants who are selected based on their knowledge, experience, and involvement in smart public administration and data-driven decision-making. The informants are chosen through purposive sampling, which means that participants are intentionally selected because they possess relevant information related to the research problem (Balaji, 2025). Purposive sampling is appropriate because this study requires deep and specific knowledge from individuals who are directly involved in digital governance, public policy, public service delivery, data management, and institutional oversight. The purpose is not to represent a population statistically, but to obtain rich and meaningful data from knowledgeable actors.

The study involves approximately twelve informants. This number is considered adequate for qualitative research because the emphasis is placed on depth of information, not numerical representation (Lakoma, 2023). The number may be adjusted if data saturation has not yet been achieved. Data saturation refers to the point at which additional interviews no longer produce substantially new information. The informants are divided into several categories to capture different perspectives on smart public administration. These categories include senior policymakers, middle-level public managers, technical data officers, frontline public service officers, and external governance observers. This composition allows the research to examine smart governance from strategic, managerial, technical, operational, and accountability perspectives.

The first informant is Dr. Adrian Pratama, a pseudonym for the Head of the Digital Government Agency. This informant is selected because he is responsible for directing digital transformation policies, coordinating smart city initiatives, and ensuring that data systems support local governance priorities. His perspective is important for understanding the strategic vision, institutional objectives, and leadership challenges behind smart public administration. The second informant is Ms. Helena Sari, a pseudonym for the Head of the Public Policy Planning Division. She is selected because planning divisions often use data to formulate development priorities, allocate budgets, and monitor program performance. Her role provides insight into how data-driven decision-making affects public policy formulation.

The third informant is Mr. Dimas Wibowo, a pseudonym for the Coordinator of Data Analytics and Performance Monitoring. He is selected because he works directly with dashboards, administrative datasets, and analytical reports used by government leaders. His information is valuable for understanding data quality, data integration, indicator selection, and analytical interpretation. The fourth informant is Ms. Nadia Rahma, a pseudonym for a Senior Information Systems Officer. She is selected because technical officers understand how digital systems are developed, maintained, secured, and connected across government departments. Her perspective is important for identifying technical risks such as system fragmentation, cybersecurity threats, interoperability problems, and data governance weaknesses (Sofyan, 2023).

The fifth informant is Mr. Bima Santoso, a pseudonym for a Public Service Innovation Manager. He is selected because public service innovation units are often responsible for designing citizen-oriented digital services. His experience helps explain whether smart administration improves service responsiveness, accessibility, and user satisfaction. The sixth informant is Ms. Rina Mahardika, a pseudonym for a Frontline Public Service Supervisor. She is selected because frontline supervisors observe how digital systems influence daily administrative work and interactions with citizens. Her perspective is essential for examining whether data-driven tools support or restrict professional discretion in public service delivery (Ongaro, 2025).

The seventh informant is Mr. Faisal Hakim, a pseudonym for a Citizen Complaint Platform Administrator. He is selected because complaint platforms generate large amounts of citizen data and are often used to identify public service problems. His information can explain how public complaints are categorized, analyzed, escalated, and transformed into administrative decisions. The eighth informant is Ms. Clara Dewi, a pseudonym for an Internal Audit and Accountability Officer. She is selected because accountability officers are responsible for monitoring compliance, detecting irregularities, and ensuring responsible use of public resources. Her perspective helps examine whether data-driven systems strengthen or weaken accountability mechanisms (Nurjannah et al., 2025).

The ninth informant is Mr. Yusuf Ramadhan, a pseudonym for a Legal and Data Protection Officer. He is selected because smart public administration raises legal and ethical issues, especially regarding privacy, consent, data sharing, and public trust (Longo & Dirsehan, 2024). His information is important for understanding the regulatory framework and the safeguards used to prevent misuse of citizen data. The tenth informant is Ms. Maya Lestari, a pseudonym for a Civil Society Representative on Digital Rights. She is selected to provide an external perspective on transparency, participation, surveillance risks, and citizen protection. The eleventh informant is Dr. Samuel Kurniawan, a pseudonym for a Public Administration Academic Expert. He is selected because he can provide theoretical and analytical interpretation of smart governance practices. The twelfth informant is Ms. Intan Permata, a pseudonym for a Community Service User Representative. She is selected to capture the citizen perspective regarding digital public services, accessibility, trust, and perceived fairness.

The primary data collection technique used in this study is semi-structured interviews (Ezekiel, 2025). Semi-structured interviews are appropriate because they allow the researcher to use guiding questions while still giving informants the flexibility to explain their experiences in depth. This technique is suitable for exploring complex topics such as data use, institutional readiness, decision-making routines, ethical risks, and public accountability. The interview guide includes questions related to the role of data in decision-making, perceived benefits of smart administration, challenges in data integration, concerns about privacy and bias, the role of human judgment, and mechanisms for ensuring transparency and accountability. Each interview is conducted in a professional and ethical manner, with informed consent from participants.

In addition to interviews, this study uses document analysis as a supporting data collection technique (Mohan & Kumar, 2024). The documents analyzed may include digital government policy documents, smart city master plans, standard operating procedures, public service reports, performance dashboard summaries, data governance regulations, annual reports, and public complaint statistics. Document analysis is used to compare formal institutional claims with the experiences described by informants. This technique strengthens the validity of the research because it allows the researcher to examine whether smart governance practices are reflected in official policies and administrative procedures. It also helps identify the institutional framework that shapes data-driven decision-making.

The study may also use limited non-participant observation where access is permitted (Tereshchenko et al., 2024). Observation can be conducted in public service units, digital command centers, or data monitoring meetings. The purpose is not to interfere with administrative activities, but to understand how data systems are used in practice. Observation can provide insight into how dashboards are interpreted, how officials discuss performance indicators, and how digital information influences administrative action. This technique supports the qualitative case study design by capturing practical and behavioral dimensions that may not be fully expressed in interviews.

The data analysis technique used in this study is thematic analysis (Eijk, 2024). Thematic analysis is selected because it enables the researcher to identify, organize, and interpret patterns of meaning across interview transcripts, documents, and observation notes. The analysis begins with data familiarization, where the researcher reads the collected material repeatedly to understand the overall content. The next stage is initial coding, where important statements are labeled according to emerging ideas. These codes are then grouped into broader themes such as data-driven policy capacity, institutional readiness, administrative efficiency, algorithmic risk, privacy protection, frontline discretion, accountability, and citizen trust. The themes are interpreted in relation to the research questions and theoretical framework.

The theoretical interpretation of the findings is guided by three theories: bounded rationality, new institutionalism, and street-level bureaucracy. Bounded rationality is used to analyze the limits of data-driven decision-making, including uncertainty, incomplete information, and the continuing need for human judgment (McDonald-Kerr & Boyce, 2023). New institutionalism is used to examine how rules, routines, norms, and organizational structures influence the adoption and effectiveness of smart public administration (A. A. Telendii, 2025). Street-level bureaucracy is used to understand how digital systems affect frontline discretion and citizen interaction (IGNATENKO, 2024). By connecting empirical themes to these theories, the study can produce a deeper explanation of opportunities and risks in modern governance.

To ensure research credibility, this study applies triangulation (Padillah, 2024). Triangulation is conducted by comparing data from interviews, documents, and observations. It is also conducted by comparing perspectives from different types of informants, such as policymakers, technical officers, frontline workers, civil society representatives, and citizens. This process helps reduce the risk of relying too heavily on a single source of information. The study also applies member checking where necessary by confirming key interpretations with selected informants (Atuhaire & Kimani, 2025). In addition, the researcher maintains an audit trail by documenting research procedures, coding decisions, and analytical reflections. These strategies are used to strengthen the trustworthiness of the study.

Ethical considerations are central to this research because the topic involves public institutions, digital systems, and data governance (Hadda, 2025). All informants are given pseudonyms to protect their identity. Institutional names may also be anonymized when necessary. The researcher ensures that participation is voluntary and that informants understand the purpose of the study. Sensitive information related to internal systems, personal data, or security vulnerabilities is treated carefully and is not disclosed in a way that could harm individuals or institutions. The ethical principle of this study is to balance academic transparency with confidentiality, responsibility, and respect for participants.

The technique for drawing conclusions in this study follows an inductive-interpretive approach (Liga, 2024). This means that conclusions are developed from patterns found in the empirical data, then interpreted through the theoretical framework. The researcher does not begin with a rigid hypothesis to be tested statistically. Instead, the researcher analyzes how informants explain their experiences, how institutional documents frame smart governance, and how digital systems appear to influence decision-making practices. From these patterns, the researcher constructs a conclusion about the opportunities and risks of smart public administration.

The conclusion-drawing process consists of several stages. First, the researcher identifies dominant themes from the data. Second, the researcher compares these themes with the research problem, research questions, and theoretical assumptions. Third, the researcher examines whether the findings support, extend, or challenge existing literature. Fourth, the researcher formulates analytical conclusions that explain how smart public administration can strengthen decision-making while also creating new risks. The final conclusion is not presented as a universal generalization, but as an analytical interpretation that may be transferable to similar governance contexts (Wirtz & Müller, 2025).

Through this methodological design, the study is expected to produce a rigorous and balanced understanding of smart public administration. The qualitative case study approach allows the research to explore the complexity of data-driven decision-making in public institutions. The purposive selection

of informants ensures that the data comes from actors with relevant knowledge and experience. The use of interviews, document analysis, and observation strengthens the credibility of the findings. Thematic analysis provides a systematic way to interpret the data, while the inductive-interpretive conclusion technique enables the study to generate meaningful insights. Overall, this research method is appropriate for examining the opportunities and risks of data-driven governance and for contributing to theoretical, academic, and practical debates in modern public administration.

RESULTS AND DISCUSSION

The findings of this qualitative case study indicate that smart public administration and data-driven decision-making have transformed the way modern governance is practiced in the selected metropolitan government context (Rivenbark et al., 2023). The research shows that digital platforms, integrated databases, service dashboards, complaint management systems, and performance monitoring tools have created new opportunities for public institutions to make decisions more accurately, quickly, and transparently (HORBULOV, 2023). At the same time, the findings also reveal that the use of data in public administration does not automatically produce better governance. Data-driven decision-making remains influenced by institutional capacity, organizational culture, political priorities, data quality, legal frameworks, ethical safeguards, and the discretion of public officials (H. et al., 2025). Therefore, the implementation of smart public administration should be understood as a complex governance process rather than a purely technological reform.

The main research problem concerns the tension between the opportunities and risks of data-driven governance. The study found that smart public administration has improved administrative visibility by allowing public managers to observe service performance, citizen complaints, budget realization, and program outcomes through digital dashboards. Several informants explained that data systems help reduce delays in identifying public service problems. For example, citizen complaints can be classified by sector, location, urgency, and responsible agency. This enables the government to prioritize responses and allocate resources more effectively. However, the same system also creates risks when data is incomplete, poorly verified, or interpreted without sufficient administrative judgment. This finding supports the relevance of Herbert A. Simon's Bounded Rationality Theory, because public decision-makers still face limited information, limited time, and limited analytical capacity, even when digital technology is available (Wang, 2024).

The implementation of smart public administration also confirms the importance of New Institutionalism Theory developed by James G. March and Johan P. Olsen. The findings show that the success of data-driven decision-making depends heavily on institutional rules, routines, leadership support, inter-agency coordination, and legitimacy (Orlov & Khmelnytskyi, 2024). In the case examined, some departments actively use data dashboards to support planning and evaluation, while others use them only for formal reporting. This variation indicates that technology adoption is shaped by institutional behavior. Digital systems may exist, but their impact depends on whether they are embedded in organizational routines and decision-making procedures. Without institutional commitment, smart governance can become symbolic rather than substantive.

The study also confirms the relevance of Michael Lipsky's Street-Level Bureaucracy Theory. Frontline officers reported that digital systems help them access citizen records, track complaint status, and respond to service requests more efficiently. However, they also noted that rigid digital classifications sometimes fail to capture complex human situations. For example, a citizen's eligibility for a social assistance program may be assessed through administrative data, but frontline officers may encounter circumstances that are not visible in the system. This finding shows that smart administration can support frontline work, but it may also constrain professional discretion (Rodriguez, 2024). Therefore, human judgment remains essential in public service delivery.

Table

Table 1 Summary of Qualitative Research Findings on Smart Public Administration and Data-Driven Decision-Making

Research Finding	Empirical Evidence from Informants	Related Theory	Interpretation	Implementation Implication
Data dashboards improve administrative visibility	Public managers can monitor complaints, service performance, and program targets in real time	Bounded Rationality	Data reduces uncertainty but does not eliminate interpretive limits	Government should combine dashboards with analytical review meetings
Institutional readiness determines technology use	Some agencies use data actively, while others use it only for reporting	New Institutionalism	Digital reform depends on rules, routines, and organizational culture	Smart governance requires institutional reform, not only software adoption
Frontline discretion remains important	Officers sometimes adjust decisions based on citizen conditions not captured by data	Street-Level Bureaucracy	Digital systems may support but also restrict service judgment	Data systems should allow human review and contextual exceptions
Data quality affects policy accuracy	Incomplete and fragmented data can produce misleading policy conclusions	Bounded Rationality and New Institutionalism	Decision quality depends on both information and institutional coordination	Data governance standards and interoperability are needed
Smart administration creates accountability opportunities and ethical risks	Digital traces improve monitoring, but privacy and surveillance concerns remain	New Institutionalism and Street-Level Bureaucracy	Accountability must be balanced with citizen rights	Legal safeguards, transparency, and audit mechanisms are necessary

The research gap identified in this study is the limited integration of decision-making theory, institutional theory, and implementation theory in explaining smart public administration. Previous studies on digital government often emphasize efficiency, innovation, and service modernization (Singh et al., 2025). However, the findings of this study show that those benefits cannot be fully understood without examining the decision-making limits of public officials, the institutional arrangements of government agencies, and the role of frontline discretion. The gap is therefore not only empirical but also conceptual. Smart public administration should not be studied merely as a technological instrument, but as a governance model that affects how decisions are produced, justified, implemented, and experienced by citizens.

The findings also show that data-driven decision-making creates an opportunity to improve policy responsiveness. Through integrated data, public managers can identify patterns of service complaints, infrastructure problems, social vulnerability, and administrative delays. This supports faster intervention and more targeted policy action. However, the study found that responsiveness is uneven across agencies. Some agencies have strong data capacity, while others still depend on manual reporting and fragmented databases. This confirms the institutional gap in smart governance implementation. According to New Institutionalism, formal technology adoption does not guarantee behavioral change. Institutions must develop shared rules, incentives, coordination mechanisms, and accountability systems to ensure that data is actually used in decision-making (Godett & Nobile, 2024).

The research question asks how smart public administration shapes data-driven decision-making and what opportunities and risks emerge from this transformation. The findings answer this question by showing that smart public administration shapes decision-making in three major ways. First, it changes the information base of government decisions by providing real-time and large-scale administrative data. Second, it changes the process of decision-making by introducing dashboards, indicators, and digital reporting systems into bureaucratic routines. Third, it changes the accountability environment by creating digital records that can be monitored, audited, and evaluated. These changes create opportunities for efficiency, transparency, policy learning, and service innovation (Valle-Cruz & García-Contreras, 2023). However, they also generate risks of data dependency, algorithmic simplification, privacy violation, unequal digital access, and reduced administrative discretion (Ngazis, 2024).

From the perspective of Bounded Rationality Theory, the findings suggest that data-driven decision-making should be treated as a decision-support mechanism rather than a decision-replacement mechanism. Public officials can use data to reduce uncertainty, identify trends, and compare policy options. Nevertheless, the data itself must be interpreted within a broader administrative and social context. Poorly designed indicators may lead to misleading conclusions. Overreliance on quantitative dashboards may ignore qualitative realities. Predictive tools may reproduce past inequalities if the data reflects historical bias (Mendhe & Mahant, 2025). Therefore, the implementation of smart public administration requires critical analytical capacity among public officials.

From the perspective of New Institutionalism, the findings indicate that smart public administration requires institutionalization. Digital systems must be connected to planning, budgeting, monitoring, evaluation, public accountability, and legal compliance. When data systems are not integrated into formal routines, they may remain peripheral tools. The research found that some officials use data only when required by superiors or external reporting mechanisms. This shows that institutional pressure influences digital behavior. Smart governance becomes meaningful only when data use becomes a legitimate and routine part of administrative practice (Kartashov et al., 2025).

From the perspective of Street-Level Bureaucracy Theory, the findings reveal that the implementation of smart governance is ultimately tested at the frontline level. Citizens experience digital government not through policy documents, but through service encounters, complaint responses, eligibility assessments, and administrative decisions. Frontline officers play a crucial role in translating data-driven systems into actual public service outcomes. If digital systems are too rigid, frontline officers may lose the ability to respond to unique citizen circumstances. If systems are too flexible without accountability, discretion may become inconsistent. Therefore, smart administration needs a balanced design that combines data-based standardization with responsible human discretion (Goncharuk, 2025).

The objective of this research is to explain and analyze how smart public administration strengthens data-driven decision-making while also generating governance risks. The findings show that this objective has been achieved by identifying the dual nature of smart administration. On the opportunity side, smart administration improves information accuracy, accelerates coordination, strengthens monitoring, supports evidence-based planning, and increases transparency. On the risk side, it introduces problems of data fragmentation, privacy vulnerability, algorithmic bias, administrative dependency on technology, and uneven institutional capacity (Forberger, 2025). These findings demonstrate that smart public administration should be evaluated through both performance and governance values.

The theoretical benefit of this research lies in its contribution to a more integrated understanding of digital-era public administration. By connecting Simon, March and Olsen, and Lipsky, the study develops a conceptual framework that explains smart governance from three levels: decision-making, institutionalization, and implementation. This framework expands public administration theory by showing that digital transformation cannot be understood only through technological modernization. It must also be analyzed through the limits of rational decision-making, the power of institutional rules, and the role of frontline discretion. Theoretically, this study strengthens the argument that data-driven governance is both a rationalizing project and an institutional-ethical challenge.

The academic benefit of this research is its contribution to future scholarship on smart governance, digital bureaucracy, public sector data analytics, and modern public administration. The findings provide a basis for comparative studies across cities, agencies, countries, or policy sectors. Future academic research can use the framework of this study to examine whether similar patterns occur in health administration, education governance, social protection, urban management, or disaster response. The study also provides an academic foundation for developing indicators of responsible data-driven governance, including data quality, transparency, accountability, citizen trust, and institutional readiness.

The practical benefit of this research is its relevance for policymakers, public managers, digital government practitioners, and frontline officers. The findings suggest that governments should not treat smart administration as merely a procurement or infrastructure project. Instead, smart governance requires investment in data literacy, ethical standards, regulatory frameworks, cybersecurity, inter-agency coordination, and citizen participation (Spadafora et al., 2024). Public managers should ensure that digital dashboards are not only displayed but also used for policy learning and administrative improvement. Technical officers should design systems that are interoperable, secure, explainable, and inclusive. Frontline officers should be trained to use data responsibly while maintaining sensitivity to citizen needs.

The discussion of the main research problem can be connected with previous research in the field of public administration and digital governance. Earlier studies generally show that digital government can improve efficiency, transparency, and service accessibility (Sibuea, 2025). The findings of this study support that view, especially in relation to faster complaint handling, better monitoring, and more informed planning. However, this study extends previous findings by showing that data-driven decision-making also creates new risks when institutional safeguards are weak. This means that the central problem is not whether governments should use data, but how governments can use data responsibly, fairly, and accountably.

The discussion of the research gap also confirms the need for a broader analytical perspective. Previous research often separates technological capacity from institutional and ethical questions. This study shows that such separation is insufficient. Data systems are embedded in institutions, and institutions are implemented through human actors. Therefore, the gap in the literature is addressed by connecting digital tools with administrative judgment and frontline practice. This integrated perspective represents the novelty of the study. It shows that smart public administration should be understood as a governance ecosystem involving technology, institutions, people, values, and citizens.

The discussion of the research question further demonstrates that smart public administration reshapes the logic of modern governance. Decision-making becomes more data-oriented, performance becomes more visible, and public service becomes more traceable. However, governance also becomes more dependent on the quality of data infrastructures and the fairness of digital classifications. This finding is important because it challenges the assumption that digital transformation is automatically progressive. Smart governance can improve public administration only when it is guided by democratic accountability, legal safeguards, institutional learning, and ethical responsibility (Pylypets, 2024).

The discussion of the research objective shows that the study has clarified both the opportunities and risks of smart public administration. The research does not reject digital transformation. Instead, it argues that data-driven decision-making should be governed carefully. Smart administration can support modern governance when data is accurate, accessible, secure, and interpreted by competent officials. Conversely, it can undermine governance when data is fragmented, biased, opaque, or used without public accountability. This balanced interpretation is important for public administration scholarship because it avoids both technological optimism and technological pessimism.

The theoretical, practical, and academic benefits of this study are also reinforced by the findings. Theoretically, the study contributes by integrating three major theories into a single analytical framework. Practically, it provides lessons for government agencies that are implementing smart governance systems. Academically, it offers a foundation for further research on the relationship between digital administration and public value. These benefits are interconnected because public

administration theory should inform practice, and practical challenges should generate new academic questions.

Overall, the results and discussion demonstrate that smart public administration is a strategic pathway for improving modern governance, but it must be managed with caution. Data-driven decision-making provides important opportunities for evidence-based policy, administrative efficiency, and public accountability. However, these opportunities are accompanied by risks related to bounded rationality, institutional weakness, and frontline implementation dilemmas. The study concludes that the future of smart governance depends not only on technological sophistication, but also on institutional integrity, ethical data governance, and the ability of public officials to combine digital intelligence with human judgment. This is the central contribution and novelty of the research.

CONCLUSION

This study concludes that smart public administration and data-driven decision-making have become important foundations for modern governance, particularly in improving the capacity of public institutions to make decisions that are faster, more accurate, more transparent, and more responsive to public needs. Based on the results and discussion, the implementation of digital platforms, integrated databases, performance dashboards, complaint management systems, and data analytics has created new opportunities for government agencies to strengthen evidence-based policy, improve service coordination, and monitor administrative performance. In relation to the title, “Smart Public Administration and Data-Driven Decision-Making: Opportunities and Risks for Modern Governance,” the findings confirm that smart administration is not merely a technological innovation, but a broader transformation in the way public organizations collect information, interpret problems, formulate policies, and deliver public services.

The results show that data-driven decision-making helps public managers reduce uncertainty in administrative processes. Through real-time data and digital dashboards, government institutions can identify service problems, classify citizen complaints, evaluate policy performance, and prioritize interventions more effectively. This supports the argument that smart public administration can enhance policy intelligence and administrative efficiency. However, the study also concludes that data does not automatically produce better decisions. Data must be accurate, relevant, integrated, and interpreted by competent public officials. Poor data quality, fragmented information systems, and weak analytical capacity may lead to misleading decisions. Therefore, smart governance should be understood as a decision-support system rather than a substitute for administrative judgment.

The conclusion of this study is closely related to the three theories used in the research. From the perspective of Herbert A. Simon’s Bounded Rationality Theory, the findings indicate that public officials still face limitations in information processing, interpretation, and decision-making, even when supported by advanced digital systems. Smart administration can reduce uncertainty, but it cannot eliminate bounded rationality. From the perspective of James G. March and Johan P. Olsen’s New Institutionalism Theory, the research shows that the success of data-driven governance depends on institutional rules, organizational routines, leadership commitment, inter-agency coordination, and public legitimacy. Digital systems become meaningful only when they are embedded in institutional practices. From the perspective of Michael Lipsky’s Street-Level Bureaucracy Theory, the study concludes that frontline public officials remain important actors in the implementation of smart governance because they translate data-based policies into direct public service experiences.

The findings also show that the main risk of smart public administration lies in the possibility of excessive dependence on technology without adequate ethical and institutional safeguards. Data-driven systems may increase transparency and accountability, but they may also create risks related to privacy, surveillance, algorithmic bias, digital exclusion, and reduced professional discretion. The discussion demonstrates that these risks are particularly important in public service delivery, where citizens’ needs are often complex and cannot always be captured by standardized digital categories. For this reason, the study concludes that modern governance requires a balance between technological rationality and human-centered public administration.

This research further concludes that the main gap in previous studies is the tendency to discuss smart governance primarily from the perspective of efficiency and technological modernization. The results of this study demonstrate that such a perspective is insufficient. Smart public administration must also be analyzed through decision-making limitations, institutional readiness, ethical responsibility, and frontline implementation. The novelty of this study lies in its integrated interpretation of smart governance as a combination of data capacity, institutional governance, and human discretion. This approach provides a more comprehensive understanding of both the opportunities and risks of data-driven decision-making.

In practical terms, the study concludes that governments should develop smart public administration through responsible data governance. Public institutions need clear data standards, strong privacy protection, transparent algorithms, interoperable systems, and continuous capacity building for civil servants. Smart governance should not be limited to the procurement of digital infrastructure; it must include institutional reform, ethical regulation, citizen participation, and accountability mechanisms. Public managers should ensure that data is used not only for reporting purposes but also for learning, policy improvement, and public value creation.

Overall, this study concludes that smart public administration can significantly strengthen modern governance when implemented responsibly. Its contribution lies in showing that data-driven decision-making offers substantial opportunities for efficiency, responsiveness, and accountability, but also produces risks that must be carefully managed. The future of modern governance depends not only on the sophistication of technology, but also on the ability of public institutions to combine data intelligence, institutional integrity, ethical safeguards, and human judgment.

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