

Integration of corporate data into state monitoring systems for strategic decisions

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Abstract. The article explores the integration of corporate data into government monitoring systems aimed at enhancing strategic decision-making in the public sector. The purpose of the study is to substantiate the theoretical and methodological foundations and practical approaches to incorporating corporate data into state monitoring systems in order to increase the efficiency of strategic decision-making in public administration. The research employed general scientific methods of cognition: analysis and synthesis; induction and deduction; system and structural-functional approaches; comparative analysis; as well as methods of generalization and forecasting. The findings show that effective strategic decision-making in the public sector is impossible without a comprehensive data management system combining analytical, ethical, and regulatory components. It is proven that the process of integrating corporate data into government monitoring systems has both technological and institutional dimensions. The study concludes that overcoming the identified barriers is possible through the implementation of modern digital technologies such as artificial intelligence, machine learning, big data analytics, and federated learning. It is found that these tools facilitate the transition from reactive to proactive public governance, improve forecasting accuracy, and reduce cognitive bias risks in policymaking. The study also justifies that applying the principles of responsible data management ensures a balance between technological efficiency, legal legitimacy, and public trust, maintaining ethical equilibrium between public and corporate interests. The experience of the United States, particularly the example of the Health Equity Consortium involving Microsoft and Amazon, demonstrates the effectiveness of bidirectional data exchange within public-private partnerships, which enhances strategic management efficiency, optimizes resource allocation, and produces social benefits. The practical significance of the study lies in the potential to apply its results for creating effective mechanisms of interaction between public and private information systems, thereby promoting transparency and evidence-based strategic governance.

Keywords: data integration, public administration, analytics, digital technologies, public-private partnership.

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Introduction

In the current context of digital transformation, data management has become a key factor in ensuring the efficiency of public administration and the strategic development of society. The state, as the central actor in public policy, increasingly depends on its ability to process, integrate, and interpret large volumes of information for well-founded decision-making. However, traditional government monitoring models based on isolated data sources prove insufficient for addressing complex cross-sectoral and socio-economic challenges. While the private sector accumulates accurate, structured, and relevant data about markets, consumers, and technologies, government systems often face limited access to such resources, which reduces forecasting accuracy and slows the development of evidence-based policy.

The integration of corporate data into government monitoring systems opens new opportunities for forming effective strategic decisions based on comprehensive and reliable information. This process involves not only the technological interconnection of diverse data sources but also the creation of legal, ethical, and organizational mechanisms ensuring security, transparency, and trust between the state and business. With the growing role of artificial intelligence, machine learning, and big data analytics, such integration becomes the foundation of a new governance paradigm – flexible, analytically oriented, and accountable to society.

Literature Review

The issue of integrating corporate data into government monitoring systems for strategic decision-making has been extensively explored in foreign academic literature, which is explained by the active development of digital ecosystems, public-private partnerships, and regulatory approaches to big data management in Europe and North America. Among the scholars who have made a significant contribution to this field are R. Arnaout, P. Carter, and R. Soni [1], who, through the example of the Health Equity Consortium initiative, demonstrated how effective public-private collaboration based on data technologies supports decision-making in crisis situations. The ethical aspect of using corporate data in the public domain has been elaborated by A. Ballantyne and C. Stewart [2], who emphasize the need for frameworks that protect citizens' rights and ensure transparency in information exchange between governmental and commercial entities.

C. B. Casady and co-authors [3] consider the institutionalization of public-private partnerships in the United States as the basis for forming sustainable mechanisms of data integration into public governance. In the technical dimension, Y. Choi, H. Lee, and Z. Irani [4] examine data-driven decision support by proposing a fuzzy cognitive map model for prioritizing IT procurement in the public sector. A significant contribution to shaping the ethical and regulatory foundations of artificial intelligence, which directly relates to trust in integrated data systems, was made by a group of researchers led by N. Díaz-Rodríguez [5].

At the level of decision-making methodology in public monitoring and environmental policy, V. Hemming and colleagues [6] adapted approaches from decision science to work with complex data. J. H. Holmes [7] highlights the importance of ensuring confidentiality and public participation in managing medical data. Meanwhile, S. L. Jarvenpaa and A. Essén [8] analyze data sustainability and the challenges of intergenerational management of information infrastructures. Q. Li and co-authors [9] study the technical aspects of federated learning as a promising approach for the secure integration of corporate data into public systems. The research by S. Nadal and colleagues [10] focuses on automating data management, while A. H. Nelson and S. Zanti [11] propose conceptual questions that should guide the integration and data exchange processes across sectors. Finally, I. Pencheva, M. Esteve, and S. J. Mikhaylov [12] analyze how big data and artificial intelligence transform public administration, creating new challenges for both researchers and practitioners.

Despite the substantial number of foreign studies on the integration of corporate data into government monitoring systems, there remains a lack of systematic work that combines technical, ethical, and managerial dimensions. Therefore, within this research, the available information has been analyzed, grouped, and systematized using various scientific methods in order to present the issue comprehensively in the context of strategic decision-making.

Purpose of the Study

The study aims to substantiate the theoretical and methodological foundations and practical approaches to integrating corporate data into government monitoring systems in order to enhance the effectiveness of strategic decision-making in the public sector. The following tasks will be carried out in order to achieve this aim: identify the features of strategic decision-making in public administration and the challenges of interaction between the public and private sectors; analyze modern digital, legal, and ethical mechanisms that help overcome the specified barriers; summarize U.S. practical experience in integrating corporate data into state analytical systems as an example of effective public – private collaboration.

Research Results

The public sector functions as a key socio-economic institution responsible for providing public services and ensuring citizens' security in the long term; its capacity for strategic governance is determined not only by political and institutional architecture but also by the quality of data that drives the entire policy-making cycle. Research highlights that in the 21st century, the driving force of this process is information and data themselves: they define objectives, shape decision contexts, and provide the empirical basis for evaluating policy outcomes [10].

Data management in this context is not merely a technical function but an institutional process that ensures the validity, transparency, and accountability of strategic decisions. As A. Nelson and S. Zanti [11] note, data integration in the public sector must take place within ethical and legal frameworks guaranteeing the safe use of personal, corporate, and business information, thereby reinforcing public trust.

At every stage of the data-based policy cycle, a model consisting of four components – legality, ethics, rationality, and responsibility – should be applied to maintain a balance between public benefit and the risks of misuse in interagency integration processes. At the same time, the strategic rationality of governance requires considering the long-term perspective of data use. The concept of data sustainability emphasizes the need to preserve the viability and multi-purpose utility of data across technological and human generations, relying on multi-layered infrastructures, sustainable metadata management, and intergenerational responsibility practices [8].

Taken together, these elements define the cyclical and multi-level nature of the strategic decision-making process – from problem identification to monitoring and feedback – where short-term analytical efficiency [10] aligns with ethical and legal legitimacy [11] and the long-term sustainability of data and infrastructures [8] (Table 1).

Table 1. Stages of strategic decision-making in public administration

Stage	Description
Problem identification	Detection of strategic challenges and societal risks requiring managerial intervention.
Formulation of policy goals	Definition of long-term objectives, expected outcomes, and key performance indicators of policy effectiveness.
Data collection and integration	Systematization, harmonization, and combination of data from various sources—governmental, corporate, and public.

Analytical evaluation of alternatives	Comparison of possible solutions based on empirical data, forecasting models, and socio-economic implications.
Implementation of decisions	Execution of policy initiatives, organizational coordination, and allocation of necessary resources.
Monitoring and feedback	Evaluation of outcomes, identification of deviations, and adjustment of strategies based on analytical findings.

Note: systematized based on Nadal et al. [10]

Decision-making in the public sector within the context of monitoring systems for strategic purposes is characterized by a high level of complexity, numerous constraints, and structural challenges, which are systematized in Table 2.

Table 2. Key challenges of interaction between corporate and government data

No.	Challenge	Brief description
1	Limited access to corporate data	Government systems lack full access to relevant business information.
2	Lack of data source integration	Public and private databases are not harmonized with each other.
3	Isolated “data silos”	Data are stored in separate environments without exchange or interoperability.
4	Regulatory barriers	Legal norms restrict shared use of data.
5	Privacy requirements	Protection of personal data constrains information integration.
6	Technical incompatibility of systems	Absence of unified standards for platform interoperability.
7	Incomplete and outdated information	Government analytical systems operate on obsolete or insufficient data.
8	Insufficient ethical and legal framework for federated learning	Lack of clear rules for model exchange without data transfer.
9	Organizational inertia	Slow response of public institutions to analytical results.
10	Cognitive biases	Human judgment errors distort analytical interpretation and decision outcomes.
11	Low trust in algorithms	Transparency and explainability of analytical systems are required.
12	Absence of a responsible data governance policy	No unified model of cooperation between the state and business.

Note: systematized based on sources [4, 6, 9]

One of the main problems is that government monitoring systems mostly lack access to corporate data containing valuable information for forecasting, risk assessment, and policy planning. The absence of integration between public and private data sources creates information gaps that reduce the effectiveness of analytical support for decision-making. As Y. Choi et al. [4] note, effective strategic management under uncertainty requires the development of dynamic models capable of reflecting causal relationships among social, political, and economic factors. Such models, like Fuzzy Cognitive Maps, allow for simulating the consequences of management decisions and forecasting long-term effects; however, their effectiveness is limited when access to relevant corporate data is blocked or fragmented.

An additional complication lies in the existence of so-called “data silos” –isolated information environments that exist in both public and corporate sectors [9]. Due to regulatory constraints, privacy requirements, and the absence of technical mechanisms for data sharing, government analytical systems often operate with incomplete or outdated information. Meanwhile, the corporate sector possesses highly accurate data on markets, consumer behavior, technological innovations, and supply chains that could significantly enhance the quality of strategic state analysis. Existing efforts to build federated learning systems that enable model sharing without direct data exchange demonstrate potential for overcoming intersectoral barriers but still require coherent legal and ethical frameworks for cooperation, which remain limited [9].

Within the decision-making tradition [6], it is emphasized that the effectiveness of public administration depends on information completeness, clear problem definition, and the ability to coordinate actions among various stakeholders. When decisions are made under conditions of information fragmentation, the risks of cognitive bias, misjudgment of alternatives, and resource misallocation increase. Government monitoring systems often function within complex hierarchical structures that slow access to analytical results and reduce flexibility in response. Combined with limited access to corporate data, this creates a dual barrier – organizational and informational – that hinders evidence-based strategic decision-making.

To overcome barriers in interaction between public and private sectors, the state must first revise its approaches to data governance and the legal framework within which such interaction occurs. This involves not only legislative updates but also the establishment of standards, interoperability protocols, control mechanisms, and ethical principles for data use. These elements form the foundation of trust among information exchange participants and ensure the legitimacy of integration processes. The existence of agreed-upon rules opens the way for joint analytical projects in which the government can utilize corporate data without violating confidentiality, while businesses can participate in shaping evidence-based public policy.

Once regulatory and ethical frameworks are established, the effective application of modern digital technologies becomes possible. These technologies serve not as an end but as a means to achieve greater transparency, analytical precision, and adaptability in public administration. Such tools include artificial intelligence (AI), machine learning (ML), and big data analytics, which enable large-scale data processing, scenario forecasting, and the reduction of managerial errors. The use of these technologies in government monitoring systems allows a transition from a reactive decision-making model to a proactive one – focused on risk prevention and evidence-based policymaking [12].

The issue of informational isolation manifested through “data silos” can be addressed by creating integrated data ecosystems that combine public, corporate, and civic data sources within a shared analytical environment [12]. This creates an institutional framework in which public authorities can use corporate data without breaching confidentiality, while businesses gain opportunities to contribute to policymaking based on objective and harmonized information. The technological interoperability of such systems gradually removes barriers of technical incompatibility between platforms and ensures effective cross-sectoral interaction.

The development of federated learning facilitates the secure use of corporate data in government models without direct information exchange. This approach addresses two critical issues simultaneously – limited access to commercial data and the need to comply with privacy requirements. It allows public systems to benefit from the analytical capabilities of the private sector without creating risks of data leakage or misuse.

Automation of analytical processes based on machine learning eliminates a significant portion of cognitive biases inherent in traditional decision-making. Algorithms can process

large volumes of unstructured data – texts, images, and geoinformation – identifying patterns that remain hidden to conventional analytical methods [12]. This increases forecasting accuracy and reduces the risk of erroneous managerial decisions caused by incomplete information. As a result, a new decision-making culture emerges, where analytical support is proactive rather than reactive.

The development of open data technologies must be grounded in transparency of government processes, fostering trust among the government, business, and society. Information openness creates conditions for public oversight, entrepreneurial innovation, and increased accountability of government institutions. This helps reduce organizational inertia and promotes the formation of social partnership mechanisms, ensuring that decision-making becomes not only technically efficient but also socially legitimate.

The implementation of responsible data governance principles serves as the conceptual foundation for these transformations. It combines technological efficiency, legal legitimacy, and ethical transparency, ensuring a balance between the interests of the state, business, and citizens. In this context, the development of artificial intelligence and data analytics not only addresses technical issues of access or compatibility but also lays the groundwork for a new model of public administration, where decisions are based on trust, objectivity, and interaction among all participants in the information space.

Thus, modern trends in data governance are defined by the integration of analytical technologies, the ethical reflection of their use, and the creation of open and interoperable data infrastructures. This opens new opportunities for the public sector in strategic forecasting, evidence-based policy development, and enhanced governance efficiency, while simultaneously demanding the renewal of legal, institutional, and cultural approaches to data management in the digital transformation era.

The integration of corporate and government data in the United States is increasingly viewed as a strategic direction in public administration development, requiring a comprehensive approach based on partnership among government agencies, the private sector, and civil society organizations. In modern conditions, such partnerships become not only tools for improving the efficiency of public services but also mechanisms for building trust, ensuring transparency, and fostering innovation in public policy.

The study by R. Arnaout, P. Carter, and R. Soni [1] shows that during the COVID-19 pandemic, technological integration among community-based organizations (CBOs), public health systems, and private corporations (including Microsoft and Amazon) enabled a bidirectional, near real-time data exchange that formed the basis for rapid decision-making in healthcare. Implemented within the Health Equity Consortium, this model integrated data on vaccination, social determinants of health, mobile medical services, and local epidemiological indicators, thereby ensuring a continuous cycle of analytics and management feedback. This integration demonstrated that combining public and corporate information systems can greatly enhance the accuracy, timeliness, and social effectiveness of decision-making, particularly in crisis conditions [1].

In turn, A. Ballantyne and C. Stewart [2] examine the issue of ethical data governance within public-private partnerships (PPPs), emphasizing the importance of upholding principles of public benefit, transparency, oversight, and citizen participation. An example is the collaboration between the UK National Health Service and Google DeepMind, which sparked considerable public debate over data ownership, access, and potential commercialization of public resources [2]. Applying similar models in the United States requires the establishment of clear ethical frameworks regulating the use of corporate technologies and analytics in the public sector to prevent risks of opacity and loss of institutional trust.

The institutional context of public-private collaboration in the United States is thoroughly analyzed in the work of C. Casady, K. Eriksson, R. Levitt, and W. Scott [3], where it is emphasized that partnership effectiveness depends on the degree of institutionalization – that is, the presence of regulatory, managerial, and organizational structures ensuring coordinated actions at all stages of the project life cycle. Although the U.S. PPP market is considered relatively young, these mechanisms enable the government to attract innovative resources, technologies, and private sector expertise to address strategic objectives – from infrastructure development to strengthening healthcare and security systems.

Thus, the examined experience demonstrates that integrating corporate data and technological solutions into government monitoring systems is a multidimensional process requiring coordination of technical, ethical, and institutional aspects. The implementation of such projects should extend beyond specific sectors (e.g., healthcare or infrastructure) to all areas of public governance – from social policy to national security. Only comprehensive interaction among the state, business, and civil society can create a coherent architecture of strategic management, where data become the key resource for informed and ethical decision-making.

Conclusions

The results of the study show that strategic decision-making in the public sector is impossible without developing an integrated data management system that ensures coherence among analytical, ethical, and regulatory components. The process of integrating corporate data into government monitoring systems has a dual nature – technological and institutional. On one hand, public authorities face limited access to corporate information, technical incompatibility of systems, and “data silos” that fragment the information space. On the other hand, the effectiveness of this integration depends on the existence of a clear legal framework, interoperability standards, and ethical regulation mechanisms. Building coherent rules and data exchange protocols forms the foundation of trust between the state and business, enabling the use of private information resources without violating confidentiality or commercial rights.

Overcoming the identified barriers is possible through the use of modern digital technologies – artificial intelligence, machine learning, big data analytics, and federated learning. These tools create conditions for transitioning from reactive to proactive governance, improving forecasting accuracy, and reducing cognitive bias risks in policymaking. Applying the principles of responsible data governance allows combining technological efficiency with legal legitimacy and public trust, ensuring an ethical balance between public and corporate interests.

The practical experience of the United States demonstrates that technological integration of public and private information systems within public-private partnerships (PPPs) can significantly enhance the effectiveness of strategic management. In particular, the Health Equity Consortium initiative involving Microsoft and Amazon during the COVID-19 pandemic showed that bidirectional real-time data exchange promotes rapid decision-making, resource optimization, and improved social outcomes. The U.S. partnership model proves that successful integration of corporate data into government systems requires not only technological readiness but also a developed institutional architecture, regulatory clarity, and stable ethical standards. In the long term, such an approach can serve as a foundation for developing a similar interaction model in Ukraine, oriented toward trust, transparency, and evidence-based governance.

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