

Artificial Intelligence as a Lever and Risk of Institutional Decoupling in Developing Countries: The Regulatory Role of Prophylactic Governance

L'Intelligence Artificielle comme levier et risque de découplage institutionnel dans les PVD: Le rôle régulateur de la Gouvernance Prophylactique

Wafa EL FKIHI^{1*}, Badr TOUZI²

The authors declare that no funding was received for this work.



Received: 01-November-2025
Accepted: 29-November-2025
Published: 04-December-2025

Copyright © 2025, Authors retain copyright. Licensed under the Creative Commons Attribution 4.0 International License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.
<https://creativecommons.org/licenses/by/4.0/> (CC BY 4.0 deed)

This article is published in the **MSI Journal of Economics and Business Management (MSIJEBM)**

ISSN 3049-141X (Online).

The journal is managed and published by MSI Publishers.

Volume: 2, Issue: 12 (December-2025)

^{1*} PhD Candidate in Management Sciences

² Associate Professor, Habilitation

^{1*,2} Research Laboratory on Economic Competitiveness and Managerial Performance (LARCEPEM)
Interdisciplinary Research Center on Performance and Competitiveness
Faculty of Legal, Economic and Social Sciences – Souissi
Mohammed V University – Rabat, Morocco

* **Correspondence:** Wafa EL FKIHI

ABSTRACT: This study addresses the dual challenge of Artificial Intelligence (AI) adoption in Developing Countries (DCs). While AI is presented as a necessary lever to compensate for chronic institutional gaps and weak information systems (IS), past experience with imported Performance Measurement Systems (PMS) suggests a high risk of institutional decoupling. Using a purely conceptual and theoretical methodology based on a systematic narrative review of contingency theory, institutional theory, and algorithmic rationality, this article extends the Hybrid and Contextual Model (MHCP). We develop a framework demonstrating that AI simultaneously poses a triple risk of decoupling—technological, institutional, and normative—if

deployed technocentrically. The core finding is formulated through three theoretical propositions positioning Prophylactic Governance (P2) as the critical moderator of the risk induced by algorithmic rationality. P2-AI, acting synergistically with Performance Culture (P1) and Structural Decentralization (P3) is essential to guarantee strategic alignment with Global and Sustainable Performance. This research transforms the AI challenge from a technical problem into a proactive governance imperative for DCs, offering a strategic framework for anticipatory governance and digital sovereignty.

Keywords: *Artificial Intelligence (AI), Prophylactic Governance, Institutional Decoupling, Developing Countries (DCs), Algorithmic Rationality.*

Résumé

Cette étude aborde le double défi de l'adoption de l'Intelligence Artificielle (IA) dans les Pays en Développement (PD). Bien que l'IA soit présentée comme un levier nécessaire pour compenser les lacunes institutionnelles chroniques et les systèmes d'information (SI) faibles, l'expérience passée avec les systèmes de mesure de la performance (SMP) importés suggère un risque élevé de découplage institutionnel. En utilisant une méthodologie purement conceptuelle et théorique basée sur une revue narrative systématique de la théorie de la contingence, de la théorie institutionnelle et de la rationalité algorithmique, cet article étend le Modèle Hybride et Contextuel (MHCP). Nous développons un cadre démontrant que l'IA pose simultanément un triple risque de découplage—technologique, institutionnel et normatif—si elle est déployée de manière technocentrique. La principale conclusion est formulée à travers trois propositions théoriques positionnant la Gouvernance Prophylactique (P2) comme le modérateur critique du risque induit par la rationalité algorithmique. P2-IA, agissant en synergie avec la Culture de la Performance (P1) et la Décentralisation Structurelle (P3), est essentiel pour garantir l'alignement stratégique avec la Performance Globale et Durable. Cette recherche transforme le défi de l'IA d'un problème technique en un impératif de gouvernance proactive pour les pays en développement (PD), offrant un cadre stratégique pour la gouvernance anticipatoire et la souveraineté numérique.

Mots-clés: Intelligence Artificielle (IA), Gouvernance Prophylactique, Découplage Institutionnel, Pays en Développement (PD), Rationalité Algorithmique.

1. INTRODUCTION

The modernization of the public sector has historically been influenced by New Public Management (NPM) (Hood, 1991; Pollitt & Bouckaert, 2000), which aims to reinforce the efficiency and accountability of administrations. This quest for rationalization has resulted in the widespread adoption of Performance Measurement Systems (PMS) such as Results-Based Management (RBM) (Kusek & Rist, 2004) and the Balanced Scorecard (BSC) (Kaplan & Norton, 1992). These tools were presented as universal vectors for institutional improvement and were massively exported to developing countries by multilateral institutions and bilateral donors (Tenakwah et al., 2023; Anh et al., 2022).

However, the direct transposition of these models, designed in developed institutional contexts, faces considerable structural challenges in Developing Countries (DCs) (Ata & Carassus, 2023; Mazouz & Leclerc, 2008). These obstacles include the chronic weakness of information systems (IS) and the insufficient qualitative data in administrations (Tichout & Cherqaoui, 2025; World Bank, 2024; Hairout, 2023), institutional instability and fragmentation of administrative capacities (Tenakwah et al., 2023; Goddard et al., 2016), an administrative culture historically less oriented toward results and transparency (Anh et al., 2022; Mnguni, 2024), as well as insufficient financial and human resources to implement PMS (World Bank, 2024). Consequently, the concrete application of PMS in DCs is often dominated by a classical financial control approach (Ahsina et al., 2014; Hairout, 2023), signaling a high risk of institutional decoupling between the formal adoption of the PMS and its substantial implementation (DiMaggio & Powell, 1983; Meyer & Rowan, 1977; Polzer et al., 2023). The formal adoption of PMS then primarily serves to guarantee external legitimacy with donors (institutional isomorphism) without transforming real internal steering practices (Hairout, 2023; Begkos & Antonopoulou, 2022).

In this context of reform stagnation, the emergence of Artificial Intelligence (AI), Big Data, and the techno-informational upheaval (Caron & Nicolini, 2023; Olan et al.,

2022) offers a dual, paradoxical dynamic. AI can act as a lever by compensating for the critical weakness of IS: it is likely to significantly improve the reliability of data collected and processed by public administrations (World Bank, 2024; Olan et al., 2022), the measurement of final outcomes and the actual impacts of public policies (Bessire, 1999; Renaud & Berland, 2007), as well as the prediction and optimization of limited public resources (UNCTAD, 2024; Olan et al., 2022).

In parallel, AI introduces algorithmic rationality and its inherent biases (Van der Voort et al., 2019; Caron & Nicolini, 2023). By systematically prioritizing quantification and efficiency, it threatens to amplify the bias toward the measurable, reinforcing the myopia of actors (Émery & Giauque, 2005) and leading to the loss of meaning of public action (Khenniche & Henriot, 2021). Furthermore, the introduction of AI in DCs without appropriate regulation creates three forms of decoupling:

1. Technological Decoupling is linked to structural dependence on proprietary platforms and models, threatening the digital sovereignty of DCs (Truby, 2020; UNCTAD, 2024; UN, 2024).
2. Institutional Decoupling manifests as the adoption of AI primarily to signal modernity (isomorphism) without effective integration into governance practices (DiMaggio & Powell, 1983; Polzer et al., 2023).
3. Finally, Public Value Decoupling occurs through the crushing of non-quantifiable objectives, such as equity or sustainability, under the weight of algorithmic rationality (Stiglitz et al., 2009; Van der Voort et al., 2019).

To avoid this technocentric drift, the concept of Prophylactic Governance (PG) has been proposed as the central regulatory pillar of a Hybrid and Contextual Model (MHCP/PMS-DCs) (Khenniche & Henriot, 2021; Mazouz et al., 2012; El Fkihi & Touzi, 2025). PG functions as an anticipatory and preventive mechanism for governance tensions, particularly the tension between the Political dimension (public values, democratic legitimacy) and the Objectifying dimension (quantification, instrumental rationality) (Khenniche & Henriot, 2021).

The central problem guiding this research is therefore: How can Prophylactic Governance (PG) help DCs transform Artificial Intelligence into a genuine lever for public performance, by strengthening the reliability of information systems and the measurement of results, while preventing the new forms of institutional, technological, and normative decoupling induced by algorithmic rationality?.

In response to this problem, this article develops a conceptual framework and formulates three theoretical propositions. This research contributes to the extension of the MHCP model by integrating the challenges of AI and algorithmic rationality, to the refinement of the notion of Prophylactic Governance as a mechanism for regulating the political/objectifying tension, and to the articulation of theories of institutional isomorphism, organizational contingency, and public value co-creation. On the practical level, it proposes recommendations for public decision-makers concerning anticipatory governance and digital sovereignty for DCs. The remainder of this article presents the in-depth literature review covering PMS, institutional decoupling, AI in the public sector, and Prophylactic Governance, followed by the methodology and conceptual approach, the theoretical analysis integrating AI and the moderating role of PG with the formulation of the three propositions, the discussion of theoretical and practical implications, and, finally, the conclusion.

Boxed – Illustration: Digitalization and Governance in Morocco

Although the MHCP-AI conceptual framework targets DCs as a whole, the experience of Moroccan Public Entities (EEPM) offers a concrete illustration of the challenges. The chronic weakness of IS (P4) justifies the attraction of AI to improve data reliability and the measurement of outcomes. However, studies on EEPM confirm a persistent institutional decoupling, where the adoption of PMS remains symbolic and dominated by classical financial control. This imbalance manifests the weakness of the Performance Culture (P1), where AI risks automating and amplifying existing efficiency biases. To avoid this drift and the "loss of meaning" of public action (Khenniche & Henriot, 2021), Prophylactic Governance (P2-AI) is imperative to regulate *ex ante* the Political/Objectifying tension. Finally, Decentralization (P3) is crucial for institutionalizing the local contestability of algorithms, counteracting their natural tendency toward over-centralization. Morocco

thus confirms that the success of AI (P4) is conditioned by the joint activation of P1, P2, and P3.

2. METHODOLOGY

2.1 Type of Research and Justification of the Conceptual Approach

This research is a purely conceptual and theoretical study aiming to develop and refine an analytical framework (the Hybrid and Contextual Model — MHCP — extended) to integrate the challenges of Artificial Intelligence (AI) into the management of public performance in Developing Countries (DCs). The main objective is to establish a robust and testable theoretical framework, rather than providing immediate empirical validation of the propositions.

We favored a systematic narrative and comparative review of the literature, rather than a pure systematic review of the PRISMA type, because the objective of this research is integrative and constructive. This approach is justified by several factors:

- **Emergence of the Field:** The integration of AI into public performance in DCs is an emerging domain, justifying the construction of an *ex ante* framework.
- **Theoretical Diversity:** The model mobilizes and critically synthesizes several disparate and distinct theoretical fields — contingency theory (Chenhall, 2003), institutional theory (Meyer & Rowan, 1977; DiMaggio & Powell, 1983), and algorithmic rationality (Van der Voort et al., 2019). A narrative review allows for this critical integration and conceptual clarification.
- **Conceptual Structuring Objective:** The goal is to construct a new adapted theoretical model (the extended MHCP) by identifying theoretical gaps (the gap of Prophylactic Governance) and articulating critical contingent factors in a new model.
- **Complexity of the Field:** The theoretical complexity requires conceptual clarification work before proceeding to empirical validation.

2.2 Literature Collection and Selection Strategy

The methodological approach adopted is qualitative, inductive, and comparative. The documentary research strategy covered foundational literature (NPM, BSC) and recent work on digitalization.

Databases, Period, and Keywords

The research was conducted over an indicative period from 2000 to 2025 for the general literature on PMS, with priority given to the years 2015–2025 for issues related to AI and digitalization. Academic databases consulted included Scopus, Web of Science (for international literature in management sciences), Cairn.info (for French-language contributions on public management and accounting), Google Scholar, JSTOR, and EBSCO.

The research was organized around four main thematic axes using a combination of keywords (in French and English) to identify relevant sources:

- Performance Measurement Systems in DCs Context: Performance Measurement Systems, Developing Countries (DCs), Institutional Decoupling, Results-Based Management (GAR), Balanced Scorecard (BSC), Public Sector.
- Artificial Intelligence and Algorithmic Rationality: Artificial Intelligence (AI), Algorithmic Rationality, Public Sector AI, Digital Sovereignty.
- Governance and Tension Management: Prophylactic Governance, Tension Management, Loss of Meaning (Perte de Sens).
- Global Performance: Global Performance, Public Value, Equity, Durability.

Inclusion Criteria and Theoretical Iteration Logic

Inclusion criteria favored peer-reviewed articles or high-credibility institutional reports (notably from UNCTAD, the World Bank, and the UN). The final corpus was constructed by a theoretical iteration logic involving:

- Initial selection by title and abstract (screening).

- In-depth reading and extraction of key concepts and theories.
- Thematic codification to organize sources by domain.

The development of the theoretical propositions (P1-AI, P2-AI, P3-AI) followed four structured steps: Articulation of Key Concepts (Step 1), Synthesis of Disparate Literatures by creating a matrix crossing the MHCP pillars with AI issues (Step 2), Formulation of Propositions in Testable Terms (Step 3), and Internal Theoretical Validation (Step 4).

2.3 Methodological Contribution: The Comparative Framework

The conceptual framework of the MHCP extended to AI relies on the fundamental distinction between a purely technical approach and the proposed proactive governance approach. Table 1 formalizes this distinction, emphasizing the added value of Prophylactic Governance (PG) for AI-assisted public management.

Table 1: Technocentric Approach vs. Prophylactic Approach Facing Artificial Intelligence Integration

Criterion	Technocentric Approach (Focus P4)	Prophylactic Approach (Focus P2-AI)
Definition & Vision	AI is a neutral technical tool for optimization and process automation.	AI is an institutional change that generates political and ethical tensions.
Institutional Risk	Triple Decoupling (Technological, Institutional, Normative). Risk of reinforced isomorphism.	Reduction of the triple decoupling through active tension management.
Role of the Human	Execution of algorithmic outputs; possible alienation of professionals.	Right to contest. Co-construction of public value.
Control Temporality	Primarily ex post (Diagnostic Control).	Anticipation and regulation ex ante of biases and dependencies.
Pursued Outcome	Quantification and Efficiency (Myopia of actors).	Global and Sustainable Performance (Equity, Sustainability). Primacy of the political dimension.

Source: Developed by the authors, structuring the contribution of the MHCP extended to AI model (P2-AI).

2.4 Methodological Limitations

This approach presents methodological limitations inherent to conceptual research. These limitations include the absence of empirical validation of the theoretical propositions, a potential documentary selection bias reflecting perspectives from Northern countries, the necessary simplification of the complex and evolving realities of DCs, and the limited generalization of results given the institutional and technological heterogeneity of DCs.

3. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

The literature review revolves around the theoretical foundations of Performance Measurement Systems (PMS), the limitations of contingency theory in the face of institutional decoupling, the role of Prophylactic Governance (PG), and the positioning of the Hybrid and Contextual Model (MHCP) in the face of AI's algorithmic rationality.

3.1 Theoretical Foundations of PMS and Institutional Decoupling

New Public Management (NPM) (Hood, 1991) relies on the hypothesis that adopting management mechanisms borrowed from the private sector would systematically improve public sector performance. PMS represent the institutionalization of this managerial logic. Three major PMS have dominated the international landscape, based on a rationalization logic: Results-Based Management (RBM), which insists on establishing measurable causality chains (inputs → activities → outputs → outcomes → impact) (Kusek & Rist, 2004; Varone, 2008); the Balanced Scorecard (BSC), proposing a multidimensional approach balancing perspectives (Kaplan & Norton, 1992; Kaplan, 2009); and the Integrated Results Management Framework (CGIR), aiming to reconcile strategic programming and operational steering (Mazouz & Leclerc, 2008; Ata & Carassus, 2023). These models rely on contingency theory (Chenhall, 2003), according to which organizational performance depends on the alignment between the control system and contextual factors (strategy, environment, technology).

However, public performance is a polysemic social construct articulated around several dimensions (Renaud & Berland, 2007; Bessire, 1999): Efficiency (outputs), Effectiveness (outcomes), Relevance (adequacy to actual needs) (Varone, 2008), and Equity and Sustainability (Stiglitz et al., 2009). A well-documented tendency shows that public administrations, particularly in DCs contexts, systematically prioritize efficiency because it is easier to quantify and report to donors (Émery & Giauque, 2005; Guillaume, 2009; Pollitt & Bouckaert, 2000). This tendency leads to performance myopia where actors optimize measurable indicators to the detriment of the true objectives of public policy (Renaud & Berland, 2007).

Institutional Decoupling Theory (Meyer & Rowan, 1977; DiMaggio & Powell, 1983) provides a powerful explanation for the persistent gap between the formal adoption of PMS and their substantial implementation. According to Meyer & Rowan (1977), organizations institutionalize formal structures and practices (the PMS) to confer institutional legitimacy rather than to improve operational effectiveness. Decoupling occurs when the organization formally adopts a system while maintaining it without operationally integrating it into real steering practices, thereby satisfying the conflicting expectations of multiple stakeholders. DiMaggio & Powell (1983) complement this analysis with institutional isomorphism, where organizations in the same organizational field adopt common structures and practices to signal institutional conformity.

This phenomenon is systematically documented in DCs: Moroccan Public Entities and Establishments (EPPM) formally adopt the BSC, but the theoretical balance is never achieved, with the financial perspective dominating the classical financial control heritage (Hairout, 2023; Ahsina et al., 2014). Similarly, in Vietnam (Anh et al., 2022; Mnguni, 2024) and Sub-Saharan African countries (Tenakwah et al., 2023; Goddard et al., 2016), public management reforms remain largely symbolic, with results indicators being little used in real strategic decisions. Polzer et al. (2023) confirm that this tendency is systematic in the face of externally imposed management reforms.

3.2 Contingency, Prophylactic Governance, and the MHCP

Contingency Theory (Chenhall, 2003; Chenhall & Morris, 1986; Modell, 2009) offers a complementary explanation: the inefficiency of PMS in DCs would be due to a lack of adjustment between the control system and contextual factors such as organizational strategy, technology, external environment, structural decentralization, quality of human resources and information, and organizational culture. However, this theory assumes instrumental rationality in the choice of the system, which does not hold in contexts of strong institutional isomorphism (Chenhall, 2003; DiMaggio & Powell, 1983).

To overcome this limitation, Khenniche & Henriot (2021) and Mazouz et al. (2012) propose the concept of Prophylactic Governance (PG) as a mechanism for proactive tension regulation. PG is defined as a set of practices, processes, and institutional arrangements aimed at anticipating, preventing, and actively regulating tensions and deviations likely to occur during the implementation of reforms, particularly the tension between the Political dimension (democratic legitimacy, public values) and the Objectifying dimension (quantification, efficiency, instrumental rationality). The core of PG lies in the management of this constitutive tension, which, without regulation, degenerates into institutional decoupling, where the Political dimension is crushed by an overload of quantification, leading to the loss of meaning of public action (Émery & Giauque, 2005; Khenniche & Henriot, 2021). The fundamental principles of PG include anticipation of tension sources, transparency of compromises and trade-offs, stakeholder participation in objective negotiation, adaptability, and responsibility (Khenniche & Henriot, 2021; Mazouz et al., 2012).

The core of PG lies in the proactive management of this conflictual dynamic. To exercise its moderating role in the face of managerial tools like PMS, Prophylactic Governance must anticipate the compromises inherent in performance measurement (Khenniche & Henriot, 2021). Table 2 formalizes the antagonistic characteristics of the constitutive tension between the demands of democratic legitimacy and those of instrumental rationality.

Table 2: Characteristics of the Constitutive Political / Objectifying Tension in Public Management

Characteristic	Political Dimension (Legitimacy / Democratic Will)	Objectifying Dimension (Instrumental / Algorithmic Rationality)
Purpose	Creation of Public Value (Moore, 1995) and Social Welfare	Optimization of Resources and Operational Efficiency
Decision Logic	Pluralistic Deliberation, Normative and Ethical Trade-offs	Quantification, Measurability, Technical Objectivity
Protected Objectives	Equity, Sustainability, Relevance (Varone, 2008), Social Justice	Outputs (achievements) and Inputs (costs)
Major Risk (without regulation)	Loss of meaning of public action (Khenniche & Henriot, 2021)	Myopia of actors (Émery & Giauque, 2005) and Triple Decoupling

Source: Developed by the authors, based on Khenniche & Henriot (2021), Van der Voort et al. (2019), Mazouz et al. (2012), and Moore (1995).

This tension is qualitatively amplified by the introduction of Artificial Intelligence. The challenge of extending the MHCP is therefore to frame algorithmic rationality to ensure the primacy of the political dimension. This framework leads to the Hybrid and Contextual Model (MHCP), developed by El Fkihi & Touzi (2025), which aims to overcome decoupling by explicitly recognizing four contextual pillars functioning in synergy. These pillars are: Institutionalized Performance Culture (P1), which roots results orientation and organizational learning (Kaplan, 2009; Speklé & Verbeeten, 2013); Structural Decentralization (P3), which allows for contextual adaptation of policies and promotes local engagement (Chenhall & Morris, 1986); Reliability of Information Systems/Capacities (P4), whose robustness is an insurmountable contingency constraint in DCs; and Prophylactic Governance (P2), which is the Central Regulatory Pillar. The synergistic dynamic of the MHCP assumes that the effectiveness of the PMS depends on the interaction of the four pillars, with Pillar 2 (PG) functioning as a critical moderator that forces the explicit negotiation of objectives, thus reducing isomorphism and reinforcing substantial alignment (El Fkihi & Touzi, 2025).

3.3 Artificial Intelligence and Algorithmic Rationality

AI and advanced analytics technologies potentially offer a qualitative leap in the capacity of public administrations to collect, analyze, and use data, acting as an Amplifier of Pillar P4 (IS Reliability). For DCs, AI could compensate for critical IS deficits (Tichout & Cherqaoui, 2025; World Bank, 2024) by automating prediction, resource optimization (Olan et al., 2022), improving data quality through automated cleaning, and measuring complex outcomes previously inaccessible (UNCTAD, 2024; Badil et al., 2025).

However, algorithmic rationality introduces constitutive biases (Van der Voort et al., 2019; Caron & Nicolini, 2023). The Quantification Bias amplifies myopia toward outputs to the detriment of outcomes, crushing objectives difficult to quantify such as dignity or equity. The Instrumental Rationality Bias creates an illusion of scientific neutrality by optimizing objective functions without integrating ethical or political trade-offs, risking the depoliticization of fundamental decisions (Van der Voort et al., 2019). Finally, the Technological Dependence Bias concentrates decision-making power among suppliers and threatens the digital sovereignty of DCs (Truby, 2020; UNCTAD, 2024; UN, 2024).

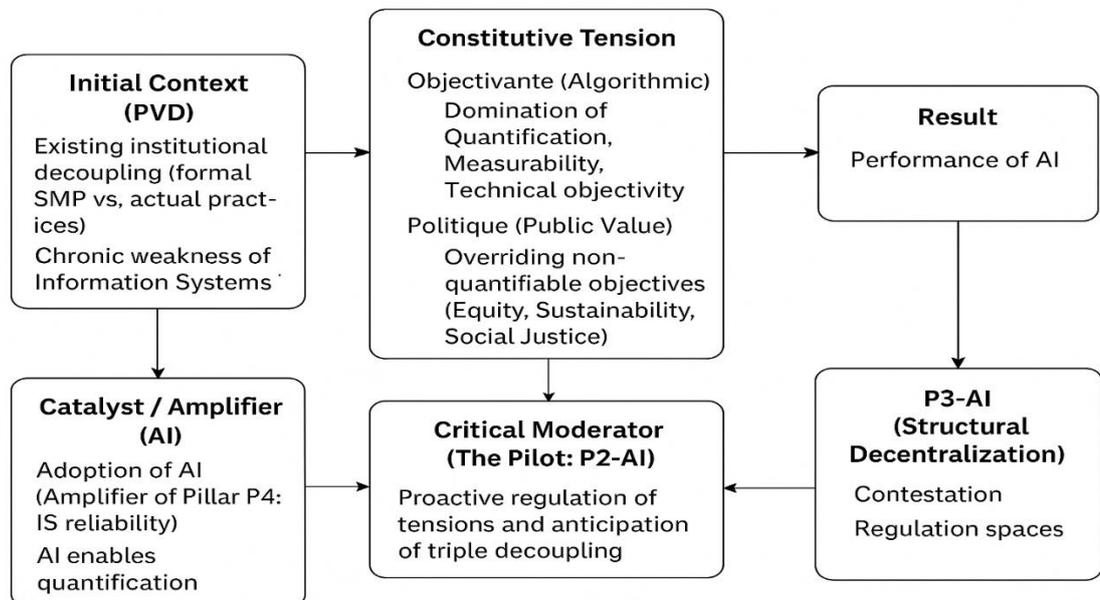
To mitigate these risks, contemporary literature insists on explainability (XAI), transparency, and accountability (Polzer et al., 2023; Van der Voort et al., 2019). However, explainability alone is insufficient without strong governance frameworks that frame the use of AI and allow stakeholders to contest or refuse algorithmic recommendations (Van der Voort et al., 2019). AI governance in DCs is often fragmented (UNCTAD, 2024; UN, 2024), facing technological asymmetry, capacity deficits, and dependence on extractive rent where public data is exported as raw material to train algorithms in rich countries. The introduction of AI also amplifies the risk of professional hybridization (Begkos & Antonopoulou, 2022; Hellqvist & Kurkkio, 2025), where the measurement imperative surpasses the service quality imperative, risking the alienation of public professionals (Begkos & Antonopoulou, 2022). These challenges underscore the imperative of Global and Sustainable Performance (Stiglitz et al., 2009), which requires measuring multidimensional well-

being and real social progress, recognizing that trade-offs are fundamentally political (Badil et al., 2025; Ata & Carassus, 2023).

4. RESULTS: THEORETICAL PROPOSITIONS INTEGRATING AI INTO THE MHCP

AI and advanced data processing technologies occupy a strategic position within the MHCP, acting both as an Amplifier of Pillar P4 (IS Reliability) and as a source of new tension for Pillar P2 (Prophylactic Governance). As an amplifier of Pillar P4, AI can technically significantly enhance the quality, reliability, and accessibility of information systems (World Bank, 2024; Olan et al., 2022), allowing for the measurement of complex dimensions and reducing input errors. As a source of new tension for P2, the introduction of algorithmic rationality creates a new form of tension between the Political dimension (democratic will) and the Objectifying dimension (quantification, optimization), bringing into play issues of explainability, transparency, and technological sovereignty.

Figure 1 proposes a more detailed breakdown of the model, integrating recent empirical and theoretical references on the reliability of information systems in DCs. It develops the mechanisms reinforcing Unregulated Tension and places P2-AI at the center of regulating the risk of algorithmic drift.



Source: Developed by the authors, based on the foundational work of the Hybrid and Contextual Model (El Fkihi & Touzi, 2025), institutional decoupling theory (Meyer

& Rowan, 1977; DiMaggio & Powell, 1983), and key contributions on Artificial Intelligence and Information Systems (Olan et al., 2022; World Bank, 2024).

Figure 1 – Detailed Causal Chain: Dynamics of AI, Constitutive Tension, and Institutional Decoupling Mechanisms in DCs Source: Developed by the authors, based on the foundational work of the Hybrid and Contextual Model (El Fkihi & Touzi, 2025), institutional decoupling theory (Meyer & Rowan, 1977; DiMaggio & Powell, 1983), and the challenges of Artificial Intelligence and Information Systems (Olan et al., 2022; World Bank, 2024). Normalized Legend: Figure 1 – Detailed causal chain of the P2-AI conceptual model. Decomposition of technological, institutional, and political mechanisms leading to Unregulated Tension, and the role of Prophylactic Governance (P2-AI) in reducing the triple decoupling. Scientific Interpretation: This diagram deepens the underlying causal chains: the weakness of information systems, already documented by Olan and the World Bank, amplifies the attractiveness of AI as a compensatory solution. However, this technological adoption mechanically reinforces the domination of metrics and the crushing of non-quantifiable objectives. This tension, when not moderated, leads to various drift scenarios: increased institutional decoupling, stagnation of outcomes, or an illusion of performance. The role of the P2-AI Pilot then becomes central: by anticipating and moderating tensions, it substantially reduces the triple decoupling and guides AI toward a sustainable and structural improvement of public performance.

The integrated conceptual model postulates that the Adoption of AI (P4) amplifies the Political/Objectifying tension, requiring the activation of Prophylactic Governance-AI (P2-AI), whose proactive regulation (including explainability, digital sovereignty, participatory governance, and alignment with public value) leads to the Reduction of Decoupling and Substantial Improvement of Global Performance (OUTCOMES).

4.1 PROPOSITION 1 (P1-AI): Performance Culture and AI Effectiveness

Statement: The effectiveness of Artificial Intelligence in strengthening the Reliability of Information Systems (P4) and improving outcomes measurement is positively conditioned by the existence of a robust Institutionalized Performance Culture (P1).

In the absence of P1, AI risks being adopted formally without being integrated into interactive use for decision support, resulting in a paradoxical reinforcement of institutional decoupling.

Performance Culture (P1) represents the institutional substrate without which the most advanced technologies remain inactive (Hairout, 2023; Kaplan, 2009). Three mechanisms explain this relationship. First, P1 guarantees interactive use vs. diagnostic use (Speklé & Verbeeten, 2013; Simons, 2000), meaning that data generated by AI are used for organizational learning and decision support, and not solely for control and accountability toward donors. Second, a strong P1 ensures the internalization vs. isomorphism (DiMaggio & Powell, 1983) of the results orientation. Third, the absence of P1 makes the risk of automating existing biases invisible (World Bank, 2024): if practices already reflect a non-results orientation (classical financial control), AI risks simply automating and amplifying these biases. The implication is that DCs must invest in institutionalized performance culture before or in parallel with AI adoption.

4.2 PROPOSITION 2 (P2-AI): Prophylactic Governance as a Critical Moderator

Statement: The explicit integration of a Prophylactic Governance mechanism dedicated to AI issues (P2-AI), ensuring anticipation, transparency, participation, and continuous regulation of the (Political/Objectifying) tension amplified by algorithmic rationality, significantly reduces the probability of institutional, technological, and normative decoupling during the integration of AI into DCs' Performance Measurement Systems.

P2-AI acts as an anticipatory regulatory mechanism operating according to four principles. First, it requires the Anticipation of the triple decoupling (technological, isomorphic, and public value) before deploying an AI solution, adjusting institutional arrangements *ex ante*. Second, it mandates the Explicitation of Political/Objectifying trade-offs: since algorithmic rationality tends to naturalize choices that are political (Van der Voort et al., 2019), P2-AI forces the explicit articulation of trade-offs between efficiency, equity, and accessibility. Third, it guarantees Digital Sovereignty and technological mastery by questioning *a priori* the challenges of technological

dependence, data ownership, and reversibility (Truby, 2020; UNCTAD, 2024). Fourth, it institutionalizes Participatory Governance and the right to contest, creating spaces for stakeholders to challenge algorithmic recommendations in the face of information asymmetry (UN, 2024; Torfing et al., 2019).

P2-AI moderates the relationship between the adoption of AI (P4) and the realization of outcomes. Without P2-AI (Scenario 1), AI adoption leads to increased decoupling and unchanged outcomes (due to the automation of existing myopia); with P2-AI (Scenario 2), AI is regulated and harnessed for explicit public purposes, leading to improved outcomes. The main function of P2-AI is to ensure that the algorithmic optimization logic never surpasses the political logic of democratic will, by creating decision-making braking points where humans can refuse or modify algorithmic recommendations without technical justification (Proposition 2a).

4.3 PROPOSITION 3 (P3-AI): Decentralization and Algorithmic Contestability

Statement: Structural Decentralization (P3) and the integration of participatory governance, by allowing local actors and citizens to contest or refuse algorithmic recommendations, positively moderate the relationship between AI adoption and the realization of Global and Sustainable Performance. In the absence of P3, AI risks accentuating the centralization of decision-making power at national levels and into the hands of technical experts.

Decentralization (P3), traditionally conceived as contextualized policy adaptation (Chenhall & Morris, 1986), becomes critical in the AI context for three reasons. First, it allows for the local contestability of algorithms (Torfing et al., 2019), because algorithms designed at the national level risk poorly capturing the diversity of local contexts. Second, it promotes participatory Co-design and co-creation of value (Moore, 1995), where users, professionals, and citizens participate in defining the objectives that AI must optimize, reducing the risk of automated bias. Third, it creates a Counter-force to the natural over-centralization of AI, which tends to concentrate power at the levels where experts and aggregated data reside (Begkos & Antonopoulou, 2022).

The three theoretical propositions formulated (P1-AI, P2-AI, P3-AI) are not isolated; the effectiveness of the extended Hybrid and Contextual Model relies instead on their synergistic interaction. Each pillar, although describing a distinct contingent factor, is interconditioned by the others, creating a network of critical interdependencies necessary for substantial performance. Table 3 formalizes these crossed relationships and highlights the need for institutional coordination to support AI adoption.

Table 3: Matrix of Crossed Synergies and Mutual Roles of the Pillars of the Hybrid and Contextual Model (MHCP extended to AI)

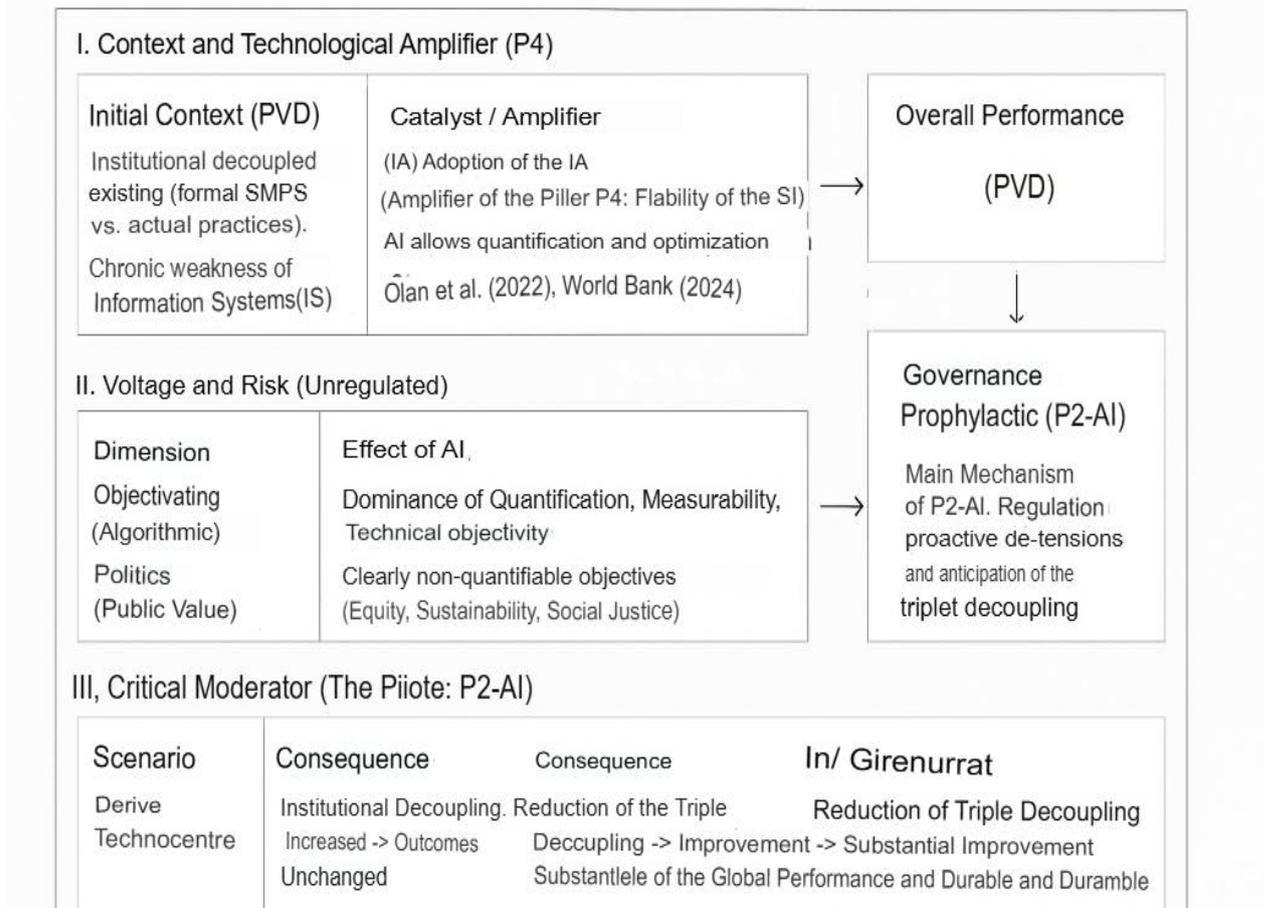
Interactions between Pillars	P1-AI (Performance Culture)	P2-AI (Prophylactic Governance)	P3-AI (Structural Decentralization)
P1-AI (Culture)	—	Legitimacy: Conditions the acceptability of P2 regulation and promotes the interactive use of AI (Speklé & Verbeeten, 2013).	Local Rooting: Facilitates the dissemination and local appropriation of P1 culture.
P2-AI (PG)	Uses: Ensures that AI data (P4) are used for learning and not only for diagnostic control.	—	Contestability: Institutionalizes deliberation mechanisms and the right to contest algorithmic outputs (Torfing et al., 2019).
P3-AI (Decentralization)	Relevance: Requires a strong local performance culture for P3 autonomy to be effective.	Regulation Spaces: Provides the levels and legitimacy to exercise P2 in the face of algorithmic biases.	—

Source: Developed by the authors, based on El Fkihi & Touzi (2025), Chenhall & Morris (1986), Speklé & Verbeeten (2013), and Torfing et al. (2019).

Central Interaction Effect: The effectiveness of AI on Global Performance is subordinated to the simultaneous activation of P1-AI, P2-AI, and P3-AI, with P2-AI in the pilot position to frame algorithmic rationality.

Figure 2 offers an analytical structure of the model into three blocks: (I) Context and Technological Amplifier, (II) Unregulated Tension and Risk, and (III) Moderating Role of the P2-AI Pilot. This organization allows for clear articulation of the different performance scenarios depending on whether P2-AI is absent, insufficient, or fully operational.

Figure 2 – Conceptual Architecture of the Moderating Role of P2-AI in Public Performance



Source: Developed by the authors, based on the foundational work of the Hybrid and Contextual Model (El Fkihi & Touzi, 2025), institutional decoupling theory (Meyer & Rowan, 1977; DiMaggio & Powell, 1983), and the challenges of Artificial Intelligence and Information Systems (Olan et al., 2022; World Bank, 2024).

Normalized Legend: Figure 2 – Conceptual architecture of the moderating role of P2-AI in public performance. Structuring the theoretical model into three blocks and performance scenarios based on the levels of triple decoupling regulation. Scientific Interpretation of Figure 2: This structural model demonstrates that public

performance depends not only on technological capacity (P4-AI), but above all on the proactive regulation ensured by P2-AI. Three scenarios emerge:

- Absence of regulation leads to institutional decoupling and stagnant outcomes.
- Partial regulation leads to a reduction in the triple decoupling.
- Complete prophylactic governance leads to a substantial and sustainable improvement in overall performance. This approach highlights the central theoretical contribution: AI does not improve performance through its technicality alone, but through the existence of an anticipatory institutional mechanism capable of reducing the frictions between algorithmic quantification and public value.

This central interaction matrix concludes the formulation of our theoretical results and naturally leads to the discussion of their implications for institutional theory and public management in the DCs context.

5. DISCUSSION

5.1 Theoretical Implications

The proposed theoretical framework complements and refines contingency theory (Chenhall, 2003) by identifying algorithmic rationality as a new contextual variable and by showing that contingency alone is insufficient in the presence of strong institutional isomorphism, requiring an explicit regulatory mechanism (P2). Concerning Institutional Isomorphism Theory (DiMaggio & Powell, 1983), the framework nuances the idea that isomorphism is inevitable. It posits that if Prophylactic Governance is activated, organizations can resist isomorphism by explicitly questioning technological adoption choices. Isomorphism then reflects a deficit in governance of technological tensions, rather than an organizational inevitability.

The article also redefines Public Performance in the algorithmic age as a multidimensional and fundamentally political construct that must be protected against algorithmic reduction. Global Performance (Stiglitz et al., 2009) is a deliberate and negotiated balance between potentially conflicting objectives. AI finally amplifies the risk of professional hybridization (Begkos & Antonopoulou,

2022; Hellqvist & Kurkkio, 2025), making P2-AI essential for protecting non-managerial professional logics.

5.2 Practical Implications: The MHCP-AI Operational Strategy

The sustainable effectiveness of AI in DCs is conditioned by a governance feat rather than a technical prowess. The extended Hybrid and Contextual Model (MHCP-AI) provides a strategic framework for public decision-makers in DCs to structure their AI adoption and prevent the triple risk of decoupling.

The challenge is not buying the technology (P4), but harnessing AI for explicit public purposes. To do this, the model dictates a strategic investment priority for DCs with limited resources:

- First: Culture and Governance (P1 and P2). Investment must focus on establishing the Institutionalized Performance Culture (P1) and Prophylactic Governance (P2) structures, investing in training executives in systemic thinking and democratic deliberation.
- Second: Digital Sovereignty Capabilities (P3, control over P4). Develop internal capacities to understand, adapt, and potentially refuse imported technological solutions.
- Only Third: Technological Infrastructures (P4). Technological investments only bear fruit if the first three levels are in place.

This strategic steering is formalized by the institutionalization of an explicit National Framework for Public AI Governance, summarized by the checklist below.

5.3 Prophylactic Governance Checklist (PGC) for Decision-Makers

This matrix is intended for ministers, administration directors, or public decision-makers and translates the theoretical requirements of Pillar P2-AI (Prophylactic Governance) into anticipatory governance actions.

Table 4: Prophylactic Governance Checklist (PGC) before AI Adoption

Prophylactic Action (PGC Checklist)	Strategic Objective and Justification (MHCP-AI Pillars)
Planned Alignment (P1, P2, P3)	Verify the prerequisite alignment of pillars P1, P2, and P3: AI (P4) should only be activated if the institutional foundations (Culture, Regulation, Decentralization) are established or under construction.
Ex Ante Decoupling Assessment	Assess the risk of triple decoupling (technological, institutional, normative): An explicit governmental deliberation process must anticipate the risks of technological dependence and loss of public value before deploying the AI solution.
Minimal Technological Sovereignty	Guarantee Digital Sovereignty: Question <i>a priori</i> the dependence on foreign suppliers and proprietary platforms, maintaining national control over critical data (Truby, 2020; UNCTAD, 2024).
Traceability of Political Trade-offs	Impose the Explication of Political/Objectifying trade-offs: Force the recognition that behind every optimization function lies a political decision (Van der Voort et al., 2019), and that these trade-offs must be traced and made public.
Transparency of Decision Criteria	Institute Transparency: Make training data, known biases, and algorithm limitations public.
6. Public Register of Algorithms	Maintain a public and auditable Register: Allows for clear accountability and responsibility in case of error or detected bias.
Human Veto Right	Create decision-making braking points (P2-AI Specific): Ensure that algorithmic optimization logic never surpasses political logic, by creating points where humans can refuse or modify algorithmic recommendations without technical justification.
Contestability Mechanisms	Institutionalize the local Right to Contest (P3): Establish decentralized spaces (P3) for professionals, citizens, and stakeholders to contest algorithmic outputs, reducing information asymmetry (Torfing et al., 2019).
Protection of Non-	Guarantee Alignment with Global Performance: Explicitly measure

Quantifiable Indicators	the impact of AI on non-quantifiable dimensions (equity, dignity, sustainability), thus protecting Public Value (Moore, 1995).
Interactive vs. Diagnostic Use	Define the nature of AI: Ensure that AI is used as an Interactive Control tool (learning and decision support, Speklé & Verbeeten, 2013) rather than a simple sterile diagnostic control tool (Kaplan, 2009).

Source: Developed by the authors, based on El Fkihi & Touzi (2025), Chenhall & Morris (1986), Speklé & Verbeeten (2013), and Torfing et al. (2019).

5.4 Research Limitations and Future Directions

This conceptual study presents theoretical and methodological limitations. The abstract P2-AI model does not detail the precise mechanisms by which it reduces decoupling, and generalization to all DCs remains limited. A critical limitation concerns the role of political will: the framework assumes the existence of this will to implement Prophylactic Governance, whereas political elites may have an interest in prolonging technological dependence or may be little interested in Global Performance. Furthermore, the framework itself might present the risk of being an imported institutional model without adaptation to traditional governance forms in DCs. The propositions remain purely theoretical and await validation through empirical studies.

Although empirical validation is beyond the scope of this article, future research must concentrate on the rigorous validation of the propositions. Qualitative approaches (comparative case studies, action research) are necessary to observe *in situ* the management of Political/Objectifying tensions and the actual use of data generated by AI (diagnostic vs. interactive use) (Yin, 1994, 2018; Savall & Zardet, 2004). Quantitative approaches using Structural Equation Modeling (SEM/PLS-SEM) are also required to develop reliable measurement instruments for key constructs, such as Perceived Algorithmic Rationality and Effective Prophylactic Governance, and to test the moderating effects of P2 on the AI-Performance relationship. Finally, contextual refinement (P3-AI Validation) will need to examine how non-Western institutional traditions might adapt the principles of Prophylactic Governance, how political elites may be interested in prolonging decoupling, and

how social movements could act as a vector of prophylactic governance against technological top-down approaches.

6. CONCLUSION

This article provides three major contributions to the literature on public performance management in DCs in the age of Artificial Intelligence. We have extended the Hybrid and Contextual Model (MHCP) by explicitly integrating the challenges of Artificial Intelligence and algorithmic rationality, recognizing that AI is not simply a neutral technology for IS improvement (Pillar P4), but a new and qualitatively distinct source of governance tensions that demands specific prophylactic framing (P2-AI). The theoretical originality lies in the conceptualization of the triple decoupling (technological, institutional, normative) induced by algorithmic rationality, and in the positioning of Prophylactic Governance (P2-AI) as a critical and necessary regulatory mechanism to transform AI into a genuine lever for Global Performance. The effectiveness of AI is conditioned not by technical factors, but by institutional and political factors: performance culture, participatory governance of tensions, and decentralization of decision-making power.

In response to the central problem, we conclude that Prophylactic Governance becomes a non-optional institutional transformation imperative. Without it, AI reproduces and amplifies existing pathologies of institutional decoupling; with it, AI can serve to reinforce both administrative efficiency and broader public values. However, P2-AI is not sufficient alone. It must be rooted in an Institutionalized Performance Culture (P1) and in Structural Decentralization (P3) that allow for its substantial implementation, with these three pillars needing to be activated in concert. This shift contributes to a paradigm change in the conception of public sector modernization: the old paradigm of the 1990s-2010s saw technology as the key success factor, while the new paradigm (2020+) asserts that public performance improves through the establishment of institutional frameworks for regulating tensions between political and technical dimensions. Technology only works under the regime of proactive governance.

This paradigm shift has important implications for multilateral institutions (World Bank, UNDP, OECD) which must stop promoting technological adoption without ensuring the institutional foundations, invest in strengthening democratic governance, and recognize that reform failures reflect an insufficiency of governance of tensions and an inadequate importation of external models. The article formulates an urgent call to public decision-makers, researchers, and international institutions: digital transformation and the adoption of Artificial Intelligence must not be externally imposed processes, guided by commercial and technocentric logics. They must be framed by Prophylactic Governance that places public values and democratic sovereignty at the center. For DCs, this means investing first in governance (institutional and deliberative capacities), questioning and adapting rather than passively importing, and organizing the legitimate contestation of algorithmic recommendations at all levels. The research community must now focus on multiplying empirical studies validating the propositions in varied contexts, collaborating with local actors, critically questioning the universality postulates of public management models, and developing alternative models of digital sovereignty. The long-term success of Artificial Intelligence in the public sector of DCs will depend less on the technical sophistication of the algorithms than on the institutional robustness of the governance frameworks that frame them.

7. References

1. Abdel-Maksoud, A., Elbanna, S., Mahama, H., & Pollanen, R. (2015). The use of performance information in strategic decision making in public organizations. *International Journal of Public Sector Management*, 28(7), 528–549. <https://doi.org/10.1108/IJPSM-06-2015-0114>
2. Ahsina, K., Taouab, O., & Nafzaoui, M. (2014). Adoption and differentiation of management control systems by Moroccan public establishments: A modeling attempt. *European Scientific Journal*, 10(4), 199–208.
3. Anh, V. T., Plimmer, G., Berman, E., & Ha, P. N. (2022). Performance management in the Vietnam public sector: The role of institution, traditional culture and

- leadership. *International Journal of Public Administration*, 45(1), 49–63. <https://doi.org/10.1080/01900692.2021.1903499>
4. Arah, O. A., Klazinga, N. S., Delnoij, D. M. J., Ten Asbroek, A. H. A., & Custers, T. (2003). Conceptual frameworks for health systems performance: A quest for effectiveness, quality, and improvement. *International Journal for Quality in Health Care*, 15(5), 377–398. <https://doi.org/10.1093/intqhc/mzg049>
 5. Ata, A., & Carassus, D. (2023). To end the Arlésienne of performance management: The proposal of a global and operational measure of public performance by its value chain. *Télescope : Stratégie, Management public et Performance des organisations de l'État*, 20(3).
 6. Badil, H., Nabil, S., & Kasbaoui, T. (2025). Performance measurement and public values: Stakes and challenges for Moroccan universities. *International Journal of Accounting, Finance, Auditing, Management and Economics*, 6(9), 496–511. <https://doi.org/10.5281/zenodo.10534571>
 7. Begkos, C., & Antonopoulou, K. (2022). Hybridization as practice: Clinical engagement with performance metrics and accounting technologies in the English NHS. *Accounting, Auditing & Accountability Journal*, 35(3), 627–657. <https://doi.org/10.1108/AAAJ-12-2019-4333>
 8. Bessire, D. (1999). Defining performance. *Comptabilité-Contrôle-Audit*, 5(2), 127–150. <https://doi.org/10.3917/cca.052.0127>
 9. Caron, D. J., & Nicolini, V. (2023). Upheaval of the techno-informational universe and measurement of public action performance: Stakes and challenges. *Télescope : Stratégie, Management public et Performance des organisations de l'État*, 20(3).
 10. Chenhall, R. (2003). Management control systems design within its organizational context: Findings from contingency-based research and directions for the future. *Accounting, Organizations and Society*, 28(2–3), 127–168.

11. Chenhall, R. H., & Morris, D. (1986). The impact of structure, environment, and interdependence on the perceived usefulness of management accounting systems. *The Accounting Review*, 61(1), 16–35.
12. DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Journal of Sociology*, 48(2), 147–160. <https://doi.org/10.2307/2095101>
13. El Fkihi, W., & Touzi, B. (in press). Performance measurement systems in Developing Countries: Prophylactic Governance as a Response to Institutional Decoupling.
14. El Fkihi, W., Touzi, B., & Farchi, F. (2024). Performance measurement systems and CSR: Comparison of models for sustainable management. *International Journal of Accounting, Finance, Auditing, Management and Economics*, 5(11), 627–639.
15. Émery, Y., & Giauque, D. (2005). *Paradoxes of public management*. L'Harmattan.
16. Goddard, A., Assad, M., Issa, S., Malagila, J., & Mkasiwa, T. A. (2016). The two publics and institutional theory -- a study of public sector accounting in Tanzania. *Critical Perspectives on Accounting*, 40, 8–25.
17. Guillaume, B. (2009). Performance indicators in the public sector: Between illusion and perversity. *Cités*, 1(37), 101–109.
18. Hairout, W. (2023). The determinants of the balance of Performance Measurement Systems (PMS) of Moroccan Public Establishments and Enterprises (EPEM). *International Journal of Accounting, Finance, Auditing, Management and Economics*, 4(4-2), 171–195. <https://doi.org/10.5281/zenodo.8264719>
19. Hellqvist, S., & Kurkkio, M. (2025). Revisiting the Hybridization Thesis: A Literature Review and Future Research Agenda. *Financial Accountability & Management*, 41(2), 241–263.
20. Hood, C. (1991). A public management for all seasons. *Public Administration*, 69(1), 3–19.

21. Kaplan, R. S. (2009). *Conceptual foundations of the balanced scorecard*. Working paper, Harvard Business School.
22. Kaplan, R. S., & Norton, D. P. (1992). The balanced scorecard---measures that drive performance. *Harvard Business Review*, 70(1), 71–79.
23. Khenniche, S., & Henriot, J. (2021). Public action: Quest for performance and loss of meaning. Insights from governance tensions. *Management international*, 25(6), 116–132. <https://doi.org/10.7202/1085586ar>
24. Kusek, J. Z., & Rist, R. C. (2004). *Ten steps to a results-based monitoring and evaluation system*. World Bank.
25. Mazouz, B., Garzon, C., & Picard, P. (2012). Deviations in public organizations seeking performance. Towards prophylactic management of deviance risks. *Management international*, 16(3), 92–100. <https://doi.org/10.7202/1011419ar>
26. Mazouz, B., & Leclerc, J. (2008). *Integrated results-based management: Designing and managing performance differently in Public Administration*. PUQ.
27. Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 340–363.
28. Mnguni, H. (2024). Assessing the use of Monitoring and Evaluation outcomes on Service Delivery at Local Government Level in South Africa. *Manuscrit soumis pour publication*.
29. Modell, S. (2009). Institutional research on performance measurement and management in the public sector: A review and future research challenges. *Financial Accountability & Management*, 25(3), 277–303.
30. Moore, M. H. (1995). *Creating Public Value: Strategic Management in Government*. Harvard University Press.
31. Olan, F., Arakpogun, E. O., Suklan, J., Al-Shaibah, F., & Babajide, O. A. (2022). Artificial intelligence and knowledge sharing: Contributing factors to

- organizational performance. *Journal of Business Research*, 145, 605–615. <https://doi.org/10.1016/j.jbusres.2022.02.066>
32. Pollitt, C., & Bouckaert, G. (2000). *Public management reform: A comparative analysis*. Oxford University Press.
33. Polzer, T., Adhikari, P., Nguyen, C. P., & Gårseth-Nesbakk, L. (2023). Adoption of the International Public Sector Accounting Standards in emerging economies and low-income countries: A structured literature review. *Journal of Public Budgeting, Accounting & Financial Management*, 35(3), 309–332. <https://doi.org/10.1108/JPBAFM-01-2021-0016>
34. Renaud, L., & Berland, N. (2007). *Measurement and steering of public performance*. Economica.
35. Savall, H., & Zardet, V. (2004). *Research in management sciences: Qualimetric approach, observing the complex object*. Économica.
36. Simons, R. (2000). *Performance measurement and control systems for implementing strategy*. Prentice Hall.
37. Speklé, R. F., & Verbeeten, F. H. M. (2013). The use of performance measurement systems in the public sector: Effects on performance. *Management Accounting Research*, 24(4), 304–321. <https://doi.org/10.1016/j.mar.2013.07.004>
38. Stiglitz, J. E., Sen, A., & Fitoussi, J.-P. (2009). *Report by the Commission on the Measurement of Economic Performance and Social Progress*. Commission sur la Mesure des Performances Économiques et du Progrès Social.
39. Tenakwah, E. S., Otchere-Ankrah, B., & Watson, C. (2023). Performance management in Africa: An agenda for research. *Management Research Review*, 46(7), 969–985. <https://doi.org/10.1108/MRR-03-2022-0163>
40. Tichout, F., & Cherqaoui, M. (2025). Public performance steering system: Feedback from the prison and reintegration administration in Morocco. *Revue Internationale des Sciences de Gestion*, 8(2), 745–774.

41. Torfing, J., Sørensen, E., & Røiseland, A. (2019). Transforming the public sector into an arena for co-creation: Barriers, drivers, benefits, and ways forward. *Administration & Society*, 51(5), 795–825.
42. Truby, J. (2020). Governing artificial intelligence in the service of the United Nations sustainable development goals. *Développement durable*, 28(4), 946–959. <https://doi.org/10.1002/sd.2048>
43. UN. (2024). *Beware of the AI fracture*. United Nations.
44. UNCTAD. (2024). *From divides to dialogue: How developing countries can shape AI*. United Nations Conference on Trade and Development.
45. Van der Voort, H. G., Klievink, A. J., Arnaboldi, M., & Meijer, A. J. (2019). Rationality and politics of algorithms. Will the promise of big data survive the dynamics of public decision making? *Government Information Quarterly*, 36(1), 27–38. <https://doi.org/10.1016/j.giq.2018.11.001>
46. Varone, F. (2008). On public performance: Reconciling policy evaluation and program budget? *Politiques et management public*, 26(3), 77–89. <https://doi.org/10.4000/pmp.1512>
47. World Bank. (2024). *Global trends in AI governance: Evolution of national approaches*. World Bank.
48. Yin, R. K. (1994). *Case study research design and methods: Applied social research and methods series* (2nd ed.). Sage Publications Inc.
49. Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage Publications.