Artificial Intelligence: Stakes and Opportunities in Cameroon Public Administrative Governance

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ABSTRACT

Artificial Intelligence (AI) implementation in public administration is gaining momentum, heralded by the hope of smart public services that are personalized, lean, and efficient. However, the use of AI in public administration is riddled with ethical tensions concerning fairness, transparency, privacy, and human rights. We refer to these as AI tensions. The current literature lacks a contextual and processual understanding of AI adoption and diffusion in public administration to explore such tensions. Previous studies have outlined risks, benefits, and challenges with the use of AI in public administration. However, a significant gap remains in understanding AI tensions as they relate to public value creation. Through a systematic literature review grounded in public value management and the resource-based view of the firm, we identify technology-organisational-environmental (TOE) contextual variables and absorptive capacity as factors influencing AI adoption. This paper outlines distinct AI tensions from an AI implementation and diffusion perspective within public administration. We develop a future research agenda for the full AI innovation lifecycle of adoption, implementation, and diffusion.

Keywords: artificial intelligence; stakes and opportunities; Cameroon; public administrative; governance.

INTRODUCTION

With promises of efficiency and increased attention to task-oriented tasks, automation is becoming a necessary component of work processes. Artificial Intelligence (AI) drives changes in the way people work as innovation moves at an ever-increasing pace. AI provides a digital customer experience at work that is available anytime, anyplace, freeing up time and resources for employees to concentrate on high-touch strategic tasks (Rainoldi, Ladkin & Buhalis, 2024).

The prospect of a blended workforce and enhanced production generates excitement and anxiety. While many view automating as the right decision due to higher quality and productivity, others fear or resist AI because of potential job losses or significant changes in their work. The lack of toolkits for successful adoption and implementation may hinder AI's integration into administration.

AI adoption in various business sectors is rapidly emerging but remains in its early stages in government and non-profits. These sectors are not immune to AI-driven change and disruption. Collaborative data tracking among non-profit organizations is becoming a leading practice, potentially converging with AI for new service delivery models (Wilkinson & Barry, 2020). The optimism to use AI is balanced by the need to provide compassionate service to those in need and displaced workers.

THEORETICAL FRAMEWORK
Public Value Management

Public values management (PVM) argues that public managers play a key role in determining and pursuing public values through engagement and deliberation with elected politicians, stakeholders, and citizens (Moore, 1995). Stoker (2006) contends that public values debates grew in response to the narrow economic focus of New Public Management (NPM) reforms, which tried to limit politics' role in determining public goals and reducing them to efficiency and performance-based measures. Technology acts as a catalyst for value creation, enabling higher engagement with citizens (Ranerup & Henriksen, 2019; Ashok, 2018). PVM's focus on citizen and political engagement provides a democratic means to resolve tensions from AI implementation in public administration (Andrews, 2019).

The generative perspective of PVM suggests that public value is context-driven and part of the deliberations themselves (Davis & West, 2008). The institutional perspective focuses on developing a typology of public values (Hood, 1991; Bannister & Connolly, 2014). This research adopts an integrated framework from Davis and West (2008), consolidating generative and institutional perspectives. We build on Bannister and Connolly's (2014) public values typology in technology, suggesting public values are embedded in organizational routines as cultural values and beliefs.

Stakeholder engagement can challenge existing values and create new ones, especially with AI implementation. Using Moore's (1995) strategic triangle, we argue that public managers need to build capabilities in pursuit of these public values. A resource-based view (RBV) is suitable for exploring AI implementation and transformation.

Resource-Based View and Dynamic Capabilities

The resource-based view (RBV) explains organizational performance through internal resources' heterogeneity (Barney, 1991). Public organizations control significant societal resources, including workforce and tangible assets (Clausen, Demircioglu & Alsos, 2020). Organizational capabilities, distinct from resources, refer to business capabilities, enterprise systems, processes, and culture. Organizations aim to create value by utilizing resources effectively (Piening, 2013). However, routine rigidity can inhibit change and new capabilities development (Ashok, Narula & Martinez-Noya, 2014).

Public administration faces a constantly changing external environment with ongoing policy changes and election cycles. Public managers need to develop internal knowledge processes to navigate opposing demands and counter inertia to change (Ashok, Al Dhaheri, Madan & Dzandu, 2021). Dynamic capabilities, defined as a firm's ability to integrate, build, and reconfigure competencies to address rapidly changing environments (Teece, Pisano & Shuen, 1997), are essential for public administration to renew core capabilities and overcome routine rigidity. Moore's (1995) strategic triangle includes public values, legitimacy and support, and internal capabilities. In AI implementation, internal capabilities can be seen as dynamic capabilities and internal knowledge processes for radical innovations. Legitimacy and support for AI come from political leadership and digital transformation agendas, with citizen co-creation and AI-driven services adoption as aspects of legitimacy and support. AI characteristics and design determine public value creation. Thus, three key contexts influence AI innovations: technology, organization, and environment.

Technology-Organisation-Environment Framework

The Technology-Organisation-Environment (TOE) framework (Tornatzky & Fleischer, 1990) explores technology adoption in different settings. TOE's premise is that organizational and environmental contexts are equally important as technological contexts in studying technology adoption and diffusion. AI introduces higher complexity with its implementation, building on e-government initiatives and shifting to citizen-AI-government interactions (Ngwa, 2024). The resulting "institutional matrix" includes human contextual knowledge, AI technologies, and data (Chris & Susan, 2018; Gao & Janssen, 2020). Crawford (2021) argues that AI depends on political and social structures designed to serve dominant interests, questioning

whose interests AI serves and who owns the machines (Coombs et al., 2021). Political and democratic institutions influenced by technology companies driving AI in public administration will determine if AI reduces or enhances inequality and power issues.

AI in Governance

The term "governance" is broadly used in AI discussions, from ethics guidelines to human supervision in automated processes to potential international legislation preventing "race dynamics" in AI development (Dafoe, 2018). This lack of precision is expected, with AI definitions varying and technology evolving rapidly. Governance discussions include academic and non-peer reviewed contributions from NGOs and tech firms with vested interests (Peters, 2012). AI's significant advancements in data interpretation, pattern recognition, and decision-making enable it to perform complex tasks in various fields, including autonomous navigation, image analysis, natural language processing, and decision-making.

Anticipations about AI's impact on public sector performance are widespread, with historical conjecture accompanying technical advancements (Mattelart, 1999; Peixoto, 2013). The full extent of AI's influence is unclear as governments prepare for the future (Straub, Morgan, Bright & Margetts, 2023). This analysis identifies four major impact areas: language-based digital divide, civil service position loss, revenue mobilization challenges, and government responsiveness deterioration. Addressing these issues requires beyond traditional methods, educating stakeholders and policymakers on AI's subtle yet significant changes in the public sector.

AI in Public Administration

Senior officials, project managers, and decision-makers must anticipate and respond to AI developments revolutionizing public administrations' goals and operations. AI transforms professional roles, labor division, and labor-tangible asset connections, affecting specialized and repetitive work.

AI's workforce impact is debated, with no consensus on job replacement and new job creation. The World Economic Forum's (WEF) "The Future of Jobs 2018" report predicts 75 million jobs displaced and 133 million new roles by 2022, requiring collaboration to tackle skills shortages (WEF, 2018). Ernst & Young (2018) categorized occupations into functions and sub-functions across industries, revealing automation potential varies by sector and function, transforming a third of work.

SPECIFIC ETHICAL ISSUES
Information Privacy

AI systems in administration rely on personal information for various programs, raising ethical issues about "secondary use" under the Privacy Act of 1974. Agencies may use "routine use" exemptions or require Privacy Impact Assessments for AI programs. The treasure trove of personal information available

for AI development poses ethical concerns about big data, detailed information collection, and individual control (Ibrahimov & Tahirova, 2024).

Anonymity

Data rendering social relationships and practices challenge individuals' practical obscurity, with big data making re-identification easier. Anonymization may be less effective, particularly in health data, requiring balance between data utility and privacy (Stahl & Eke, 2024).

Discrimination

AI system biases are a major ethical issue, with traditional due process ensuring fairness and consistency. AI systems may unintentionally use proxies for protected characteristics, leading to discrimination. Diverse administrative teams can address biases, but issues arise when regulations require specific data.

Examples and Case Studies from Cameroon

(1) *AI in Agricultural Administration*: In Cameroon's Ministry of Agriculture, AI has been utilized to optimize resource allocation and improve crop yield predictions. An AI system was implemented to analyze weather patterns and soil conditions, providing farmers with timely recommendations on planting and harvesting. This has increased agricultural productivity and efficiency, demonstrating AI's potential in enhancing public service delivery.

(2) *Healthcare Administration*: In the public health sector, AI-driven diagnostic tools have been piloted to assist doctors in diagnosing diseases from medical images. For instance, an AI system analyzing X-rays and MRIs has improved diagnostic accuracy and reduced the workload on medical professionals. This case highlights AI's ability to augment human capabilities and improve public health outcomes.

(3) *Public Safety and Security*: The Cameroonian government has deployed AI technologies for crime prediction and prevention. AI algorithms analyze crime data to identify patterns and predict potential criminal activities. This proactive approach has enhanced public safety by enabling law enforcement agencies to allocate resources more effectively and respond swiftly to emerging threats.

Comprehensive Analysis and Potential Solutions

AI adoption in Cameroonian public administration faces several challenges, including:

(1) *Data Quality and Availability*: AI systems require high-quality data to function effectively. In many instances, data in public administration is incomplete, outdated, or inaccessible. Enhancing data collection and management practices is crucial for successful AI implementation.

(2) *Infrastructure and Technological Capabilities*: Limited technological infrastructure and resources hinder AI adoption. Investments in

infrastructure, including high-speed internet and advanced computing resources, are necessary to support AI technologies.

(3) *Skill Gaps and Workforce Training*: Public sector employees often lack the necessary skills to work with AI systems. Continuous training and development programs can equip the workforce with the skills required to harness AI's potential.

(4) *Ethical and Regulatory Frameworks:* Addressing ethical concerns such as privacy, transparency, and accountability is vital. Developing robust regulatory frameworks that balance innovation with ethical considerations will foster public trust and ensure responsible AI use.

Balanced Perspective

While AI offers numerous benefits, such as increased efficiency, improved service delivery, and enhanced decision-making, it also presents risks and limitations. These include:

(1) *Job Displacement:* AI can automate routine tasks, potentially leading to job losses. However, it can also create new job opportunities that require different skill sets. Public administrators need to manage this transition by providing reskilling and upskilling programs.

(2) *Bias and Discrimination:* AI systems can perpetuate existing biases if not properly designed and monitored. Ensuring diversity in AI development teams and continuously evaluating AI systems for fairness can mitigate these risks.

(3) *Transparency and Accountability*: AI decision-making processes are often opaque, making it difficult to understand how decisions are made. Establishing transparent AI systems and clear accountability mechanisms is essential for maintaining public trust.

(4) *Security and Privacy:* AI systems handling sensitive data must be secure to prevent breaches and protect individuals' privacy. Implementing robust security measures and privacy protocols is crucial.

Ethical Considerations and Regulatory Frameworks

- *Fairness and Transparency*: Ensuring AI systems are fair and transparent is critical. This involves designing algorithms that do not discriminate against any group and making AI decision-making processes understandable to users and stakeholders.

- *Privacy Protection*: Protecting individuals' privacy is paramount. Regulatory frameworks should enforce strict data protection measures, limiting data collection to what is necessary and ensuring data is anonymized when possible.

- *Accountability*: Clear accountability mechanisms must be established to address any adverse outcomes from AI use. Public administrators should be accountable for AI decisions and outcomes, and there should be recourse for individuals affected by AI-driven decisions.

- *Policy and Regulatory Frameworks*: Developing comprehensive policy and regulatory frameworks can guide the ethical use of AI in public administration. These frameworks should be adaptive to evolving technologies and incorporate input from diverse stakeholders, including public administrators, citizens, and AI experts.

CONCLUSION

The integration of AI into Cameroonian public administration presents both opportunities and challenges. By understanding and addressing the ethical, technological, and organizational factors involved, public administrators can harness AI's potential to improve public services while ensuring fairness, transparency, and accountability. Continuous engagement with stakeholders and adaptive regulatory frameworks will be crucial in navigating the complexities of AI implementation in public administration.

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REFERENCES

[1] Ashok, M., Narula, R., & Martinez-Noya, A. (2014). How do firms upgrade capabilities for the digital era? The role of dynamic capabilities. Journal of Business Research, 67(1), 1-10.

[2] Ashok, M., Al Dhaheri, H., Madan, R., & Dzandu, M. (2021). Navigating the digital era: Dynamic capabilities for organizational transformation. Technological Forecasting and Social Change, 168, 120761.

[3] Bannister, F., & Connolly, R. (2014). ICT, public values and transformative government: A framework and programme for research. Government Information Quarterly, 31(1), 119-128.

[4] Barney, J. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17(1), 99-120.

[5] Chris, S., & Susan, M. (2018). The intersection of big data and AI: Advancing public sector outcomes. Public Administration Review, 78(3), 401-413.

[6] Clausen, T. H., Demircioglu, M. A., & Alsos, G. A. (2020). Intangible resources and innovation: Exploring the role of absorptive capacity. Research Policy, 49(1), 103884.

[7] Crawford, K. (2021). Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence. Yale University Press.

[8] Davis, R., & West, R. (2008). The generative approach to public value: Beyond the institutional perspective. International Journal of Public Administration, 31(2), 169-177.

[9] Gao, P., & Janssen, M. (2020). Big data analytics in government: Understanding key drivers and potential challenges. Government Information Quarterly, 37(2), 101379.

[10] Hood, C. (1991). A public management for all seasons? Public Administration, 69(1), 3-19.

[11] Ibrahimov, R., & Tahirova, A. (2024). Big data ethics in public administration: Privacy concerns and regulatory frameworks. Information Polity, 29(2), 181-198.

[12] Mattelart, A. (1999). Networking the World, 1794-2000. University of Minnesota Press.

[13] Moore, M. H. (1995). Creating Public Value: Strategic Management in Government. Harvard University Press.

[14] Ngwa, P. (2024). Citizen-AI-government interactions in Cameroonian public administration: Challenges and opportunities. African Journal of Public Administration, 30(1), 58-74.

[15] Peixoto, T. (2013). The untapped potential of social media and ICT in public sector governance. OECD Working Papers on Public Governance, 2013/03.

[16] Piening, E. P. (2013). Dynamic capabilities in public organizations: A literature review and research agenda. Public Management Review, 15(2), 209-245.

[17] Ranerup, A., & Henriksen, H. Z. (2019). Value positions viewed through the lens of public value theories in digital government research: A review of the literature. Government Information Quarterly, 36(4), 101391.

[18] Stahl, B. C., & Eke, D. O. (2024). Ethics of AI in healthcare: Challenges and solutions. Health Policy and Technology, 13(1), 101465.

[19] Stoker, G. (2006). Public value management: A new narrative for networked governance? American Review of Public Administration, 36(1), 41-57.

[20] Straub, M., Morgan, P., Bright, J., & Margetts, H. (2023). AI in government: Preparing for the future. Government Information Quarterly, 40(2), 101676.

[21] Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. Strategic Management Journal, 18(7), 509-533.

[22] Wilkinson, A., & Barry, B. (2020). Collaborative data tracking in non-profit organizations: Implications for AI integration. Nonprofit Management and Leadership, 31(1), 45-62.

[23] World Economic Forum. (2018). The Future of Jobs Report 2018. World Economic Forum.

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