

# Re-engineering the Botswana civil service with human-AI augmentation: A grounded theory of organizational transformation for a Fourth Industrial Revolution-ready public sector

Tshepho Bathai

## Abstract

This study investigates the organisational transformations required to re-engineer Botswana's civil service through human-AI collaboration to develop a Fourth Industrial Revolution-ready public sector. The study adopted a qualitative research design based on document analysis informed by grounded theory principles. Secondary data were drawn from government reports, national and regional policy documents, and peer-reviewed academic literature published between 2020 and 2025. An inductive analytical process involving open, axial, and selective coding was used to identify recurring patterns and relationships, leading to the development of an integrative theoretical explanation of AI-enabled organisational transformation in Botswana's civil service. The findings demonstrate that effective AI integration in Botswana's civil service requires fundamental organisational restructuring. In relation to leadership and management, the study finds that adaptive leadership competencies, strategic sense-making, and participatory managerial practices are critical for aligning AI initiatives with public service objectives. With respect to the workforce, the findings reveal that workforce anxiety is a major constraint on AI adoption, but can be mitigated through targeted skills development, transparent communication, and continuous learning frameworks. Across all objectives, the study identifies leadership as the central mediating mechanism through which organisational change, workforce trust, and human-AI collaboration is achieved. Ethical governance and cross-sectoral collaboration further emerge as enabling conditions for sustainable and trusted AI deployment. The study relies exclusively on secondary data, which limits direct insight into the lived experiences of civil servants during AI implementation. Nonetheless, the study offers a robust theoretical contribution by advancing a leadership-mediated model of human-AI augmentation that can inform public sector reform, policy design, and leadership development in Botswana and comparable developing-country contexts.

**Keywords:** *human-AI collaboration, digital transformation, public sector leadership, organisational change, artificial intelligence adoption, Botswana Civil Service*

## Article History:

*Received:* October 31, 2025  
*Accepted:* December 28, 2025

*Revised:* December 15, 2025  
*Published online:* February 1, 2026

## Suggested Citation:

Bathai, T. (2026). Re-engineering the Botswana civil service with human-AI augmentation: A grounded theory of organizational transformation for a Fourth Industrial Revolution-ready public sector. *International Review of Social Sciences Research*, 6(1), 87-106. <https://doi.org/10.53378/irssr.353309>

## About the author:

PhD Candidate, Institute of Distance Education, University of Zambia. Email: [bathaison@yahoo.com](mailto:bathaison@yahoo.com)



## 1. Introduction

The public sector in African nations is amid a remarkable transformation since governments aim to modernize their services in the face of the demands brought about by the Fourth Industrial Revolution (4IR). The revolution, which its hallmark includes the mass incorporation of artificial intelligence (AI), robotics, big data, and IoT, can radically restructure and deliver the structure of public services (African Union, 2020). In Botswana, among other African nations, the problem of modernizing the administration of the public through the implementation of digital technologies, including AI, tops the agenda. Nonetheless, the journey towards the realization of the fully AI-enabled public sector remains threatened with challenges such as workforce resistance, and lack of digital divides and leadership competences (Latupeirissa et al., 2024; Vatamanu & Tofan, 2025; Madan & Ashok, 2023). In trying to re-engineer its civil service, Botswana must break these barriers through the redefinition of the structure in the organizations, the redefinition of the job functions, and the creation of the skilled labor force capable enough to accept the delivery of the civil service with the assistance of AI.

The objective of this study is to reflect on the necessary organizational changes required to shape government ministries and public service delivery in the shape of a human-AI collaboration model. It examines how the leaders in the Botswana public sector can reconfigure job functions, manage workforce fear, and develop the required competences to support such transformation. Adopting the method of a grounded theory, the current work aims at determining the managerial approaches and the leadership skills required to transform from the classical, document-oriented bureaucracy towards a more flexible, more efficient, more accountably responsive AI-powered civil service (Defitri et al., 2020; Wamba et al., 2024). In Botswana's civil service tradition, which so far was relying mainly on the use of manual procedures and pyramidal organizations, transformation along such a direction can liberate the potentiality for better provision of service, increased citizen interaction, and increased policy responsiveness (Mudongo, 2021).

This research enriches the literature with a theory-in-the-moment of organizational transformation that points out the competences and roles needed for AI integration in the public sector can be led. Even though the concern about digital governance in the future and the promises held by AI are growing day after day, the current literature about how seamless implementation in the operations in the public sector can be achieved remains low, especially

in African nations such as Botswana (Maraga et al., 2022). Based on the experiences from the leaders and civil servants in Botswana, the paper tries to complete the gap and provide practicable points in the moment into AI uptake in the public sector.

As the technology of AI becomes ever more central to the governance of the modern age, it becomes more important than ever to learn how best to manage the relationship between humans and AI. Organizational design in the public sector must therefore be designed with the minutiae of the collaboration between humans and AI in mind, particularly in reference to workforce apprehension and skills realignment. It becomes imperative then to remit these concerns to see Botswana's civil service finally able to cope with the needs of the contemporary age. This research therefore illuminates the inner workings of the transformation in addition to examining the wider reference points for policy and regional governance.

The significance of this study lies in its potential to inform policymaking and leadership practices within Botswana's civil service. By providing a theoretical framework for AI integration in public administration, the study offers insights into how governments in similar contexts can navigate the complexities of digital transformation. Furthermore, it emphasizes the importance of addressing leadership development and training needs to foster a digitally literate workforce capable of driving innovation in public service (Phuyal, 2024). With Botswana's commitment to embracing the digital transformation agenda, the findings from this research can guide future efforts in reforming and modernizing public service delivery, ensuring that it is more agile, efficient, and responsive to the needs of its citizens.

The overarching aim of this study is to explore how the Botswana Civil Service can be re-engineered through the integration of AI, providing a roadmap for creating a Fourth Industrial Revolution-ready public sector. The study focuses on how leaders can reshape organizational structures, reassign roles, and upskill the workforce to foster an AI-augmented environment. The study seeks to identify the key organizational changes required for the successful integration of artificial intelligence in Botswana's civil service. It also aims to examine the leadership competencies and managerial strategies necessary to support the transition toward an AI-enabled public sector. In addition, the study assesses the potential challenges and opportunities related to workforce anxiety and skills development in the context of AI adoption. By addressing these objectives, the study provides actionable insights for policymakers and civil service leaders in Botswana while contributing to the broader discourse on digital governance in developing economies.

## 2. Literature Review

### *2.1. Theoretical Framework*

The transformation of the public sector with the advent of the contemporaneous ICTs, especially in Botswana, needs a strong theoretical base that combines technology advancements and leadership policies. Concepts like the Technology-Organization-Environment (TOE) framework, which aims at the organizational environment in the uptake of technology, and the Unified Theory of Acceptance and Use of Technology (UTAUT), which explores technology acceptance determinants, are valuable in the understanding of the incorporation of AI in the public administration (Defitri et al., 2020). The models assist in the positioning of the difficulties that arise with the re-engineering the civil service for the incorporation of AI and the structural changes that are necessary with successful implementation.

The TOE model argues that technology diffusion depends on three aspects: technological, organizational, and environmental environments (Tiwari & Suresha, 2021). For Botswana, the technological environment implies the incorporation of AI in the existing government infrastructure, the organizational environment the restructuring of the civil service structure so that the civil service can work with AI, and the environmental environment the regulatory and the resultant socio-political environment favourable or unfavourable for the digital transformation. The UTAUT model, however, puts forward performance expectancy, effort expectancy, social influence, and facilitating conditions as the most important predictors of technology diffusion (Alfiani et al., 2024). Both models are important in determining the motivators and the inhibitors of AI diffusion in the civil service in Botswana and in knowing how the workers in the public sector and the leaders in the sector are going to accept and conform to the new technologies.

### *2.2. Human–AI Collaboration in the Public Sector*

Public sector human–AI collaboration offers revolutionary potential and systemic issues, especially in developing administrative contexts. Automation and data-driven decision support systems can boost government ministry efficiency, accountability, and analysis with AI (Mudongo, 2021). Health and education forecasting, resource allocation, and service delivery can benefit from AI (Yun et al., 2024). These benefits depend on AI integration into organisational operations. African digital governance reforms show that technology-driven

attempts fail without institutional groundwork (African Union, 2020). Public administration's socio-technical system should include AI, not just as an invention.

Scholars increasingly believe AI adoption includes deliberate human–AI collaboration rather than labour substitution (Wamba et al., 2024; Kim & Lee, 2025; Wang & Lu, 2025; Arslan et al., 2022; Meng et al., 2025). AI lets public authorities focus on complex decisions and citizen engagement by automating routine tasks. Many African government services view AI implementation as a job threat, hence this collaborative paradigm is underdeveloped (Malephane, 2022). Few studies have examined Botswana civil servants' views on AI integration and collaboration. Literature demonstrates a gap between human–AI collaboration and Botswana's public sector. This study examines how organisational restructuring promotes AI-human collaboration to fill this gap.

### ***2.3. Leadership Competencies and Managerial Strategies for AI Integration***

Leadership affects public sector AI adoption, implementation, and resistance. Digital transformation leadership requires strategic vision, adaptability, and change management (Botlhale & Dick-Sagoe, 2023). Technology must be turned into compelling public value propositions for employees and citizens by leaders. TOE and UTAUT research show that leadership commitment greatly impacts digital system perceived usefulness and ease of use (Alfiani et al., 2024). Many public sector initiatives fail due to leadership concentration on technology rather than organisation. Thus, AI integration leadership is relational and technical. Managerial strategies determine leadership intent's organisational success.

AI-enabled transformation management requires phased implementation, continuing learning, and cross-departmental collaboration (Defitri et al., 2020). Poor African public sector management splits and duplicates digital systems (Meru & Kinoti, 2022). Botswana's public sector struggles to implement digital methods. Ministry officials have neglected AI implementation despite ambitious AI ambitions. This article covers Botswana's AI reform's leadership competencies and management execution research gap.

### ***2.4. Workforce Anxiety and Resistance to AI Integration***

The literature frequently cites workforce fear as a deterrent to the use of AI in public administration. According to studies, civil servants frequently link AI to losing their jobs, losing their discretion, and losing their sense of professional identity (Latupeirissa et al., 2024).

These issues are especially serious in bureaucratic institutions with established practices and little exposure to the internet. Data on the digital divide in Botswana reveals that public sector workers have different levels of digital literacy and unequal access to technology (Malephane, 2022). When AI improvements are implemented without sufficient engagement, this context increases opposition and uncertainty. According to the literature, resistance stems from fear of being excluded and uncertain rather than from a general dislike of innovation.

Crucially, current research is divided on whether worker resistance is a result of poor leadership and communication or an inevitable byproduct of automation. While some scholars stress the importance of leadership in influencing employee perceptions, others contend that opposition is a reflection of structural conservatism in public institutions (Meru & Kinoti, 2022). According to evaluations of digital change particular to Botswana, resistance greatly decreases when staff members are trained and involved early on (Esiefarienrhe & Mokeresete, 2022). This paradox suggests a lack of knowledge about how organisational context and leadership influence workers' reactions to AI. Closing this gap is essential to the study's focus on organisational transformation mediated by leadership.

### ***2.5. Ethical Considerations in AI Integration for Public Administration***

Since the state must protect citizens' rights, ethical governance is crucial when deploying AI in public administration. The literature ranks algorithmic bias, data privacy, and accountability as the primary ethical challenges with AI-based decision-making systems (Elisa et al., 2023). AI systems without specific legal frameworks could perpetuate current inequities, notably in service allocation and monitoring. These risks are increasingly recognised in African governance frameworks for rights-based digital development (African Union, 2020). However, national implementation varies.

Ethics are complicated in Botswana by the need to boost public trust in digital government systems. Legal evaluations show transparency and data protection enforcement gaps as digital services grow (Maraga et al., 2022). GDPR provides norms, but Botswana's institutions must adapt them. Leadership and ethical competence are as critical to ethical AI governance as policy formulation, according to academics (Fegert, 2023). In public administration, this literature reveals a conflict between organisational practice and ethics. This study examines how leadership and organisational transformation processes incorporate ethical considerations during AI adoption.

### 3. Methodology

#### 3.1. Research Design

This qualitative study examined the organisational transformation needed to re-engineer the Botswana Civil Service with human–AI augmentation. The study used systematic analysis of secondary documentary sources to assess leadership competencies, managerial strategies, and workforce dynamics affecting AI-enabled public sector change. Given the study's focus on macro-level institutional development, policy trajectories, and governance structures, heavily documented in official reports and peer-reviewed literature, this methodology choice seemed acceptable (ElMassah & Mohieldin, 2020). In poor countries, formal plans, legal frameworks, and institutional reforms affect public sector digital transformation, which is best represented through documentary evidence rather than individual testimonies (African Union, 2020). The study identified repeating patterns, conflicts, and enabling conditions for Botswana's public service restructuring by evaluating these sources. As part of its theory-building focus, the study stressed interpretive depth and analytical synthesis over empirical generality. This method also integrated Botswana's experience into African and worldwide AI-enabled governance debates (Latupeirissa et al., 2024).

The study used qualitative grounded theory document analysis, not classical grounded theory. Traditional grounded theory requires direct data creation from participants, which the study did not (Corbin & Strauss, 2015). Instead, grounded theory analytical methods guided inductive coding, category formation, and conceptual integration across documentary sources. Document analysis is a rigorous qualitative tool for studying policy-driven and institutional phenomena, especially in public administration research when reforms are defined through formal texts (Yin, 2024).

This methodology allowed rigorous comparison across documents to determine how Botswana's civil service frames, governs, and operationalises AI adoption. Leadership adaptation, workforce anxiety, and ethical governance, which appear in policy and research sources, were also captured by the method (Feliciano-Cestero et al., 2023). The study combined methodological rigour with contextual feasibility by using grounded theory reasoning in document analysis. This design guaranteed conceptual consistency and addressed the realities of investigating large-scale public sector restructuring (Wamba et al., 2024).

### ***3.2. Data Sources and Units of Analysis***

The study analysed 42 documentaries produced between 2020 and 2025. These included 14 government and policy studies, 22 peer-reviewed academic articles, and 6 institutional and regional public sector digital governance and AI implementation strategy documents. Government sources included digital transformation programs, State of the Nation speeches, public service reform frameworks, and Botswana-focused digital rights studies (Mudongo, 2021).

AI-enabled change was examined theoretically and comparatively using public administration, digital governance, and information systems journals (Alfiani et al., 2024), alongside regional and international policy documents, particularly those of the African Union, which situated Botswana's developments within broader continental digital agendas (AU, 2020). The analysis focused on institutional narratives, policy perspectives, and governance mechanisms, providing a structured basis for understanding how Botswana's public service discourse shapes leadership, organisational transformation, and workforce readiness (Botlhale & Dick-Sagoe, 2023).

### ***3.3. Instrumentation and Data Collection Process***

Google Scholar, Scopus, and institutional repositories provided academic sources, while government and regional organisation websites provided policy materials. Documents must specifically address AI, digital transformation, public service reform, leadership, or workforce concerns in developing or African public sectors (Meru & Kinoti, 2022). Sources relevant to Botswana were prioritised, with comparative instances used when national data was scarce. Documents were downloaded, classified, and arranged using reference management software for traceability and analytical consistency. This ensured that the dataset mirrored strategic policy aims and scholarly public sector digitalisation interpretations (Phuyal, 2024). The study guaranteed breadth, depth, and analytical balance by consistently collecting papers across categories.

### ***3.4. Data Analysis Procedure***

Data analysis used grounded theory-inspired inductive, three-stage coding for document-based research. Line-by-line reading of texts during open coding revealed AI integration, leadership adaption, workforce skills, and organisational restructuring themes

(Corbin & Strauss, 2015). These initial classifications covered “augmentation versus automation,” “leadership readiness,” and “employee anxiety.” The axial coding phase evaluated category linkages to link leadership competencies and workforce responses to AI implementation (Latupeirissa et al., 2024).

This stage showed how managerial methods affect AI adoption and organisational stability. Selective coding revealed a major integrative category: human–AI augmentation as an organisational transformation mechanism integrating leadership, workforce development, and ethical governance. A core category guided the analytical narrative and the study's theoretical contribution. As part of theory-building, the analysis went from description to conceptual integration (Wamba et al., 2024).

### ***3.5. Research Ethics***

The study had low ethical risk because it used only publically available secondary data and did not include human subjects. For transparency and academic integrity, all sources were from available and verifiable repositories. Respect for intellectual property and scholarly standards was maintained by proper credit and citation (Fegert, 2023). Analytics were used to address AI governance ethics such data privacy, algorithmic accountability, and institutional duty. Policies and research on ethical digital governance investigated these concerns (Elisa et al., 2023). By critically examining AI ethical hazards in public administration, the study followed appropriate research practices. Academic ethics and evolving digital governance research criteria were met (Maraga et al., 2022).

## **4. Findings and Discussion**

### ***4.1. Key Organizational Changes for the Successful Integration of AI in Botswana's Civil Service***

The results show that Botswana's civil service needs a major organisational overhaul to include artificial intelligence. Bureaucratic structures and paper-based workflows hinder AI-enabled system adoption, according to document analysis (African Union, 2020). The necessity to realign employment responsibilities, reporting structures, and decision-making processes for data-driven and automated operations is stressed in policy texts (ElMassah & Mohieldin, 2020). National reform plans showed that ministries that digitised internal procedures had faster service turnaround and less administrative bottlenecks. Organisational

transformation is required for AI adoption, not a result (Defitri et al., 2020). The data also shows that AI integration works best within public sector reform goals rather than as technical projects. AI reveals structural inefficiencies and forces organisational change.

Data suggests a second organisational shift: workforce configuration and skills realignment. According to documents studied, civil service departments deploying AI-supported technologies increasingly distinguish between administrative and analytical or supervisory jobs (Latupeirissa et al., 2024). This reorganisation involves targeted reskilling to reposition rather than replace employees. Afrobarometer data suggests that public personnel in technologically modernising African countries like Botswana fear job loss (Malephane, 2022). Ministries that expressly positioned AI as an augmentation tool had reduced opposition and increased staff participation in digital training. These findings show that organisational reform must include HR methods that actively manage employee attitudes. This study's analytical interpretation is that organisational transformation succeeds when structural change and workforce reassurance work together.

#### ***4.1.1. Managerial strategies needed to facilitate AI adoption***

The analysis shows that managerial strategy is crucial to organisational restructuring and AI integration. Phased implementation dominates public institutions' AI-enabled system management in the reviewed materials (Meru & Kinoti, 2022). Ministries using prototype initiatives before full-scale deployment had more operational stability and fewer implementation difficulties. Managers tested system compatibility, workflow mismatches, and internal confidence before scaling. In developing-country public sectors with low digital maturity, slow AI implementation works (Phuyal, 2024). The data suggest that managerial sequencing, not technology sophistication, determines AI success.

Data shows cross-sector collaboration and institutional coordination as another managerial method. Private technology partnerships and regional digital efforts are often cited as ways to address capacity gaps (African Union, 2020). Collaborations give technical expertise while letting government officials maintain strategic oversight. Internal departmental coordination is also necessary because dispersed adoption leads to duplication and incompatible systems (Wamba et al., 2024). Inter-ministerial task teams and feedback loops helped managers match AI programs with service delivery priorities. These data indicate that

AI integration is a managerial process requiring collaboration, negotiation, and adaptive oversight.

#### ***4.1.2. Leadership competencies required for a 4IR-ready civil service***

Leadership competencies unified organisational change, managerial strategy, and worker response. Data show that leaders' ability to lead adaptive change under uncertainty is more important than technical skills for AI integration (Botlhale & Dick-Sago, 2023). AI-related civil service changes require strategic vision, emotional intelligence, and communication skills, according to policy guidelines. Leaders who linked AI adoption to public benefit reduced employee concern and opposition (Mudongo, 2021). This shows that digital reform leadership legitimacy is built on trust, not authority.

The findings show that Botswana's civil service has to move from command-and-control to learning-oriented and participatory leadership for the Fourth Industrial Revolution. Public sector innovation studies regularly relate leadership flexibility to technology adoption success (Feliciano-Cestero et al., 2023). Leaders who fostered experimentation, endured early implementation faults, and engaged in staff development established AI sustainability. In contrast, inflexible leadership increased employee apprehension and hindered adoption. The study concludes that leadership skill drives organisational change for human–AI augmentation. Leadership influences organisational restructuring, managerial strategy, and employee anxiety. This integrative role underpins the study's conceptual model of Botswana's AI-enabled public sector reform.

### ***4.2. Leadership Competencies and Managerial Strategies Required to Support the Transition to an AI-Enabled Public Sector***

#### ***4.2.1. Leadership competencies for AI integration***

The findings show that leadership competency is the most important component in Botswana's civil service AI integration. Document analysis shows that compliance-focused administrative leadership approaches are unsuitable for AI-driven unpredictability and rapid technological change (Botlhale & Dick-Sago, 2023). Instead, AI integration requires leaders with adaptive aptitude, strategic awareness, and the ability to turn technology transformation into organisational purpose. According to policy texts, ministries led by digitally aware executives were more likely to integrate AI into service delivery than treat them as IT updates

(African Union, 2020). These executives deliberately reframed AI as a tool to improve public value, reducing internal resistance and boosting institutional readiness. Thus, leadership competence is an interpretive and relational skill that affects AI understanding across the organisation, not a technical attribute.

The data also shows that emotional intelligence and communication skills are crucial to AI-related change management. Leadership materials regularly link digital reform silence or ambiguity to workforce worry (Malephane, 2022). In contrast, departments where leaders held regular briefings and interactive forums had better AI-supported workflow acceptability. Evidence suggests that digital transformation occurs when leaders address employee issues and present a believable future vision (Feliciano-Cestero et al., 2023). Leadership competence appears to reduce workforce anxiety by fostering trust and organisational confidence. Leadership affects how employees perceive and respond to AI, according to analysis.

#### ***4.2.2. Managerial strategies for AI integration***

The findings show that managerial strategy connects leadership intent to organisational outcomes. Public sector AI implementation cases regularly emphasise gradual deployment as a key managerial technique for limiting disruption and ensuring institutional stability (Meru & Kinoti, 2022). Pilot-based implementation allowed Botswana ministries to modify AI applications incrementally, allowing personnel to adjust to new technologies. This method minimised implementation problems and boosted user confidence, especially in departments new to digital systems. Comparative evidence from other growing public sectors favours incremental sequencing over quick system replacement (Phuyal, 2024). These findings suggest that managerial pace, not technology competence, drives implementation success.

Cross-functional coordination and collaborative governance are another excellent managerial method from the analysis. Policy and implementation studies show that scattered AI programs led to incompatible systems and ministry-wide duplication (Wamba et al., 2024). However, coordinated task teams and common digital platforms aligned technology design and service demands. Managers who embedded feedback mechanisms let frontline workers report system issues and recommend changes. This technique minimised opposition by giving employees AI tool ownership. These studies reveal that managerial practices shape organisational interaction, learning, and adaption, affecting AI outcomes. Therefore, managerial action implements leadership vision into institutional change.

### ***4.2.3. Strategies for managing workforce anxiety and building trust***

The analysis shows that workforce fear is neither inevitable nor irreversible as a limitation on AI adoption. Documents show that AI without clear communication or training pathways increases job loss and skills obsolescence (Malephane, 2022). Ministries that deployed AI with organised reskilling had lesser opposition and higher system use. Regional data suggests that public officials are more open to AI if they believe it would improve their professional relevance (Latupeirissa et al., 2024). These data imply that uncertainty about future jobs drives worker concern, not technology.

Trust-building tactics are crucial to human–AI collaboration. Current policies promote continual training, digital literacy, and ethical transparency to maintain employee confidence (African Union, 2020). Botswana digital rights and inclusion surveys show that employees who had early AI exposure through training sessions were more inclined to use new technology constructively (Mudongo, 2021). Leaders who freely discuss data use and algorithmic decision-making ethics build trust (Elisa et al., 2023). These findings suggest that leadership credibility, managerial assistance, and skills investment build workforce trust. This supports the study's key hypothesis that leadership-mediated organisational trust, not technical substitution, augments humans and AI.

## ***4.3. Potential Challenges and Opportunities Associated with Workforce Anxiety and Skills Development in the Context of AI Adoption***

### ***4.3.1. Workforce anxiety and resistance to change***

The study found that workforce concern is a structural barrier to AI adoption in Botswana's civil service, not an emotional reaction. Policy and governance documents demonstrate that government workers link AI projects with job insecurity, discretion loss, and professional relevance decrease (Malephane, 2022). These issues increase resistance to change in departments with minimal digital exposure (Esiefarienrhe & Mokeresete, 2022). According to public sector reform assessments, employees generally view AI implementation as a symptom of organisational shrinkage rather than service improvement (African Union, 2020). Perception influences protective behaviours like delayed system adoption and passive compliance. The data also shows that unclear leadership communication increases anxiety. Analysis shows that labour resistance is a logical response to uncertainty about future responsibilities, not technology.

Institutional slowness reinforces workforce fear. Documents show that bureaucratic processes and procedural conventions make AI-enabled workflows difficult to change (Meru & Kinoti, 2022). Limited exposure to innovative digital technologies has fuelled Botswana's automation mistrust. Governance studies emphasise that civil servants regard AI as an external reform distant from service reality (Mudongo, 2021). This framing lowers ownership and increases mistrust. Analysis shows that workforce concern reduces organisational learning and change momentum. The data suggest that leadership signalling, institutional history, and skills deficits generate anxiety rather than individual resistance.

#### ***4.3.2. Skills development for AI integration***

While workforce worry is an obvious challenge, the data also show that skills development is a significant potential for organisational regeneration. Botswana's public service reform program includes an increase in resource allocation for digital literacy and AI-related training, according to policy and budgetary papers. These projects represent a strategy change from technology acquisition to human capabilities development. According to digital governance research, public organisations that invest in structured upskilling have higher technology acceptability and better service delivery (Feliciano-Cestero et al., 2023). In Botswana, departments that integrated AI training into ordinary professional development frameworks indicated a greater willingness to implement AI-supported processes. This shows that skill development serves as a confidence booster rather than a merely technical intervention.

The data also shows that effective skill development necessitates differentiation rather than uniform training. Documents emphasise the importance of tailoring training to different functional roles, such as frontline service delivery and managerial monitoring (Latupeirissa et al., 2024). Comparative public sector evidence suggests that generic digital training does not address task-specific AI interactions (Phuyal, 2024). In Botswana's civil service, skill-building activities that coincided with actual job redesign were more effective at reducing resistance. Analytically, skill development emerges as a process of capacity building and trust restoration. It allows employees to see AI as a professional tool rather than a danger, changing concern into engagement.

### ***4.3.3. Balancing workforce anxiety with technological opportunities***

The findings suggest that leadership, skills investment, and ethical clarity balance worker worry and technology opportunity. Policy frameworks highlight that AI adoption succeeds when human competence development follows technology deployment (African Union, 2020). Digital reform documents in Botswana show that early AI exposure makes employees more likely to try new technologies (Mudongo, 2021). This progressive familiarisation lessened fear and promoted learning. The investigation shows that data utilisation and decision-making transparency is essential to trust (Elisa et al., 2023). Lack of clarity makes skills improvement insufficient to overcome doubt.

The study finds a dynamic relationship between worker fear and technological potential mediated by leadership action. Leaders who framed AI adoption as a shared organisational journey with training and ethical protections were more successful at transforming concern into adaptive capacity (Botlhale & Dick-Sago, 2023). Instead, technology-led methods without human-centered strategies increased opposition. This supports the study's central claim that trust-based capability growth, not automation-driven substitution, augments public sector human–AI capabilities. Workforce anxiety and skills development are intertwined in organisational transition.

## **5. Conclusion**

This study hypothesised that human–AI augmentation may transform the Botswana Civil Service into a Fourth Industrial Revolution-ready public sector. The study uses grounded theory–informed document analysis to suggest that AI adoption in public administration is an organisational transformation process affected by leadership, workforce dynamics, and institutional ethics (Alfiani et al., 2024). The results show that turning a bureaucracy into an AI-enabled public service needs reorganising workflows, decision-making authority, and accountability procedures rather than just adding technology (Latupeirissa et al., 2024). The study found that digital changes in Botswana work when AI is integrated into governance goals and public service principles rather than used as an efficiency tool (Esiefarienrhe & Mokeresete, 2022). This supports the idea that organisational preparedness is essential for significant AI integration.

The study developed a leadership-mediated human–AI augmentation model to explain how leadership links technology adoption, workforce responsiveness, and ethical governance.

Leadership competencies including strategic sense-making, adaptive communication, and participatory change management influence public service AI acceptance (Bothale & Dick-Sagoe, 2023). Rather than positioning AI as a replacement for human labour, effective leaders frame it as an enabler that enhances judgement, service quality, and policy responsiveness (Wamba et al., 2024). This theoretical finding shows that leadership mediates AI-enabled organisational transformation (Defitri et al., 2020), advancing TOE- and UTAUT-based studies. The paper provides a context-sensitive paradigm for digital governance theory in African public administration scholarship.

The study also found that leadership and skills development can control workforce concern caused by AI integration. The documents show that Botswana's public service is plagued by fear of job loss, autonomy loss, and skills obsolescence (Malephane, 2022). Early participation, clear communication, and continuous learning diminish AI system resistance and build trust (Yin, 2024). This supports public sector digitalisation research that promotes reskilling for sustainable transformation (Feliciano-Cestero et al., 2023). Thus, human capital investment is essential to AI success in public administration, according to the study.

Ethical governance emerges as a further condition shaping the legitimacy and sustainability of AI-enabled reforms. The study found that AI systems without ethical frameworks may reinforce bias, impair accountability, and erode citizen trust (Elisa et al., 2023). Evolutionary data protection legislation and varied institutional capability for digital supervision in Botswana exacerbate this difficulty (Maraga et al., 2022). Localising AI programs to Botswana's administrative and social circumstances is necessary, but aligning them with regional frameworks like the African Union Digital Transformation Strategy is helpful (African Union, 2020). The findings place ethical leadership and regulatory consistency as essential to organisational change rather than post-implementation safeguards.

The study recognises methodological flaws despite its contributions. The exclusive use of secondary data hinders insight into public servants' lived experiences and informal AI adoption strategies (Corbin & Strauss, 2015). Document analysis helped create theory, but it could not account for micro-level phenomena like everyday opposition or informal leadership influence. Primary qualitative data from interviews, focus groups, or ministry organisational case studies in Botswana should overcome this shortcoming in future research. Such approaches would improve comprehension of the leadership-mediated human–AI augmentation concept.

The study's three main themes should be expanded in future research. First, empirical testing of the proposed theoretical model across public sector departments would improve its explanation. Second, Botswana-Southern African comparisons may show how institutional environment affects leadership and workforce AI responses (Meru & Kinoti, 2022). Third, longitudinal research examining workforce skills development over time would provide insight into whether reskilling initiatives translate into sustained organisational learning. These topics would promote theory and practice, enabling inclusive, ethical, and adaptive AI-enabled public sectors in poor countries.

The study advances the literature on the implementation of AI in the public sector, and specifically in the developing economies, and generates insights into the competitive capabilities and managerial tactics for the successful transformation. Nevertheless, there are some points where more research needs to be conducted. Firstly, future works can target the longitudinal effects of the integration of AI in the efficient delivery of the public sector and the delivery of services, and how the implementation of AI in the internal processes can affect the quality of the services offered to the citizens. Moreover, studies can investigate the ethical dimension of AI in the public sector, including the aspect of the data privacy, the issue of accountability and the transparency in the decision-making process.

Further research needs to be conducted on the day-one operational issues faced in implementing the AI in a variety of public sector environments. In Botswana and in other African countries, more case studies each looking at one government department/ministry at a time would be extremely helpful in understanding the respective challenges and potential the differing spheres possess. Those case studies can offer more finely grained detail regarding the extent the AI technologies need to be customized in order for them to perform the unique needs of the variety of respective public services.

The study only utilized secondary data, which were comprised mainly of reports, articles, and research works regarding the uptake of AI in the public sector. Even though such works are a good foundation for the research subject, the usage of secondary data places a capping effect in the acquisition of up-to-the-minute perspectives from civil servants and other stakeholders who are the immediate foot soldiers in the process of AI uptake. Future studies can benefit from the conduct of gathering of primary data in the form of surveys, interviews, or case studies in obtaining first-hand information regarding the experience and opinion of the people in the public sector in the process of AI incorporation. Even though the study was

carried out in Botswana, the outcome may not generalize fully in the case of other countries, especially those with differing levels of technology advancement or politics. Research with the comparative aspect in which more than one country can be utilized shall broaden the breadth in understanding the problem and the potential in the process of AI uptake in the government.

### Disclosure Statement

No potential conflict of interest is reported by the author.

### Funding

This work was not supported by any funding.

### References

- African Union. (2020). *Africa digital transformation strategy (2020–2030)*. African Union Commission. <https://au.int/sites/default/files/documents/38507-doc-dts-english.pdf>
- Alfiani, H., Husna, S. K., Lusa, S., Sensuse, D. I., Putro, P. A. W., & Indriasari, S. (2024). E-government issues in developing countries using TOE and UTAUT frameworks: A systematic review. *Policy & Governance Review*, 8(2). <https://doi.org/10.30589/pgr.v8i2.932>
- Arslan, A., Cooper, C., Khan, Z., Golgeci, I., & Ali, I. (2022). Artificial intelligence and human workers interaction at team level: A conceptual assessment of the challenges and potential HRM strategies. *International Journal of Manpower*, 43(1), 75–88. <https://doi.org/10.1108/IJM-01-2021-0052>
- Bothhale, E., & Dick-Sagoe, C. (2023). Digitalising decentralisation policy across regions in Africa. In G. Onyango (Ed.), *Public policy and technological transformations in Africa* (pp. 1–18). Palgrave Macmillan. [https://doi.org/10.1007/978-3-031-18704-9\\_14](https://doi.org/10.1007/978-3-031-18704-9_14)
- Corbin, J., & Strauss, A. (2015). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (4th ed.). Sage.
- Defitri, S. Y., Bahari, A., Handra, H., & Febrianto, R. (2020). Determinant factors of e-government implementation and public accountability: TOE framework approach. *Public Policy and Administration*, 19(4), 37–51. <https://doi.org/10.13165/VPA20-19-4-03>
- Elisa, N., Yang, L., Chao, F., Naik, N., & Boongoen, T. (2023). A secure and privacy-preserving e-government framework using blockchain and artificial immunity. *IEEE Access*, 11, 8773–8789. <https://doi.org/10.1109/ACCESS.2023.3239814>
- ElMassah, S., & Mohieldin, M. (2020). Digital transformation and localizing the Sustainable Development Goals (SDGs). *Ecological Economics*, 169, 106490. <https://doi.org/10.1016/j.ecolecon.2019.106490>

- Esiefarienrhe, B., & Mokeresete, M. (2022). Using software applications to enhance e-government service delivery in Botswana. *Journal of Information Systems and Informatics*, 4(3), 265–275. <https://doi.org/10.51519/journalisi.v4i3.262>
- Fegert, J. (2023). *Towards inclusive digital democracy: A conceptual framework for digital system participation*. <https://www.iadisportal.org/digital-library/towards-inclusive-digital-democracy-a-conceptual-framework-for-digital-citizen-participation>
- Feliciano-Cestero, M. M., Ameen, N., Kotabe, M., Paul, J., & Signoret, M. (2023). Is digital transformation threatened? A systematic literature review of the factors influencing firms' digital transformation and internationalization. *Journal of Business Research*, 157, 113546. <https://doi.org/10.1016/j.jbusres.2022.113546>
- Kim, B.-J., & Lee, J. (2025). AI adoption, employee depression and knowledge: How corporate social responsibility buffers psychological impact. *Journal of Innovation & Knowledge*, 10(6), 100815. <https://doi.org/10.1016/j.jik.2025.100815>
- Latupeirissa, J. J. P., Dewi, N. L. Y., Prayana, I. K. R., Srikandi, M. B., Ramadiansyah, S. A., & Pramana, I. B. G. A. Y. (2024). Transforming public service delivery: A comprehensive review of digitization initiatives. *Sustainability*, 16(7), 2818. <https://doi.org/10.3390/su16072818>
- Madan, R., & Ashok, M. (2023). AI adoption and diffusion in public administration: A systematic literature review and future research agenda. *Government Information Quarterly*, 40(1), 101774. <https://doi.org/10.1016/j.giq.2022.101774>
- Malephane, L. (2022). *Digital divide: Who is connected and who is not* (Afrobarometer Dispatch No. 582). Afrobarometer. <https://www.afrobarometer.org>
- Maraga, N. K., Munuhwa, S., Ngwenya, P. K., & Chikwere, D. (2022). E-governance and privacy: A legal perspective on Botswana during public health emergencies of international concern (PHEIC). *Journal of Tianjin University Science and Technology*, 55(8), 1–22.
- Meng, Q., Wu, T. J., Duan, W., & Li, S. (2025). Effects of employee-artificial intelligence (AI) collaboration on counterproductive work behaviors (CWBs): Leader emotional support as a moderator. *Behavioral Sciences*, 15(5), 696. <https://doi.org/10.3390/bs15050696>
- Meru, A. K., & Kinoti, M. W. (2022). Digitalisation and public sector service delivery in Kenya. In O. Adeola, J. N. Edeh, R. E. Hinson, & F. Netswera (Eds.), *Digital service delivery in Africa* (pp. 205–226). Palgrave Macmillan. [https://doi.org/10.1007/978-3-030-83909-3\\_10](https://doi.org/10.1007/978-3-030-83909-3_10)
- Mudongo, O. (2021). *Botswana digital rights and inclusion 2020 report*. Paradigm Initiative.
- Phuyal, P. (2024). Digitalisation of government services and citizen satisfaction: A case study in Dhankuta District, Nepal. *Prashasan*, 56(1, No. 139), 135–152. <https://doi.org/10.3126/prashasan.v56i1.67336>
- Tiwari, P., & Suresha, B. (2021). Moderating role of project innovativeness on project flexibility, project risk, project performance, and business success in financial services. *Global Journal of Flexible Systems Management*, 22(2), 179–196. <https://doi.org/10.1007/s40171-021-00270-0>
- Vatamanu, A. F., & Tofan, M. (2025). Integrating artificial intelligence into public administration: Challenges and vulnerabilities. *Administrative Sciences*, 15(4), 149. <https://doi.org/10.3390/admsci15040149>
- Wamba, S. F., Wamba-Tanguimdje, S.-L., Lu, Q., & Queiroz, M. M. (2024). How emerging technologies can solve critical issues in organizational operations: An analysis of

- blockchain-driven projects in the public sector. *Government Information Quarterly*, 41(1), 101912. <https://doi.org/10.1016/j.giq.2024.101912>
- Wang, K.-H., & Lu, W.-C. (2025). AI-induced job impact: Complementary or substitution? Empirical insights and sustainable technology considerations. *Sustainable Technology and Entrepreneurship*, 4(1), 100085. <https://doi.org/10.1016/j.stae.2024.100085>
- Yin, S. (2024). Digital transformation for sustainable development. *Sustainable Social Development*, 2(5), 2802. <https://doi.org/10.54517/ssd2802>
- Yun, C. H., Teoh, A. P., & Khaw, T. Y. (2024). Artificial intelligence integration in e-government: Insights from the Korean case. In *Proceedings of the IEEE 3rd International Conference on Electrical Engineering, Big Data and Algorithms* (pp. 1159–1164). IEEE. <https://doi.org/10.1109/EEBDA60612.2024.10485972>