www.ijarp.com ISSN 2456-9992 Page: 01-29

International Journal Advanced Research Publications

Research Article

Volume: 02
Issue: 01

EVALUATING THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE DEVELOPMENT OF MANAGEMENT AND LEADERSHIP COMPETENCIES IN THE PUBLIC SERVICE

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Article Received: 23 November 2025, Article Revised: 13 December 2025, Published on: 03 January 2026

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DOI: https://doi-doi.org/101555/ijarp.5884

ABSTRACT:

This study examines how the integration of artificial intelligence influences the development of management and leadership competencies within public service contexts. The purpose of the study is to assess the extent to which AI shapes core managerial and leadership capabilities, with particular attention to strategic decision making, interpersonal effectiveness, and adaptive leadership skills. Drawing on a descriptive research design, the study synthesises recent empirical literature and secondary data drawn from peer reviewed studies, policy reports, and institutional analyses. The findings illustrate that AI is increasingly redefining the roles and expectations placed on public managers by strengthening decision support systems, improving access to real time data, and enhancing analytical capacity. These developments enable managers to focus more deliberately on strategic oversight and problem solving, while routine administrative tasks are progressively automated. However, the study

also reveals uneven patterns of adoption across public service organisations, accompanied by persistent scepticism regarding the suitability of AI for leadership functions that depend on human judgement, emotional intelligence, and relational engagement. The results suggest that while AI can support leadership development, it cannot substitute the human dimensions of public service leadership. Consequently, effective leadership development strategies must integrate digital competency building with strong ethical governance frameworks that address issues of accountability, transparency, and bias. The study contributes to public administration scholarship by clarifying how AI functions as an enabling rather than replacing force in leadership development. It further offers practical implications for public sector capacity development, emphasising the need for structured AI literacy initiatives and adaptive leadership frameworks. The article concludes by identifying future research directions focused on human AI collaboration and the long-term evolution of leadership competencies in digitally mediated governance environments.

KEYWORDS: Artificial intelligence, Digital transformation, Leadership development, Management competencies, Public service.

INTRODUCTION AND BACKGROUND

Artificial intelligence has become an increasingly visible feature of contemporary public administration, reshaping how governments organise work, deliver services, and support decision making. Across national and local administrations, AI tools are now used for data analysis, forecasting, resource allocation, and citizen engagement, reflecting a broader shift toward digitally enabled governance (Organisation for Economic Co-operation and Development, 2024). This growing presence of AI has compelled public service organisations to reconsider how leadership and management competencies are developed and sustained in environments where technology plays a central role. Rather than being confined to technical units, AI increasingly influences strategic and operational decisions, placing new expectations on public managers and leaders (Wirtz, Weyerer, & Geyer, 2023). Governments worldwide have articulated strategies to integrate AI into administrative processes and service delivery, often framing these efforts as necessary responses to fiscal pressure, rising service demands, and public expectations for efficiency and transparency (OECD, 2025). These strategies frequently emphasise performance improvement, faster decision cycles, and evidence-based policymaking. However, they also implicitly reshape the competency profile required of public leaders. Contemporary public managers are now expected to combine

traditional public service values with digital literacy, data interpretation skills, and an ability to lead organisational change in technologically mediated contexts (United Nations Educational, Scientific and Cultural Organization, 2024).

Within this evolving landscape, public service leadership is no longer defined solely by hierarchical authority or procedural expertise. Instead, leadership increasingly requires the capacity to interpret AI-generated insights, exercise informed judgement, and balance technological efficiency with ethical and social considerations (Mergel, Edelmann, & Haug, 2023). Strategic judgement remains critical, particularly where algorithmic recommendations intersect with political priorities, legal constraints, and public accountability. At the same time, people management and interpersonal competencies continue to matter, as public sector leaders must guide employees through uncertainty, address fears of job displacement, and maintain trust in organisational decisions influenced by AI (Wirtz et al., 2023). Despite widespread policy attention, empirical understanding of how AI contributes to the development of management and leadership competencies in the public service remains limited. Much of the existing literature focuses on technological capabilities, implementation challenges, or regulatory implications, rather than on the human and developmental dimensions of AI adoption (OECD, 2024). Where leadership is discussed, it is often treated instrumentally, as a mechanism for driving adoption, rather than as a set of competencies that may themselves be transformed by sustained interaction with AI systems (Mergel et al., 2023). This gap is significant because leadership development in the public sector has traditionally been grounded in values such as accountability, fairness, and service orientation, which may be both supported and challenged by algorithmic governance.

Emerging studies suggest that AI can strengthen certain managerial competencies, particularly those related to analytical reasoning, scenario planning, and performance monitoring. Decision support systems, predictive analytics, and automated reporting tools can enhance leaders' capacity to process complex information and respond to policy problems with greater precision (Sousa, Melo, & Cunha, 2024). At the same time, there is evidence of uneven adoption across public organisations, with scepticism persisting around the use of AI in areas that require discretion, empathy, and relational engagement (Giannini & Folco, 2024). These tensions highlight the need to understand not only what AI can do, but how it reshapes leadership practice and identity in public institutions. The ethical dimension of AI further complicates leadership development in the public service. Concerns related to bias,

transparency, accountability, and data governance place additional demands on leaders, who must ensure that AI-supported decisions align with democratic values and legal norms (OECD, 2025). As a result, ethical judgement and governance capacity emerge as central leadership competencies rather than peripheral considerations. UNESCO (2024) emphasises that public sector leaders require not only technical awareness of AI systems but also the moral and institutional capacity to govern their use responsibly.

Against this background, the present study seeks to deepen understanding of how AI influences the development of core management and leadership competencies in public service contexts. The study is guided by two central questions:

First, how does the integration of AI affect the development of managerial and leadership competencies among public sector managers?

Second, what challenges and opportunities arise when AI is introduced as a tool to support leadership practice rather than merely operational efficiency?

Addressing these questions is important for informing leadership development programmes, competency frameworks, and policy interventions aimed at strengthening public sector capacity in the digital era. By focusing on competency development rather than technology adoption alone, this study contributes to a growing body of scholarship that views digital transformation as a socio-institutional process. Understanding how AI interacts with leadership development is essential for ensuring that public service organisations remain effective, ethical, and human-centred while navigating rapid technological change.

LITERATURE REVIEW

Introduction

The rapid diffusion of artificial intelligence across public sector institutions has generated a substantial and growing body of academic literature. Scholars increasingly agree that AI is not merely a technical innovation but a transformative force that reshapes organisational structures, work processes, and the competencies required of managers and leaders (Mergel et al., 2023). In public administration, this transformation unfolds within complex institutional environments characterised by legal mandates, political oversight, and strong normative commitments to public values. As a result, the implications of AI adoption for leadership and management competencies differ in important ways from those observed in private sector contexts (Wirtz et al., 2023). This literature review critically examines recent scholarship on AI adoption in organisations, with a particular focus on public service settings. The review is

organised around four interrelated themes: AI and organisational performance, managerial readiness and attitudes toward AI, leadership and competency development in digitally mediated environments, and ethical and human centred approaches to AI in the public sector. Throughout the review, the researchers adopt a reflective position that supports the view that AI can enhance certain managerial and leadership competencies, while simultaneously introducing new risks and blind spots that are insufficiently addressed in current literature. The review concludes by identifying a conceptual gap concerning leadership identity formation in AI enabled public organisations, thereby justifying the need for the present study.

AI Adoption and Organisational Performance

A substantial body of contemporary literature approaches artificial intelligence adoption primarily through the lens of organisational performance and efficiency, framing AI as a technical solution to long standing administrative challenges in both private and public sector organisations. Recent empirical studies demonstrate that AI systems improve operational outcomes by automating repetitive administrative tasks, accelerating data processing, and supporting advanced forms of data driven and predictive decision making (Quttainah, Sadhna, Aggarwal, & Alsharif, 2025). These performance gains are particularly appealing in public service environments where organisations are expected to deliver complex services under conditions of fiscal constraint, staffing shortages, and heightened public scrutiny. Taking this perspective, AI is often positioned as a productivity enhancing instrument capable of offsetting structural limitations within public administration systems (OECD, 2025). Within public organisations, AI enabled tools such as automated workflow systems, decision support dashboards, and predictive analytics platforms are frequently promoted as mechanisms for reducing administrative burden and increasing managerial efficiency. Empirical evidence suggests that when routine tasks such as reporting, scheduling, and compliance monitoring are automated, managers are afforded greater time and cognitive space to focus on strategic planning, coordination, and organisational oversight (Sousa, Melo, & Cunha, 2024). The literature therefore tends to associate AI adoption with a shift in managerial attention away from procedural control toward higher value activities that are assumed to strengthen organisational performance. However, the researchers observes that this dominant narrative often treats performance improvement as an end in itself, with limited interrogation of how such shifts fundamentally alter the nature of managerial work and leadership practice in public institutions.

Recent studies in public administration and digital government scholarship suggest that AI adoption does more than improve efficiency, as it actively reshapes decision making structures, redistributes expertise, and transforms accountability relationships within organisations. Mergel, Edelmann, and Haug (2023) demonstrate that digital transformation initiatives, including AI integration, frequently relocate decision authority from individual managers to algorithmically informed systems, thereby changing how judgement is exercised and justified. In these contexts, managers increasingly rely on AI generated insights to inform choices, which can enhance analytical rigour but may also constrain discretionary space. This reconfiguration has direct implications for leadership competencies, particularly those related to sense making, coordination across organisational units, and the ability to contextualise technical outputs within broader institutional and social goals. In public administration settings, performance-oriented narratives surrounding AI adoption are further complicated by the normative foundations of public service. Unlike private organisations, public sector performance cannot be evaluated solely in terms of efficiency or output maximisation. Research indicates that AI driven performance management tools may unintentionally privilege quantifiable indicators at the expense of qualitative dimensions such as equity, inclusion, and citizen trust (Wirtz, Weyerer, & Geyer, 2023). This tendency raises important concerns about the narrowing of managerial focus and the potential erosion of public value when leadership decisions become overly aligned with algorithmic metrics. The researchers align with this critique and contends that leadership competencies in AI enabled public organisations must extend beyond technical proficiency and efficiency management.

Departing from the researchers' perspective, the critical contribution of AI to organisational performance lies not only in its capacity to optimise processes, but in its ability to challenge and redefine leadership roles within public institutions. Effective performance in AI mediated environments requires leaders who can interpret algorithmic outputs critically, question underlying assumptions, and balance data driven insights with ethical judgement and contextual awareness. OECD (2025) policy analyses emphasise that without strong leadership competencies in ethical governance and accountability, AI driven performance gains risk undermining public trust rather than enhancing it. Consequently, organisational performance should be understood as a multidimensional outcome that includes not only efficiency and effectiveness, but also legitimacy, transparency, and responsiveness. In synthesising the literature, the researchers argues that future studies should move beyond instrumental evaluations of AI adoption and place greater analytical emphasis on how

performance gains reshape leadership practice and managerial identity in the public service. AI adoption is not a neutral technical intervention, but a socio organisational process that redistributes power, redefines expertise, and alters how performance itself is understood and measured. Assessing organisational performance in AI enabled public institutions therefore requires an expanded conceptualisation of leadership competencies, one that foregrounds ethical mediation, reflective judgement, and the capacity to align technological innovation with the enduring values of public service.

Managerial Readiness and Attitudes Toward AI

Another prominent theme emerging from recent scholarship concerns managerial readiness and attitudes toward the adoption of artificial intelligence in public sector organisations. The literature consistently shows that public managers do not respond to AI in uniform ways, but rather display a spectrum of attitudes shaped by individual capabilities, organisational environments, and broader institutional norms. Empirical research indicates that digital literacy plays a decisive role in shaping managerial openness to AI, with managers who possess prior experience in data analytics and digital systems demonstrating higher levels of confidence and willingness to engage with AI enabled tools (Giannini & Folco, 2024). These findings suggest that readiness is not merely a function of formal position, but of accumulated exposure to digital forms of work and decision making. Organisational culture further mediates managerial attitudes toward AI adoption in public administration contexts. Studies show that managers operating in organisations with established digital strategies and supportive leadership climates are more likely to perceive AI as an opportunity rather than a threat (Sousa, Melo, & Cunha, 2024). In such environments, AI systems are often framed as decision support mechanisms that enhance managerial judgement rather than replace it. This framing appears to reduce anxiety about loss of control and reinforces the perception that AI can complement human expertise. Conversely, in organisations where digital transformation is poorly communicated or inconsistently implemented, managers tend to associate AI with heightened risk, uncertainty, and potential blame in the event of system failure, which undermines readiness for adoption (OECD, 2025).

A recurring finding across multiple studies is the persistence of scepticism toward the application of AI in leadership domains that rely heavily on interpersonal interaction, discretion, and ethical judgement. Giannini and Folco (2024) report that both managers and frontline public servants' express discomfort with AI systems being used in contexts such as

performance appraisal, disciplinary procedures, or citizen facing decision making. This scepticism reflects concerns about fairness, transparency, and the inability of algorithmic systems to account for contextual nuance and moral complexity. These concerns are not marginal, but appear consistently across different administrative traditions and governance systems, suggesting that they are rooted in the normative foundations of public service rather than resistance to technology per se. Large scale empirical evidence reinforces these observations. A survey-based study published in *Government Information Quarterly* found that while public sector managers were generally willing to use AI for technical functions such as forecasting, resource allocation, and workload optimisation, they were significantly more reluctant to rely on algorithmic systems for evaluative or disciplinary decisions that directly affect employees' careers and dignity (Wirtz, Weyerer, & Geyer, 2023). This pattern of selective acceptance illustrates how managerial attitudes toward AI are shaped by perceived ethical risk and accountability exposure, rather than by technical feasibility alone. Managers appear acutely aware that delegating sensitive decisions to algorithms may weaken their capacity to justify outcomes to staff, unions, and the public.

The researchers support the view that such attitudes should not be interpreted narrowly as barriers to AI adoption or as indicators of insufficient skills. Instead, these responses may signal unresolved tensions between technological rationality and the value driven logic of public administration. Recent policy-oriented analyses argue that responsible AI adoption in the public sector depends on leaders who are capable of exercising restraint and critical judgement, particularly in contexts where algorithmic efficiency may conflict with principles of equity and human dignity (OECD, 2025). Based on this perspective, scepticism toward certain AI applications may represent an implicit form of ethical reasoning grounded in professional responsibility rather than a deficit in openness or competence. By reframing managerial resistance as a potentially constructive response, the researchers introduce a new dimension to the literature on AI readiness. Rather than viewing resistance solely as an obstacle to be managed or eliminated, it can be understood as a leadership competency that reflects awareness of ethical boundaries, accountability obligations, and the limits of automation in public service. This interpretation aligns with emerging arguments that effective leadership in AI enabled organisations requires not only digital skills, but also the capacity to question technological solutions and defend human centred decision making when appropriate (Giannini & Folco, 2024). In this sense, managerial readiness should be

conceptualised not as unconditional acceptance of AI, but as the ability to engage with AI critically, selectively, and responsibly.

AI and Leadership Competency Development

The relationship between artificial intelligence and leadership competency development remains comparatively underdeveloped within the broader body of public administration and digital governance scholarship. While a growing number of studies focus on the technical and managerial skills required to implement, procure, and oversee AI systems, far fewer explicitly interrogate how sustained interaction with AI reshapes leadership capabilities, professional identities, and decision-making practices over time (Mergel, Edelmann, & Haug, 2023). As a result, leadership is often treated as a secondary consideration, assumed to adapt naturally once technical capacity has been established. This assumption risks underestimating the depth of organisational and cognitive change introduced by AI in public service environments. Where leadership is addressed in the literature, it is frequently conceptualised in functional or instrumental terms. Studies tend to emphasise leadership roles related to change management, project sponsorship, and technological championing, portraying leaders primarily as facilitators of AI adoption rather than as subjects whose own competencies and authority structures are transformed by technology (Giannini & Folco, 2024). This framing aligns with early digital transformation narratives that position leadership as a means to overcome resistance and ensure implementation success. However, such perspectives offer limited insight into how AI alters the substance of leadership work, particularly in contexts characterised by complexity, uncertainty, and normative constraints typical of the public sector.

More recent contributions begin to move beyond this narrow framing by examining the cognitive and relational dimensions of leadership in AI enabled organisations. Sousa, Melo, and Cunha (2024) argue that AI systems enhance cognitive leadership competencies by expanding managers' capacity for analytical reasoning, scenario evaluation, and evidence-based judgement. Through access to advanced analytics and predictive modelling, leaders are better equipped to engage with complex policy problems that require the integration of multiple data sources and competing objectives. These developments suggest that AI can deepen rather than diminish strategic leadership, provided that leaders possess the skills necessary to interpret and contextualise algorithmic outputs. Complementing this perspective, Quttainah, et al. (2025) demonstrate that AI savvy leadership is positively associated with

higher levels of employee engagement and more effective technology utilisation within organisations. Their findings indicate that leaders who understand AI not only make better use of technological tools themselves, but also play a critical role in shaping employee perceptions, reducing anxiety, and fostering a climate of trust around AI adoption. This highlights an important relational dimension of leadership competency development, where technical understanding supports credibility, communication, and sense making rather than replacing human leadership functions.

Despite these advances, the researchers identify a significant limitation within the existing literature. Leadership competencies are frequently treated as relatively static attributes that can be incrementally enhanced through targeted training programmes or skills frameworks. This competency checklist approach assumes continuity in the nature of leadership, with AI simply adding new skills to an existing repertoire. Such an assumption overlooks the possibility that AI fundamentally alters what it means to lead in the public service. As algorithmic systems become embedded in decision making processes, leadership identity, professional norms, and sources of authority may be reshaped in profound ways (Giannini & Folco, 2024). Emerging scholarship suggests that leaders increasingly operate in hybrid decision environments where authority is shared between human judgement and algorithmic recommendations. In these contexts, leadership competence involves not only using AI effectively, but also taking responsibility for decisions influenced by opaque or probabilistic systems. This raises questions about autonomy, accountability, and legitimacy that extend beyond traditional competency models (Wirtz, Weyerer, & Geyer, 2023). Leaders must be able to justify decisions that are partially derived from AI outputs while remaining accountable to legal standards, political principals, and the public. Such demands point to the emergence of new leadership competencies centred on ethical mediation, reflexivity, and governance rather than purely technical expertise. The researchers therefore contends that future studies must move beyond descriptive accounts of AI related skills and examine how AI influences leaders' sense of responsibility, autonomy, and professional legitimacy over time. Leadership development in AI enabled public service contexts should be understood as a dynamic and evolving process in which competencies are continuously renegotiated through interaction with technology, organisational expectations, and public values. By foregrounding leadership identity and ethical agency, rather than limiting analysis to skill acquisition, scholarship can offer a more comprehensive understanding of how AI reshapes leadership competency development in the public sector.

Ethical and Human Centred Approaches to AI

Ethical considerations occupy a central and increasingly prominent position in contemporary literature on the use of artificial intelligence in public sector contexts. As AI systems become embedded in decision making processes that directly affect citizens' rights, access to services, and life chances, scholars and policy institutions alike emphasise that technological capability cannot be separated from normative responsibility. International organisations such as the Organisation for Economic Co-operation and Development and the United Nations Educational, Scientific and Cultural Organization have articulated comprehensive ethical frameworks that position transparency, accountability, fairness, and human centred design as foundational principles for responsible AI adoption in government (OECD, 2025; UNESCO, 2024). These frameworks reflect a shared understanding that public sector AI must be governed not only as a technical system, but as a socio-political intervention with far reaching implications. A defining feature of these international frameworks is the explicit recognition of leadership responsibility in shaping how AI is designed, implemented, and governed within public institutions. Both OECD (2025) and UNESCO (2024) emphasise that ethical AI outcomes depend heavily on leadership choices regarding data governance, procurement standards, oversight mechanisms, and accountability structures. In this sense, ethics is not treated as an abstract principle, but as a practical leadership function that requires ongoing judgement and institutional stewardship. Public sector leaders are positioned as mediators between algorithmic systems and democratic values, tasked with ensuring that efficiency gains do not come at the expense of equity, inclusion, or procedural justice.

Empirical research reinforces the importance of ethical leadership in AI enabled public service environments. Studies published in leading public administration journals demonstrate that public trust in AI mediated decisions is closely associated with perceptions of fairness, transparency, and explainability (Wirtz, Weyerer, & Geyer, 2023). These perceptions are shaped less by the technical sophistication of AI systems and more by how decisions are communicated, justified, and contested within organisational and political settings. Leadership oversight therefore plays a decisive role in shaping whether AI is experienced by citizens and employees as a legitimate support tool or as an opaque and unaccountable authority. UNESCO (2024) extends this argument by explicitly linking ethical AI governance to leadership competency development. The organisation argues that public sector leaders must develop the capacity to question algorithmic outputs, rather than accepting them uncritically as objective or neutral. This includes understanding the

limitations of training data, recognising potential sources of bias, and appreciating how automated systems may reproduce or amplify existing social inequalities. Ethical leadership in this context also requires the ability to manage data governance risks, including issues of privacy, surveillance, and consent, which are particularly sensitive in public administration settings. Furthermore, UNESCO highlights the importance of stakeholder engagement, arguing that leaders should facilitate inclusive and deliberative processes that allow citizens, civil servants, and civil society actors to participate meaningfully in decisions about AI use.

The researchers strongly support this human centred orientation and view it as essential for sustaining democratic legitimacy in AI enabled governance. However, a critical limitation emerges in how ethical frameworks are translated into leadership development practice. Despite the proliferation of guidelines and principles, ethical considerations are often treated as external compliance requirements rather than as integral components of leadership identity and capability. OECD (2025) notes that many public sector training programmes emphasise regulatory adherence, risk mitigation, and procedural checklists when addressing AI ethics. While these elements are necessary, they are insufficient for cultivating deeper forms of moral reasoning and reflective judgement. Moving from the researchers' perspective, this narrow focus risks reducing ethical leadership to a technical exercise rather than recognising it as a core dimension of public service professionalism. Ethical challenges associated with AI rarely present themselves as clear cut compliance issues. Instead, they often involve competing values, uncertainty, and context specific trade-offs that require deliberation and judgement. Leadership competencies in AI contexts should therefore include the ability to navigate ethical ambiguity, engage with dissenting perspectives, and take responsibility for decisions that cannot be fully delegated to algorithms (Giannini & Folco, 2024). Without these capacities, ethical frameworks may remain aspirational documents rather than living guides for practice. This gap between ethical aspiration and operationalisation suggests that ethical and human centred approaches to AI remain unevenly embedded within public sector leadership development. While frameworks articulate what responsible AI should look like, they offer limited guidance on how leaders should internalise and enact these principles in everyday decision making. The researchers argues that future leadership development initiatives must move beyond compliance-based ethics training and prioritise reflective learning, case-based reasoning, and dialogue around real world dilemmas posed by AI use in public service. Only by embedding ethical reasoning as a lived leadership competency can

public institutions ensure that AI serves not only organisational performance goals, but also the democratic and human values at the heart of public administration.

Global Initiatives and Public Sector Capacity Building

Global and national initiatives aimed at strengthening artificial intelligence competencies among public servants provide valuable insight into how leadership development is currently being conceptualised and operationalised in public sector contexts. In recent years, international organisations and national governments have increasingly recognised that AI adoption in public administration cannot succeed without deliberate investment in human capacity. As a result, capacity building programmes have emerged that seek to equip public sector leaders with the knowledge and skills required to govern, oversee, and ethically deploy AI systems. These initiatives reflect a growing consensus that leadership competence is a critical enabler of responsible and effective AI integration (OECD, 2025). UNESCO's recent programmes represent one of the most comprehensive global efforts to frame AI capacity building in human centred and ethical terms. UNESCO (2024) emphasises that public sector leaders must develop not only technical literacy, but also an understanding of the social, cultural, and ethical implications of AI use in governance. Its competency frameworks explicitly link AI knowledge to leadership responsibilities such as safeguarding human rights, promoting inclusion, and ensuring transparency in automated decision making. By situating AI within a broader governance and values-based framework, UNESCO positions leadership development as a means of aligning technological innovation with democratic principles rather than as a purely technical exercise.

At the national level, competency frameworks such as India's AI competency framework for public service further illustrate how governments are attempting to bridge the gap between technology and leadership practice. The Government of India (2024) highlights the importance of leadership skills that connect policy formulation, technological understanding, and citizen engagement. This framework recognises that public sector leaders operate at the intersection of multiple domains and must be capable of translating technical AI capabilities into policy outcomes that are understandable, legitimate, and responsive to public needs. By emphasising cross functional leadership competencies, the framework acknowledges that AI governance is as much a leadership challenge as it is a technological one. Despite these important advances, the researchers observes that many global and national capacity building initiatives remain primarily focused on skill acquisition rather than deeper organisational and

cultural transformation. Competency frameworks typically enumerate what leaders should know or be able to do, such as understanding AI basics, managing data, or overseeing procurement processes. While these competencies are necessary, they often present leadership development as a linear accumulation of skills rather than as an evolving practice shaped by sustained interaction with AI systems (Giannini & Folco, 2024). This approach risks underestimating the extent to which AI adoption reshapes leadership roles, relationships, and identities over time.

Recent public administration scholarship suggests that leadership practice in AI enabled organisations is inherently relational and dynamic. As AI systems become embedded in everyday decision making, leaders must continuously negotiate their authority in relation to algorithmic recommendations, organisational expectations, and public accountability demands (Wirtz, Weyerer, & Geyer, 2023). However, these relational and identity-based dimensions of leadership are rarely foregrounded in capacity building initiatives. Training programmes often focus on individual competencies, overlooking how leadership is enacted collectively through organisational culture, norms, and informal practices. The researchers argues that this gap points to a need for more reflective and practice-oriented approaches to public sector capacity building. Rather than focusing exclusively on technical proficiency or compliance with ethical guidelines, leadership development initiatives should create space for critical reflection on how AI alters decision making, power dynamics, and professional identity. OECD (2025) policy analyses emphasise that successful AI integration depends on leaders who can foster organisational learning, manage uncertainty, and engage constructively with resistance and ethical concern. These capabilities are difficult to capture in standardised competency frameworks, yet they are essential for long term institutional adaptation. In synthesising the literature and policy initiatives, the researchers contends that global and national efforts to build AI capacity in the public sector represent an important foundation, but not a complete solution. While frameworks such as those developed by UNESCO and the Government of India articulate what responsible AI leadership should entail, they offer limited guidance on how leaders evolve through sustained engagement with AI in real organisational contexts. Future capacity building efforts should therefore move beyond static competency models and incorporate experiential learning, peer reflection, and organisational level interventions. By doing so, public sector leadership development can better reflect the complex, adaptive, and human dimensions of governing with AI.

Literature Review Conclusion

In summary, the existing literature confirms that AI adoption significantly affects organisational performance, managerial work, and leadership practice in the public service. Research demonstrates clear benefits in terms of efficiency, analytical capacity, and decision support, while also highlighting persistent concerns related to ethics, trust, and human judgement. The literature further shows that managerial attitudes toward AI are shaped by professional values and perceptions of risk, rather than technical considerations alone. However, this review identifies a critical gap in understanding how AI influences the development of leadership and management competencies as dynamic, socially embedded processes. While scholars acknowledge the need for AI related skills and ethical awareness, less attention is paid to how AI reshapes leadership identity, authority, and responsibility in public organisations. The researchers argue that addressing this gap requires moving beyond adoption focused studies toward analyses that examine leadership development over time, within specific institutional and cultural contexts. This gap provides a strong justification for the present study and underscores its contribution to public administration scholarship.

THEORETICAL FRAMEWORK

This study is grounded in competency theory, which views effective leadership and management as outcomes of the continuous development and integration of multiple skill domains, including cognitive, interpersonal, and technical competencies. Contemporary public administration scholarship emphasises that competencies are not static attributes but dynamic capacities shaped by organisational context, institutional norms, and technological change (Sousa, Melo, & Cunha, 2024). Within public service environments, competency theory highlights the importance of balancing analytical capability with ethical judgement, relational skills, and contextual awareness, particularly in settings characterised by political oversight and public accountability (Mergel, Edelmann, & Haug, 2023). The researchers support this perspective, noting that leadership competence in the digital era cannot be reduced to technical proficiency alone, but must incorporate reflective judgement and value-based decision making.

Alongside competency theory, the study draws on human-AI collaboration theory, which conceptualises artificial intelligence as an augmentative partner rather than a substitute for human leadership. Human-AI collaboration frameworks argue that AI systems enhance human decision making by processing large volumes of data and identifying patterns, while

humans retain responsibility for interpretation, ethical reasoning, and final judgement (Dellermann, Ebel, Söllner, & Leimeister, 2019; applied in public sector contexts by Wirtz, Weyerer, & Geyer, 2023). Recent public administration literature reinforces this view, suggesting that effective leadership increasingly depends on the ability to work alongside intelligent systems while maintaining human oversight and accountability (Giannini & Folco, 2024).

The researchers adopt a supportive but critical stance toward human-AI collaboration theory, arguing that while augmentation narratives are persuasive, they often underestimate the subtle ways in which AI reshapes authority, discretion, and professional identity. In public service contexts, leaders do not merely collaborate with AI systems but operate within decision environments partially structured by algorithmic outputs (OECD, 2025). This interaction requires new forms of digital literacy, ethical sensitivity, and institutional judgement. Together, competency theory and human-AI collaboration theory provide a robust lens for understanding how leadership and management competencies in the public sector evolve through sustained interaction between human actors and AI systems.

METHODOLOGY

This study employed a qualitative descriptive research approach based on systematic synthesis of existing empirical studies, policy documents, and secondary data sources. Qualitative descriptive designs are well suited to research that aims to clarify concepts, identify patterns, and interpret meanings within an emerging field of inquiry, particularly where primary data collection is not essential (Kim, Sefcik, & Bradway, 2017; applied in recent public administration reviews by Mergel et al., 2023). The researchers selected this approach to provide a comprehensive and contextually grounded understanding of how AI influences leadership and management competency development in public service settings.

Data sources consisted of peer reviewed journal articles, reports from international organisations, and authoritative policy publications released within the last five years. Inclusion criteria required that sources explicitly address artificial intelligence in public administration or examine leadership, management, or competency development in digitally mediated organisational contexts. The researchers conducted a structured review and thematic analysis, coding the literature for recurring patterns related to decision making, ethical governance, digital literacy, and leadership practice associated with AI adoption (Sousa et al., 2024).

This methodological approach does not require ethical clearance, as it relies exclusively on publicly available secondary data and does not involve human participants, personal data, or institutional access. By synthesising recent and credible sources, the methodology ensures analytical rigour while remaining appropriate for conceptual and theory informed inquiry in public administration research (OECD, 2025).

RESULTS

The analysis of recent empirical studies, policy reports, and authoritative secondary sources reveals three interrelated and dominant themes regarding the impact of artificial intelligence on the development of management and leadership competencies in the public service. These themes relate to the enhancement of analytical and decision support competencies, the growing importance of adaptability and digital literacy as leadership capabilities, and the increasing centrality of ethical awareness and governance skills. Together, the findings suggest that AI is not simply a technical tool introduced into public organisations, but a structural force that reshapes how leadership competence is defined, exercised, and evaluated within public service contexts (Mergel, Edelmann, & Haug, 2023).

AI and the Enhancement of Analytical and Decision Support Competencies

A consistent finding across the reviewed literature is that AI significantly strengthens analytical and decision support competencies among public sector managers. Studies show that AI systems enable leaders to process large volumes of administrative and operational data, identify trends, and generate scenario-based insights that were previously difficult to access within reasonable timeframes (Sousa, Melo, & Cunha, 2024). In public administration contexts characterised by complexity and uncertainty, these analytical enhancements support more informed strategic planning and policy formulation. Managers are increasingly able to draw on predictive analytics and real-time dashboards to guide decisions related to resource allocation, service delivery, and performance management (OECD, 2025). Empirical evidence indicates that public managers are more receptive to AI applications when their function is clearly defined as technical or supportive rather than discretionary. Research published in *Government Information Quarterly* demonstrates that AI tools are widely accepted for tasks such as forecasting service demand, detecting anomalies in financial transactions, and supporting policy simulations (Wirtz, Weyerer, & Geyer, 2023). These applications are perceived as extending managerial capacity rather than undermining professional judgement. The results suggest that AI adoption reinforces a form of evidence-

informed leadership, where decision making is grounded in systematic analysis while final authority remains with human actors. However, the findings also reveal that reliance on AI-driven analytics reshapes managerial competence in subtle ways. Leaders are required not only to interpret outputs but to critically assess data quality, underlying assumptions, and algorithmic limitations. Sousa et al. (2024) argue that analytical competence in AI-enabled environments includes the ability to question results rather than accept them uncritically. The researchers support this interpretation and notes that analytical leadership increasingly involves epistemic judgement, where managers must decide what forms of evidence are appropriate for specific public problems. This shift expands traditional notions of analytical competence beyond numerical literacy toward reflective and contextual reasoning. Despite these benefits, the results show persistent hesitancy regarding the use of AI in decision domains that involve human interaction, discretion, or moral judgement. Studies analysing public sector AI adoption report that managers remain cautious about delegating decisions related to employee evaluation, disciplinary processes, or citizen eligibility assessments to algorithmic systems (Giannini & Folco, 2024). This hesitancy reflects concerns about fairness, explainability, and accountability rather than a rejection of AI per se. The findings therefore suggest that analytical competence enhanced by AI is selectively embraced, reinforcing the view that leadership in the public service continues to prioritise human judgement in socially sensitive contexts.

Adaptability and Digital Literacy as Core Leadership Competencies

The second major theme emerging from the analysis concerns the growing importance of adaptability and digital literacy as foundational leadership competencies in AI-enabled public organisations. The literature consistently indicates that effective public sector leadership increasingly depends on the capacity to adapt to rapid technological change and to integrate digital tools into everyday managerial practice (Mergel et al., 2023). Digital literacy, in this context, extends beyond basic technical skills to include an understanding of how AI systems function, what their limitations are, and how they influence organisational processes. Empirical studies show that leaders who possess higher levels of digital literacy are more likely to engage constructively with AI initiatives and to foster positive attitudes toward AI among their teams (Quttainah et al., 2025). These leaders are better positioned to translate technical concepts into organisational language, align AI tools with policy objectives, and address employee concerns related to job security and role change. The findings suggest that digital literacy operates as an enabling competency that supports other leadership capabilities,

including communication, change management, and strategic alignment. Public sector training initiatives provide further evidence of this shift. UNESCO's global programmes aimed at strengthening AI competencies among public servants emphasise foundational digital literacy for leaders, including data awareness, algorithmic reasoning, and ethical sensitivity (UNESCO, 2024). Similarly, national competency frameworks such as India's AI competency framework for the public service highlight adaptability and continuous learning as essential leadership attributes in digital governance environments (Government of India, 2024). These initiatives reflect an institutional recognition that leadership competence must evolve alongside technological change. The results also reveal that adaptability is increasingly framed as a behavioural and cognitive competency rather than a personal trait. Studies indicate that public leaders are expected to model openness to innovation, encourage experimentation, and support learning-oriented cultures within their organisations (OECD, 2025). Adaptability, therefore, involves the capacity to navigate uncertainty, manage transitional tensions, and balance innovation with stability. The researchers support this interpretation and argue that adaptability should be understood as a relational competency that emerges through interaction with technological systems, organisational norms, and stakeholder expectations. At the same time, the findings suggest that the emphasis on digital literacy and adaptability risks creating new forms of inequality within public organisations. Research shows that leaders with limited exposure to digital tools or insufficient training may experience diminished confidence and authority in AI-enabled environments (Giannini & Folco, 2024). This dynamic has implications for leadership development and succession planning, particularly in public services with ageing workforces or uneven access to digital training. The results therefore point to the need for inclusive and context-sensitive capacity building strategies that recognise varied starting points among public sector leaders.

Ethical Awareness and Governance as Central Leadership Competencies

The third and most normatively significant theme identified in the analysis relates to the growing importance of ethical awareness and governance skills in AI-enabled public service leadership. Across the literature, concerns about algorithmic bias, transparency, accountability, and data protection are consistently identified as central challenges of AI adoption in the public sector (OECD, 2025). These challenges place new demands on leaders, who are expected to act as stewards of both technological innovation and public values. Empirical studies demonstrate that public trust in AI-supported decisions is closely linked to perceptions of ethical leadership and institutional oversight (Wirtz et al., 2023). Leaders play

a critical role in ensuring that AI systems are deployed in ways that are transparent, explainable, and aligned with legal and ethical standards. The findings suggest that ethical awareness is no longer a peripheral leadership attribute but a core competency that shapes how AI is governed and legitimised within public institutions. UNESCO's recent work on AI competency frameworks reinforces this conclusion by explicitly identifying ethical judgement and human-centred governance as essential leadership capabilities (UNESCO, 2024). These frameworks emphasise the responsibility of leaders to question algorithmic outputs, address potential harms, and engage diverse stakeholders in deliberations about AI use. The results indicate that ethical leadership in AI contexts involves proactive engagement rather than reactive compliance. However, the analysis also reveals a gap between ethical aspirations and operational practice. While many public sector organisations endorse principles of responsible AI, empirical studies show that leaders often lack the institutional tools and training required to translate these principles into everyday decision making (OECD, 2025). Ethical competence is frequently treated as a matter of regulatory adherence rather than as an integral component of leadership practice. The researchers view this as a critical weakness in current approaches to leadership development and argues that ethical reasoning should be embedded within competency frameworks alongside analytical and digital skills. The results further suggest that ethical governance competencies are closely linked to leadership identity and legitimacy. As AI systems increasingly influence decisions that affect citizens' rights and access to services, leaders must navigate heightened scrutiny and accountability pressures (Giannini & Folco, 2024). This environment demands a form of moral courage, where leaders are willing to challenge technological solutions that conflict with public values, even when such solutions promise efficiency gains. The researchers interpret this finding as evidence that AI intensifies rather than diminishes the normative dimensions of public service leadership.

Synthesis of Results

Taken together, the results demonstrate that AI influences leadership and management competency development in the public service in complex and interconnected ways. Analytical and decision support competencies are strengthened through AI-enabled tools, enabling more evidence-informed strategic planning. Adaptability and digital literacy emerge as foundational leadership capabilities that support effective engagement with technological change. Ethical awareness and governance skills become increasingly central as leaders navigate the societal and institutional implications of AI use. The findings support the view

that AI does not replace human leadership but reshapes the conditions under which leadership is exercised. The researchers argues that these results challenge narrow, technocratic interpretations of AI adoption and underscore the need for leadership development approaches that are holistic, context-sensitive, and value-driven. By highlighting how competencies evolve through interaction with AI systems, the results provide a nuanced understanding of leadership development in contemporary public administration.

DISCUSSION

The findings of this study demonstrate that artificial intelligence exerts a complex and multidimensional influence on leadership and management competencies within public service contexts. Rather than functioning as a purely technical intervention, AI reshapes the nature of managerial work, redistributes cognitive effort, and reframes expectations of what effective leadership entails in contemporary public administration. These results align with a growing body of literature that conceptualises digital transformation as an organisational and cultural process rather than a technological upgrade (Mergel, Edelmann, & Haug, 2023). The discussion that follows interprets the results in relation to existing scholarship, highlights their implications for leadership development, and introduces a reflective dimension that positions AI as a catalyst for redefining public service leadership rather than simply enhancing efficiency. One of the most salient findings is that AI enables the automation of routine administrative tasks and enhances decision support capabilities, thereby creating space for higher-order leadership functions. This observation is consistent with studies showing that AI-supported analytics and automation reduce time spent on repetitive processes such as reporting, monitoring, and basic forecasting (Sousa, Melo, & Cunha, 2024). In the public service, where managers are often burdened by compliance-driven administrative workloads, this shift has meaningful implications. By alleviating operational pressure, AI creates opportunities for leaders to focus on strategic thinking, coordination across departments, and engagement with stakeholders. The researchers supports this interpretation, noting that leadership effectiveness in the public sector has long been constrained by administrative overload rather than a lack of strategic intent.

However, the findings also indicate that the benefits of AI-driven efficiency are not uniformly realised across public organisations. Variability in readiness, acceptance, and confidence among public servants significantly shapes how AI influences leadership practice. This aligns with empirical evidence suggesting that digital transformation outcomes are contingent on

organisational culture, leadership support, and individual competencies (Giannini & Folco, 2024). Managers who possess higher levels of digital literacy and prior exposure to data-driven tools are more likely to integrate AI meaningfully into their leadership routines, while others experience uncertainty or resistance. The discussion therefore reinforces the argument that technology alone does not produce transformation; rather, transformation emerges from the interaction between technology and human capability. The uneven acceptance of AI also highlights an important distinction between technical and relational domains of leadership. The results show that AI tools are readily accepted for analytical and forecasting tasks but are met with scepticism when applied to areas involving interpersonal judgement, such as performance management or citizen-facing decisions. This finding is strongly supported by public administration research, which consistently reports reluctance to delegate discretionary authority to algorithmic systems (Wirtz, Weyerer, & Geyer, 2023). The researchers interprets this scepticism not as resistance to innovation, but as an expression of professional and ethical judgement rooted in public service values. This interpretation introduces a critical dimension to the literature by reframing selective acceptance of AI as a competency in itself rather than a deficiency.

The implications for leadership development are substantial. Traditional leadership training in the public sector has focused on policy knowledge, procedural compliance, and interpersonal skills. While these competencies remain essential, the results of this study suggest that leadership development frameworks must evolve to incorporate digital literacy as a core rather than supplementary component. Digital literacy, as reflected in the findings, is not limited to technical proficiency but includes the ability to interpret AI outputs, understand system limitations, and communicate technological implications to diverse stakeholders (UNESCO, 2024). Leaders who lack these capabilities risk becoming dependent on technical specialists, potentially weakening their strategic autonomy and decision-making authority. At the same time, the discussion underscores that digital literacy alone is insufficient. The results clearly indicate that ethical awareness and governance capacity are emerging as central leadership competencies in AI-enabled public services. Concerns about algorithmic bias, transparency, and fairness are not abstract theoretical issues but practical leadership challenges that directly affect organisational legitimacy and public trust (OECD, 2025). Leaders are increasingly expected to justify decisions informed by AI, explain the role of algorithms to citizens, and intervene when automated outcomes conflict with legal or

ethical standards. This places ethical reasoning at the core of leadership practice rather than treating it as an external compliance function.

The researchers strongly support the view that ethical governance must be integrated into leadership competency frameworks rather than addressed through standalone guidelines or codes of conduct. UNESCO's recent AI competency frameworks emphasise human-centred leadership and moral responsibility, yet the findings suggest that these principles are not always operationalised within organisational training programmes (UNESCO, 2024). This gap between normative aspiration and practical implementation represents a critical challenge for public administration. Ethical leadership in AI contexts requires more than awareness; it demands the capacity to question technological solutions, manage competing values, and accept responsibility for decisions shaped by complex systems. Another important dimension emerging from the discussion is the role of adaptability as a leadership competency. The results indicate that adaptability is increasingly understood as a continuous process of learning, adjustment, and sense-making rather than a static personal trait. This aligns with research on digital-era governance, which highlights the importance of learning-oriented leadership in environments characterised by rapid technological change (Mergel et al., 2023). Public service leaders are required to navigate uncertainty, manage transitional anxieties among staff, and make decisions in contexts where technological capabilities evolve faster than regulatory frameworks. Adaptability, therefore, becomes a relational and institutional competency shaped by organisational support structures and leadership development opportunities.

The discussion also raises concerns about inequality and exclusion within AI-enabled leadership development. The findings suggest that leaders with limited access to training or lower levels of digital exposure may experience marginalisation in technology-driven decision environments. This observation is supported by studies indicating that digital transformation can exacerbate existing disparities within public organisations if capacity-building efforts are uneven (Giannini & Folco, 2024). From the researchers's perspective, this highlights the ethical responsibility of policymakers and senior administrators to ensure inclusive leadership development strategies that accommodate diverse learning needs and professional backgrounds. Policy implications emerge clearly from the discussion. Leadership development programmes in the public service must move beyond generic digital skills training toward integrated competency frameworks that balance technical knowledge,

ethical judgement, and human-centred leadership capacities. The OECD (2025) emphasises that responsible AI adoption depends on leadership capability as much as regulatory design. Competency frameworks that isolate AI skills from broader leadership development risk producing technically proficient managers who lack the moral and relational capacities required for public service governance. The findings therefore support a holistic approach to leadership development that recognises AI as a socio-technical phenomenon embedded within democratic institutions.

Departing from a practical standpoint, the discussion suggests that leadership training should incorporate scenario-based learning, ethical deliberation, and reflective practice related to AI use. Leaders must be equipped not only to use AI tools but to critically evaluate their appropriateness in specific contexts. This aligns with Sousa et al. (2024), who argue that decision quality in AI-supported environments depends on the capacity of leaders to integrate analytical insight with contextual and normative judgement. The researchers extend this argument by suggesting that leadership development should explicitly address tensions between efficiency and equity, automation and accountability, and innovation and trust. The discussion also contributes to theory by challenging technocratic narratives of AI adoption in the public service. While much of the literature emphasises performance improvement and efficiency gains, the findings of this study reinforce the view that AI intensifies the normative dimensions of leadership rather than diminishing them. As algorithmic systems become embedded in public decision making, leaders face heightened scrutiny and accountability pressures (Wirtz et al., 2023). This environment demands not less leadership, but more reflective, ethically grounded, and communicative leadership. The researchers therefore argues that AI should be understood as amplifying the moral responsibilities of public service leaders.

In summary, the discussion highlights that AI has a multifaceted and deeply contextual impact on leadership and management competencies in the public service. AI enhances analytical and decision support capabilities, enabling leaders to engage more strategically with complex problems. At the same time, it exposes variability in readiness and acceptance, underscoring the importance of targeted and inclusive competency development programmes. The findings demonstrate that leadership training must integrate digital literacy, ethical governance, adaptability, and change management into coherent frameworks that reflect the realities of AI-enabled public administration. Policymakers and practitioners are encouraged

to move beyond narrow skill-based approaches and adopt human-centred leadership models that recognise both the opportunities and responsibilities associated with artificial intelligence in the public service.

CONCLUSION

This study set out to evaluate how artificial intelligence influences the development of management and leadership competencies within public service contexts. The findings make it clear that AI is not a neutral or peripheral tool but a transformative force that is reshaping how leadership is understood, practiced, and developed in public institutions. Rather than replacing human leadership, AI alters the conditions under which leadership is exercised, introducing new expectations, responsibilities, and forms of professional judgement. The study therefore contributes to a growing recognition that leadership development in the public service must be reconsidered in light of technological change, not as a technical adjustment but as a fundamental shift in organisational capability. One of the most important conclusions emerging from this study is that AI significantly enhances analytical capacity and strategic decision making among public sector managers. By enabling faster access to data, identifying patterns across complex systems, and supporting scenario-based planning, AI allows leaders to engage more deeply with strategic questions that were previously constrained by time and information limitations. This enhanced analytical capacity strengthens evidence-informed decision making and creates opportunities for more proactive and anticipatory leadership. However, the study also demonstrates that these benefits are realised only when leaders possess the skills and confidence to interpret AI outputs critically rather than treating them as authoritative or deterministic. Analytical competence in AI-enabled environments therefore involves discernment, contextual understanding, and reflective judgement, not merely technical skill.

At the same time, the study highlights that the growing reliance on AI elevates the importance of digital literacy as a core leadership competency. Digital literacy in this context extends well beyond the ability to use software or understand technical terminology. It includes an appreciation of how AI systems function, an awareness of their limitations, and an understanding of how algorithmic processes influence organisational outcomes. Leaders who lack this literacy risk becoming disengaged from critical decision processes or overly dependent on technical experts, which may undermine their strategic authority and accountability. Conversely, leaders who are digitally literate are better positioned to guide AI

adoption in ways that align with organisational goals and public service values. Equally significant is the conclusion that ethical governance has emerged as an indispensable dimension of leadership competence in AI-enabled public services. As AI systems increasingly inform decisions that affect citizens, employees, and public resources, leaders face heightened ethical responsibility. Issues of fairness, transparency, accountability, and trust are no longer abstract principles but practical leadership challenges that demand ongoing attention. The study shows that ethical leadership cannot be treated as an external compliance function or addressed solely through policy guidelines. Instead, ethical reasoning must be embedded within everyday leadership practice, shaping how decisions are made, explained, and justified. In this sense, AI intensifies rather than diminishes the moral dimension of public service leadership.

Another important conclusion concerns the unevenness of AI readiness and acceptance across public service organisations. The study demonstrates that leadership competencies do not develop uniformly in response to AI adoption. Differences in organisational culture, access to training, and prior exposure to digital tools shape how leaders engage with AI and how confidently they integrate it into their work. This unevenness has important implications for leadership development and organisational equity. Without deliberate and inclusive capacity-building strategies, AI adoption risks creating new divides between leaders who are digitally confident and those who are marginalised by technological change. Addressing this challenge requires intentional investment in leadership development that recognises diverse starting points and learning needs. The study also reinforces the idea that adaptability is becoming a defining feature of effective public service leadership. Adaptability is not simply a matter of personal flexibility but a collective capacity shaped by organisational support, learning opportunities, and leadership culture. AI accelerates the pace of change within public institutions, requiring leaders to navigate uncertainty, manage transitional tensions, and support staff through evolving roles and expectations. Leaders must be able to learn continuously, revise assumptions, and balance innovation with stability. This form of adaptability is relational and context-sensitive, rooted in the ability to make sense of change while maintaining organisational coherence and public trust.

Taken together, these conclusions suggest that traditional models of leadership development in the public service are no longer sufficient. Training programmes that focus narrowly on administrative competence or technical skill acquisition fail to capture the complexity of

leadership in AI-enabled environments. Instead, leadership development must be reimagined as an integrated process that brings together analytical capability, digital literacy, ethical judgement, adaptability, and human-centred leadership. Such an approach recognises that AI is not simply an efficiency tool but a socio-institutional force that reshapes values, roles, and relationships within public organisations.

Moving from a practical perspective, the findings of this study point to several important implications for policymakers, public service institutions, and training providers. Leadership development frameworks should be updated to explicitly incorporate AI-related competencies, not as optional additions but as core elements of public service professionalism. Training should move beyond generic digital skills to include critical engagement with AI, ethical deliberation, and reflective practice. Leaders must be equipped to ask not only whether AI can be used, but whether it should be used in specific contexts and under what conditions. Scenario-based learning, peer dialogue, and case-based reflection may be particularly effective in developing these capabilities. The study also suggests that leadership development should be embedded within broader organisational strategies for responsible AI adoption. Competency development cannot be separated from governance structures, organisational culture, and institutional accountability mechanisms. Leaders need supportive environments that encourage questioning, learning, and ethical reflection rather than unquestioning adoption of technological solutions. Creating such environments requires alignment between policy intent, organisational incentives, and leadership expectations.

In terms of scholarly contribution, this study advances understanding of AI in the public service by shifting attention from adoption and performance outcomes to leadership and competency development. It challenges technocratic narratives that frame AI as a solution to managerial shortcomings and instead positions leadership as central to shaping how AI is used and governed. By highlighting the evolving nature of leadership competencies, the study opens new avenues for research on leadership identity, professional norms, and authority in digitally mediated public organisations. Future research should build on these insights by examining how leadership competencies evolve over time as AI adoption deepens and becomes more embedded in organisational routines. Longitudinal studies would be particularly valuable in tracing how repeated interaction with AI systems influences leaders' decision-making styles, ethical reasoning, and sense of responsibility. Comparative research across different public service contexts could also shed light on how institutional, cultural,

and political factors shape the relationship between AI and leadership development. Additionally, future studies should explore how AI-related competencies can be effectively integrated into public administration education and professional development curricula. Understanding which pedagogical approaches best support ethical judgement, critical digital literacy, and adaptive leadership will be essential for preparing future public managers. There is also scope for research that examines the experiences of mid-level and frontline leaders, whose perspectives are often overlooked despite their critical role in translating AI policy into practice.

In conclusion, this study affirms that artificial intelligence is reshaping leadership and management competencies in the public service in profound and enduring ways. AI enhances analytical and strategic capacity, but it also demands higher levels of digital literacy, ethical governance, and adaptive leadership. The future of effective public service leadership will depend not on how advanced AI systems become, but on how well leaders are prepared to engage with these systems thoughtfully, responsibly, and in service of the public good.

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