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CIVIL SERVANTS' READINESS IN FACING THE IMPLEMENTATION OF ARTIFICIAL INTELLIGENCE IN LOCAL GOVERNMENT BUREAUCRACY

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Abstract

This study aims to analyze civil servants' readiness in facing the implementation of artificial intelligence in local government bureaucracy. The study focuses on civil servants' capacity, digital literacy, technological competence, organizational culture, and bureaucratic resistance to AI-based transformation. This research uses a qualitative method with an exploratory-descriptive approach and conceptual framework development. Data were collected from secondary and documentary sources, including recent peer-reviewed journal articles, policy documents, institutional reports, regulatory materials, and scholarly works related to AI adoption, digital transformation, civil-service competence, public-sector innovation, organizational culture, and bureaucratic resistance. The data were analyzed using thematic analysis by classifying findings into digital literacy, technological competence, organizational culture, leadership support, bureaucratic resistance, ethical awareness, and institutional support. The findings show that AI implementation in local government depends not only on technological infrastructure, but also on civil servants' ability to operate digital systems, interpret algorithmic recommendations, evaluate data quality, and maintain public accountability. The study also finds that bureaucratic resistance may arise from fear of job displacement, loss of authority, weak technical confidence, rigid work culture, and lack of training. The main contribution of this study is the formulation of a human-centered AI readiness framework consisting of digital literacy, technological competence, adaptive organizational culture, ethical awareness, and institutional support. This framework emphasizes that civil servants are the key actors of successful AI transformation in local government bureaucracy.

Keywords: artificial intelligence; bureaucratic resistance; civil servants; digital literacy; local government.

1. INTRODUCTION

The implementation of artificial intelligence in local government bureaucracy is increasingly becoming a strategic issue in the era of digital governance. AI is expected to improve public-service delivery, accelerate administrative processes, support data-based decision-making, and reduce repetitive bureaucratic workloads. Yet, the success of AI transformation in government cannot be determined by technology alone. Civil servants play a central role in translating AI systems into administrative practice, interpreting algorithmic outputs, maintaining service ethics, and ensuring that digital innovation remains aligned with public accountability. Studies on AI-augmented public administration show that the attitudes, perceptions, and willingness of government employees significantly influence the acceptance and sustainability of AI adoption in public institutions [1]. This indicates that AI transformation in local government requires not only technological infrastructure, but also competent, adaptive, and digitally literate civil servants.

The readiness of civil servants is closely related to digital literacy, technological competence, organizational culture, and bureaucratic adaptability. AI-based governance requires public employees who are able to understand digital systems, manage data, evaluate algorithmic recommendations, and communicate AI-supported decisions to citizens. In local government, this need is even more urgent because civil servants directly handle public services, licensing, social assistance, administrative records, complaints, and community-based policy responses. Research on public managers' competencies in AI implementation shows that managerial capacity, technical understanding, and organizational readiness are essential for adopting AI in local government [2]. AI adoption challenges in city governments also demonstrate that public managers must address issues related to data readiness, organizational resistance, ethical governance, technical skills, and institutional coordination [3]. These findings suggest that civil servants must be positioned as active agents of AI transformation rather than passive users of digital applications.

One of the main problems in AI implementation is the gap between technological ambition and bureaucratic capacity. Local governments may adopt AI-based systems, but their effectiveness will remain limited if civil servants lack digital competence, data literacy, analytical skills, and confidence in using new technologies. AI systems may also create anxiety among employees who perceive automation as a threat to professional roles, administrative

authority, or job security. Bureaucratic resistance can emerge when innovation is introduced without adequate training, leadership support, participatory design, and organizational learning. Maragno et al. [4] explain that AI implementation in public-sector organizations is shaped by organizational affordances, constraints, data quality, and institutional alignment. Madan and Ashok [5] also identify organizational capacity, skills, ethics, and governance as central issues in AI adoption and diffusion in public administration. These studies show that the human dimension of AI implementation is not secondary; it is a determining factor in whether AI becomes a meaningful reform instrument or merely a formal digital project.

Recent literature has provided strong foundations for understanding AI adoption in public administration. Zuiderwijk et al. [6] emphasize that AI in public governance must be analyzed through technical, institutional, ethical, and societal dimensions. Van Noordt and Misuraca [7] map AI use in the public sector and show that AI implementation varies across government functions and administrative contexts. Tangi et al. [8] argue that AI-augmented government transformation requires sociotechnical organizational change, while de Almeida and dos Santos Jr. [9] explain that public organizations need structured AI governance to translate ethical principles into operational procedures. Van Noordt and Tangi [10] further show that AI capability influences public value creation in public administration. Related research on digitally induced change highlights that digital transformation in the public sector requires organizational learning, leadership, new competencies, and changes in work routines [11]. Jo [12] also demonstrates that collaborative culture, empowerment leadership, and supportive IT work environments are important for strengthening digital transformation in public-sector organizations.

Other studies have examined digital transformation, service innovation, and public-sector capacity from broader perspectives. Scupola and Mergel [13] show that digital transformation in public administration requires co-production and public-value orientation. Criado et al. [14] analyze digital public services as an innovation process that depends on institutional capability and service redesign. Chen et al. [15], Gesk and Leyer [16], and Yigitcanlar et al. [17] show that AI-based public services, self-service technologies, and local government AI applications depend on user acceptance, service context, trust, and perceived usefulness. Alshahrani et al. [18] discuss AI-supported government decision-making and identify governance, skills, data, and ethical challenges. Rizk and Lindgren [19] show that automated decision-making in public administration creates tensions between efficiency, discretion, transparency, and fairness. Explainability and transparency studies also indicate that civil servants must be able to understand and communicate AI-supported decisions in ways that are procedurally fair and publicly accountable [20], [21].

The literature also shows that responsible AI adoption requires institutional governance, sustainable decision-making, digital inclusion, and human-capacity development. Attard-Frost et al. [22] demonstrate that AI governance initiatives require coordination, policy clarity, and practical implementation mechanisms. Wilson and van der Velden [23] propose sustainable AI as a public-sector decision-making model that integrates responsibility, social value, and ethical control. Chohan and Hu [24] emphasize that digital inclusion and ICT training are essential for strengthening digital competency in public-sector transformation. In the Indonesian context, Silitonga [25] identifies a digital-skills gap in the public sector and highlights the importance of civil servants' digital literacy for supporting digital transformation. Although previous studies have examined AI adoption, public-sector digital transformation, AI governance, public-service innovation, and digital skills, a gap remains in explaining civil servants' readiness as the key determinant of AI transformation in local government bureaucracy. This study addresses that gap by analyzing the capacity of civil servants, digital literacy, organizational culture, technological competence, and bureaucratic resistance to AI implementation. Its novelty lies in placing civil servants at the center of AI-based bureaucratic transformation, emphasizing that the success of AI in local government depends not only on technology as an administrative instrument, but also on human readiness, institutional learning, and ethical public service orientation.

2. RESEARCH METHODS

This study employs a qualitative research design using an exploratory-descriptive approach and conceptual framework development**.** The qualitative approach is appropriate because this study does not aim to measure statistical relationships or test the technical performance of a specific artificial intelligence system. Instead, it seeks to understand the readiness of civil servants in facing AI implementation within local government bureaucracy. The exploratory-descriptive approach allows the study to examine key readiness dimensions, including digital literacy, technological competence, organizational culture, bureaucratic adaptability, leadership support, and resistance to AI-based transformation. Conceptual framework development is used because the novelty of this study lies in positioning civil servants as the central factor in AI transformation, rather than treating technology as the primary driver of bureaucratic change.

The case study of this research focuses on civil servants' readiness for AI implementation in local government bureaucracy. Local government is selected as the unit of analysis because it directly manages public services, licensing, population administration, social assistance, complaint handling, and community-level policy responses. These administrative areas are increasingly affected by digital systems and have strong potential for AI adoption. The study examines civil servants' readiness through several analytical dimensions: capacity to use digital

tools, ability to manage and interpret data, understanding of AI-supported administrative processes, openness to organizational change, ethical awareness, and willingness to collaborate with AI-based systems. The study also analyzes bureaucratic resistance as part of institutional readiness, including concerns about job displacement, loss of authority, limited technical confidence, rigid work culture, and lack of training.

The data used in this study are collected from secondary and documentary sources. The main sources consist of peer-reviewed journal articles published within the last five years, policy documents, institutional reports, regulatory materials, and scholarly works related to AI adoption, digital transformation, civil-service competence, public-sector innovation, local government bureaucracy, digital literacy, organizational culture, and bureaucratic resistance. Data collection is conducted through document identification, relevance screening, thematic classification, and content analysis. The data are analyzed using qualitative thematic analysis by classifying the findings into several themes: digital literacy, technological competence, organizational culture, leadership and institutional support, bureaucratic resistance, ethical awareness, and human-centered AI governance. The results of this analysis are used to construct a civil servant readiness framework for AI-based local government transformation, emphasizing that successful AI implementation depends on human capacity, organizational learning, ethical responsibility, and adaptive bureaucratic culture.

3. RESULTS AND DISCUSSION

a. Civil Servants' Digital Literacy and Technological Competence as the Foundation of AI Readiness

The findings show that civil servants' readiness to face AI implementation in local government bureaucracy is strongly determined by their level of digital literacy and technological competence. AI-based bureaucracy requires civil servants who are not only able to operate digital applications, but also understand how data are collected, processed, interpreted, and used in administrative decision-making. In local government, this competence is crucial because civil servants are directly involved in public services, licensing, population administration, social assistance, complaint handling, and community-level policy implementation. AI systems may assist in document classification, service-priority analysis, chatbot-based interaction, and data-driven decision support, but these functions will not work effectively if civil servants do not understand their operational logic and administrative implications.

The analysis indicates that digital literacy in AI-based bureaucracy must be understood beyond basic computer skills. Civil servants need the ability to evaluate data quality, interpret algorithmic recommendations, identify potential errors, and communicate AI-supported decisions to citizens. This finding is consistent with Ahn and Chen [1], who show that government employees' perceptions and willingness to use AI significantly influence AI-augmented public administration. Sandoval-Almazan et al. [2] also emphasize that public managers' competencies are central to AI implementation in local government. These studies support the argument that AI readiness is not only a matter of technological infrastructure, but also a matter of human capability within the bureaucracy.

The findings also show that weak technological competence may create dependence on technical vendors or specialized IT units. When civil servants lack the ability to understand AI systems, they may treat algorithmic outputs as final answers without critical evaluation. This condition can increase the risk of automation bias, inaccurate service decisions, and weak administrative accountability. De Bruijn et al. [20] argue that explainable AI is important because public-sector decisions must be understandable and justifiable. Grimmelikhuijsen [21] further shows that algorithmic transparency affects citizens' trust in automated decision-making. These findings indicate that civil servants must have sufficient digital competence to act as critical users of AI, not merely as passive operators of digital systems.

In the Indonesian public-sector context, the digital-skills gap remains a significant challenge. Silitonga [25] highlights that digital transformation in the Indonesian public sector faces challenges related to uneven digital skills, institutional readiness, and human-resource development. This condition is highly relevant to local government bureaucracy, where digital capacity often varies across agencies, regions, age groups, and job categories. For this reason, AI implementation requires systematic capacity-building programs, including digital literacy training, data analytics training, AI ethics education, and practical simulations of AI-supported administrative work. Civil servants should be trained not only to use AI tools, but also to understand their limitations, risks, and accountability consequences.

b. Organizational Culture, Leadership Support, and Bureaucratic Resistance to AI Implementation

The second finding shows that organizational culture plays a decisive role in shaping civil servants' readiness for AI implementation. Local government bureaucracy is often characterized by hierarchical procedures, formal routines, risk avoidance, and strong dependence on administrative rules. While these characteristics are important for maintaining legal certainty, they may also slow down innovation when digital transformation requires experimentation, learning, flexibility, and inter-agency collaboration. AI implementation requires a work culture that supports data sharing, adaptive learning, cross-unit coordination, and openness to new administrative methods. Without cultural change, AI may be adopted formally as a digital project but fail to transform bureaucratic performance.

Leadership support is also a critical factor. AI implementation requires leaders who can provide strategic direction, allocate resources, support training, reduce employee anxiety, and create a safe environment for organizational learning. Jo [12] shows that collaborative culture, empowerment leadership, and supportive IT work environments are important for digital transformation in the public sector. Scupola and Mergel [13] also emphasize that digital transformation in public administration requires co-production and public-value orientation. These studies support the finding that AI transformation should not be imposed only through top-down technology procurement. It must be accompanied by leadership that encourages participation, learning, and shared ownership among civil servants.

The findings also reveal that bureaucratic resistance may emerge from several sources. Civil servants may resist AI because they fear job displacement, reduced authority, increased monitoring, additional workload, or loss of professional relevance. Resistance may also occur when AI systems are introduced without sufficient explanation, training, or involvement of employees in system design. Sienkiewicz-Małyjurek [3] shows that AI adoption challenges matter for public managers, particularly in relation to organizational readiness, institutional barriers, and implementation constraints. Maragno et al. [4] also explain that AI implementation in public-sector organizations is shaped by affordances and constraints, including organizational capacity, data quality, and institutional alignment. These findings confirm that resistance to AI is not merely psychological; it is also institutional and managerial.

The discussion further shows that resistance can be reduced when AI is framed as a support system rather than a replacement for civil servants. AI should be introduced as a tool that helps employees reduce repetitive work, improve service accuracy, analyze data more effectively, and provide better responses to citizens. Madan and Ashok [5] emphasize that AI adoption in public administration involves tensions between innovation, fairness, privacy, organizational capacity, and public value. Tangi et al. [8] also argue that AI-augmented government transformation has sociotechnical implications that require organizational change. This means that successful AI implementation depends on the ability of local governments to align technology with work routines, employee roles, public-service ethics, and institutional learning.

c. Human-Centered AI Readiness Framework for Local Government Bureaucracy

The main result of this study is the formulation of a **human-centered AI readiness framework** for local government bureaucracy. This framework consists of five interrelated components: **digital literacy, technological competence, adaptive organizational culture, ethical awareness, and institutional support**. Digital literacy refers to civil servants' ability to understand and use digital systems in administrative work. Technological competence refers to the ability to operate, interpret, and evaluate AI-supported tools. Adaptive organizational culture refers to the willingness of bureaucratic institutions to learn, collaborate, and redesign work processes. Ethical awareness refers to civil servants' understanding of accountability, fairness, privacy, explainability, and public-service responsibility. Institutional support refers to leadership, regulation, training, infrastructure, and governance mechanisms that enable AI implementation to operate responsibly.

This framework contributes to previous research by placing civil servants at the center of AI-based bureaucratic transformation. Previous studies have discussed AI adoption, AI capability, public-sector digital transformation, and AI governance [6], [7], [9], [10]. This study extends those discussions by emphasizing that AI readiness in local government depends on the readiness of public employees who will use, supervise, interpret, and communicate AI systems in daily administrative practice. Van Noordt and Tangi [10] show that AI capability influences public value creation in public administration. This study adds that AI capability is not only technical or organizational; it is also human and professional. Civil servants' competence determines whether AI will produce public value or become another underused digital instrument.

The framework also emphasizes the importance of ethical awareness. Civil servants must understand that AI-supported administration may affect citizens' access to services, benefits, licenses, and public information. For this reason, AI use must be guided by fairness, transparency, privacy protection, explainability, and accountability. De Almeida and dos Santos Jr. [9] explain that public organizations need structured AI governance to implement ethical principles. Wilson and van der Velden [23] also propose sustainable AI as a public-sector decision-making model that balances innovation and responsibility. These studies support the finding that AI readiness must include ethical and normative competence, not only technical skills.

Institutional support is equally important. Civil servants cannot be expected to adapt to AI without adequate training, clear regulations, leadership commitment, and supportive infrastructure. Chohan and Hu [24] show that ICT training programs are essential for strengthening digital competency. Haug et al. [11] also explain that digitally induced change in the public sector requires organizational learning, new competencies, and changes in work routines. These findings confirm that AI implementation must be accompanied by structured human-resource development. Local governments need continuous training programs, competency standards, ethical guidelines, technical assistance, and evaluation mechanisms to ensure that civil servants can work effectively with AI systems.

Based on the overall analysis, this study finds that the success of AI implementation in local government bureaucracy depends more on human and organizational readiness than on technological availability alone. AI can

support public services, licensing, administrative decision-making, and community analysis, but its effectiveness depends on civil servants who are digitally literate, technologically competent, ethically aware, and institutionally supported. The novelty of this study lies in shifting the focus from AI as a technological instrument to civil servants as the key actors of AI transformation. In this perspective, AI-based bureaucracy should not be designed as a machine-centered transformation, but as a human-centered governance reform that strengthens public service, administrative accountability, and adaptive government capacity.

4. CONCLUSION

This study finds that the readiness of civil servants is a decisive factor in the successful implementation of artificial intelligence within local government bureaucracy. AI can improve public services, licensing administration, data-based decision-making, complaint handling, and internal bureaucratic efficiency. Yet, these benefits depend on civil servants' ability to understand, operate, interpret, supervise, and ethically use AI-supported systems. The findings show that digital literacy and technological competence must be understood beyond basic application skills. Civil servants need the capacity to evaluate data quality, identify potential algorithmic errors, interpret AI recommendations, and communicate AI-supported decisions to citizens in a transparent and accountable manner.

The study also finds that organizational culture and leadership support strongly influence AI readiness. Local government bureaucracy often operates through hierarchical procedures, formal routines, and risk-averse work patterns. These characteristics may limit AI transformation when innovation requires collaboration, learning, experimentation, and workflow redesign. Bureaucratic resistance may emerge from fear of job displacement, reduced authority, increased workload, weak technical confidence, and limited involvement in digital-system design. For this reason, AI should be introduced as a supporting instrument that strengthens the role of civil servants, not as a technology that replaces their professional function in public administration.

The main novelty of this study lies in the formulation of a human-centered AI readiness framework for local government bureaucracy. The framework consists of five dimensions: digital literacy, technological competence, adaptive organizational culture, ethical awareness, and institutional support. This framework extends previous studies on AI adoption and digital transformation by placing civil servants as the key actors of AI implementation. The study emphasizes that AI readiness is not only technological or infrastructural, but also human, organizational, and ethical.

The findings imply that local governments should prioritize human-resource development before expanding AI adoption. Training programs should include digital literacy, data analytics, AI ethics, algorithmic accountability, and practical use of AI in administrative work. Local governments also need leadership commitment, clear governance standards, participatory implementation, and continuous evaluation to reduce resistance and strengthen trust among civil servants. This study is limited because it uses a qualitative and documentary-based approach. Future research should empirically test the proposed framework through interviews, surveys, or comparative case studies across local governments. Further studies may also examine how age, education, position level, work experience, organizational culture, and leadership style affect civil servants' readiness to adopt AI.

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