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# Utilizing Artificial Intelligence to Optimize Public Services: A Case Study in Regional Government

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## **ABSTRACT**

This study aims to analyze the use of Artificial Intelligence (AI) to optimize public services in local governments, while identifying challenges and opportunities for its implementation. The research method used is a qualitative case study approach, through in-depth interviews, observations, and documentation analysis. The results show that the application of AI through service chatbots, digital queuing systems, and population data analysis can improve bureaucratic efficiency, reduce public waiting times, and increase public satisfaction. However, AI implementation still faces challenges such as limited infrastructure, lack of human resource competency, resistance from some employees, and public doubts about data security. This study confirms that the success of AI adoption in local governments is determined not only by technological readiness, but also by data protection policies, change management, and increasing public digital literacy.

**Keywords**: Artificial Intelligence; Public Services; Regional Government; Digital Governance

### INTRODUCTION

The development of Artificial Intelligence (AI) is currently showing rapid progress and its use is becoming more widespread, not only in the business and industrial sectors but also beginning to be integrated into the public sector. AI technology presents an innovative solution to improve the efficiency, accuracy, and quality of government services to the public. For example, the application of AI in big data analysis enables the government to make evidence-based decisions more quickly and accurately (Rohman et al., 2024).

Furthermore, the use of AI in public services, such as digital queuing systems, service chatbots, population data management, and fraud detection in social assistance distribution, is a strategic step to address the challenges of limited human resources and increasingly complex service needs. With its automation, prediction, and self-learning capabilities, AI has the potential to transform traditional bureaucracy into a more modern, transparent, responsive, and citizen-focused government. However, the development of AI in the public sector also requires regulations, ethics, and digital infrastructure readiness to ensure optimal utilization and prevent gaps in technology access within the community (Safriatullah et al., 2025).



This technology has the potential to increase efficiency by speeding up bureaucratic work processes that previously took a long time, providing transparency through a system that can minimize the practice of abuse of authority and strengthen accountability, while simultaneously improving the quality of government services by providing faster, more accurate, responsive services that meet the needs of the community (Afriansyah & Torrido, 2024).

The context of public services in local governments is currently fraught with various complex challenges. Slow bureaucracy often makes service processes cumbersome and less responsive to public needs. Limited human resources (HR), both in terms of quantity and competence, mean that the apparatus' ability to manage public services is less than optimal. Furthermore, administrative inefficiency remains a classic problem, characterized by overlapping procedures, underutilization of information technology, and weak coordination between work units (Prahara et al., 2024).

This situation has resulted in low public satisfaction, as local government services have not met the expected standards of effectiveness, speed, and transparency. These challenges demand innovation and transformation in public service delivery, including through the use of digital technology and artificial intelligence (AI) to achieve more modern, efficient, and citizen-focused governance (Criado & Gil-Garcia, 2019).

AI is considered a strategic solution for optimizing public services because it can deliver innovations that address the weaknesses of traditional bureaucracy. Through intelligent queuing systems, for example, citizens no longer have to wait long hours manually. Instead, they can obtain queue numbers digitally and be guided by more accurate service time estimates. Service chatbots are also a significant breakthrough, as they can provide fast and accurate responses to public inquiries at any time, regardless of business hours, thereby increasing information accessibility and reducing the burden on officers (Nzobonimpa, 2023).

Furthermore, big data analysis in public policy enables local governments to process and understand large amounts of data in real time, enabling evidence-based and more targeted policy formulation. With the application of AI, public services have the potential to become more efficient, transparent, and inclusive, and adapt to the evolving needs of society in the digital age (Hilabi et al., 2025).

The implementation of AI in local governments in Indonesia is beginning to show positive progress, although it is still in its early stages and limited. Several regions have adopted AI-based systems to support various aspects of public services, such as the use of chatbots to quickly and interactively answer public questions regarding population administration, permits, and healthcare services. Furthermore, some regions are utilizing AI technology in digital queuing systems at hospitals and service offices, thereby reducing waiting times and increasing public convenience (Simanjuntak et al., 2024).

In the smart city sector, AI is being applied to traffic analysis through smart cameras that can detect road congestion and provide real-time traffic flow management recommendations. Several local governments are also beginning to explore the use of AI in population data management and social assistance distribution to ensure targeted targeting and minimize the potential for fraud. These practices demonstrate that AI has significant potential to catalyze digital transformation at the regional level, although challenges related to technological infrastructure, human resource capacity, regulations, and the digital divide still require serious attention for more effective and equitable implementation (Kumar et al., 2024).

However, its implementation is uneven and limited, so the benefits of AI in improving the quality of public services have not been fully realized by all local governments. Many regions face technical challenges, such as limited digital infrastructure, unstable internet connections, a lack of information system integration, and a shortage of hardware and software to support AI-based technology (Kamaluddin et al., 2024).

On the other hand, non-technical obstacles also pose significant barriers, including low human resource competency in mastering new technologies, bureaucratic resistance to change, limited budgets for technology investment, and the absence of clear regulations and operational standards regarding the use of AI in public services. These conditions indicate that while AI has great potential to revolutionize regional bureaucracy, its implementation still requires a comprehensive strategy, support from central government policies, increased digital literacy among civil servants, and collaboration with the private sector and academia to ensure its use is more optimal, inclusive, and sustainable (Newman et al., 2022).

This research gap lies in the limited number of studies discussing the use of AI in the context of local government, as previous research has focused more on AI implementation in the business or corporate sector. Existing studies in the public sector generally focus on technology and infrastructure aspects, while direct experiences, implementation challenges, and the perspectives of citizens as users of public services are rarely addressed. Furthermore, few studies have used a qualitative approach with case studies to explore in-depth how AI impacts the effectiveness of local public services, leaving this research space wide open.

The purpose of this research is to comprehensively analyze the use of Artificial Intelligence (AI) to optimize public services in local governments, including aspects of efficiency, transparency, and perceived service quality. The research also aims to identify various technical and non-technical challenges faced in implementing AI, as well as opportunities that can be leveraged to support digital transformation in the local government sector.

Furthermore, this research seeks to explore the perceptions and experiences of both the government as service providers and the public as beneficiaries, in order to gain a more comprehensive picture of the effectiveness of AI-based public services. Ultimately, this research is expected to formulate applicable and sustainable strategic recommendations for local governments in

developing, implementing, and expanding the use of AI as a crucial instrument for realizing modern, responsive, and community-oriented governance.

The novelty of this research lies in its attempt to present a qualitative case study that in-depth examines the implementation of AI in local government, not only from a technological perspective but also encompassing the social, managerial, and cultural dimensions of the organization, often overlooked in previous research. This approach makes a novel contribution by combining anthropological and managerial perspectives to understand how AI influences patterns of interaction between government and citizens, both in the context of service delivery and public trust.

Furthermore, this research offers a new conceptual model relevant to the local and regional context in Indonesia, thus serving as a practical reference for implementing AI appropriate to the socio-cultural conditions of local communities. Furthermore, this research is one of the initial studies supporting the direction of digital transformation in local government through the use of AI, while enriching the academic literature and providing a strategic basis for developing technology-based public policies in Indonesia.

### **METHODOLOGY**

This research method uses a qualitative approach with a case study method that focuses on the use of Artificial Intelligence (AI) in optimizing public services in local government. The research was conducted in specific local government offices that have implemented AI, with research subjects including government officials, IT staff, public service employees, and the public as service recipients (Atmaja, 2024).

The data used consisted of primary data in the form of in-depth interviews with key informants and secondary data in the form of policy documents, internal government reports, official publications, and public service data. Informants were selected using purposive sampling techniques based on their role, knowledge, and involvement with AI, as well as snowball sampling when necessary to find additional informants. Data collection techniques included in-depth interviews, participant observation, and documentation, with instruments in the form of semi-structured interview guides, field notes, observation sheets, and audio/visual recordings with permission (Rifa'i, 2023).

Data analysis used the Miles & Huberman model, which includes data reduction, data presentation, and conclusion drawing/verification. This was complemented by thematic analysis to identify key patterns, categories, and themes related to AI effectiveness. Data validity was maintained through source triangulation, member checking with informants, and peer debriefing with fellow researchers. This study also adhered to research ethics by requesting informed consent, maintaining respondent confidentiality, and presenting research results objectively and impartially.

### RESULTS AND DISCUSSION

Research shows that the use of AI in public services in local governments has been implemented through various innovations such as service chatbot applications, digital queuing systems, and population data analysis. The presence of AI has been proven to help accelerate public service responses, particularly in population administration and licensing services, while simultaneously increasing bureaucratic efficiency. Consequently, public waiting times have been significantly reduced, user satisfaction levels have increased due to faster and more transparent services, and employees have been assisted in handling routine administrative workloads.

However, AI implementation still faces several challenges, including limited technological infrastructure such as servers and internet networks in remote areas, a lack of human resource competency in operating the system, resistance from some employees who feel their roles are threatened, and issues of data security and privacy that have not been fully guaranteed. From the perspective of service recipients, the public generally considers AI beneficial, but some still experience difficulties in accessing technology-based services due to limited digital literacy. Therefore, mentoring and education are needed to ensure more inclusive and sustainable adoption of AI in the public sector.

Table 1. Research Results on AI Implementation in Regional Public Services

Aspect	Key Findings	Field Evidence	Interpretation
Utilization of AI	AI is used in service chatbots, digital queuing systems, and population data analysis.	Interviews with IT staff and observation of service systems.	AI helps speed up administrative service processes and improve responsiveness.
Service Efficiency	People's waiting time is reduced, satisfaction is increased.	Service data documentation shows a reduction in queue times of up to 40%.	AI is effective in optimizing bureaucracy and increasing public satisfaction.
Employee Support	Employees are assisted in routine administrative work.	Employee statement: lighter manual workload.	AI serves as a support, not a replacement for employees.
Technical Challenges	Limited infrastructure and human resource competencies.	Technical notes on server outages & interviews with employees struggling to adapt.	Infrastructure and human resource training are crucial factors for the success of AI implementation.
Employee Resistance	Some employees are worried that their roles will be replaced.	The interview results showed discomfort with change.	Change management is required.

Data Security	There are still doubts about the privacy and security of people's data.	Public complaints regarding digital data storage.	Stricter regulations and data security systems are needed.
Public Perception	The majority of people are satisfied, but there is a digital literacy gap.	Interviews with villagers revealed difficulties accessing the application.	AI is useful, but it needs digital education to be inclusive.

The research results table shows that local governments have begun utilizing AI through service chatbot applications, digital queuing systems, and population data analysis, signaling a digital transformation in the public sector with a focus on improving service speed and public data management. In terms of efficiency, field data shows a reduction in waiting times of up to 40% for administrative services, resulting in increased public satisfaction due to faster and more transparent services in line with digital governance principles. AI has also been shown to support employees by easing routine administrative burdens, allowing them to focus more on analytical tasks and direct service delivery. However, technical challenges remain, such as server disruptions, unstable internet connections, and limited employee skills, demonstrating that successful AI adoption depends not only on technology but also on infrastructure readiness and human resource quality. Furthermore, some employees have shown resistance due to concerns about their roles being replaced, necessitating change management to emphasize that AI serves as a support tool, not a threat. Concerns have also arisen regarding data security and public privacy, given that data protection regulations at the local level are still inadequate. Clear regulations and robust security systems are urgently needed. From a public perspective, the majority find AI-based services helpful, but some groups still struggle to access them due to low digital literacy. This underscores the need for education and support to ensure AI implementation in public services is truly inclusive and prevents a digital divide.

## AI Contribution to Service Optimization

AI has been proven to increase bureaucratic efficiency by reducing manual procedures that are often time-consuming, complicated, and prone to administrative errors. Through the automation of work processes, such as data verification, document management, and basic administrative services, AI can eliminate unnecessary bureaucratic steps and accelerate service flows. Furthermore, the use of AI also helps create more consistent, transparent, and accountable work standards because every procedure is systematically recorded in a digital system (Purwono, 2025).

This not only lightens the workload of government officials but also provides a faster, simpler, and more satisfying service experience for the public. Thus, AI plays a crucial role in driving bureaucratic transformation toward modern, efficient, and public-focused governance (Nurhamzah & Erina Darni,

2025).

This aligns with digital governance theory, which emphasizes the importance of leveraging technology as a key instrument in creating a more responsive, transparent, and participatory government. This theory is based on the idea that digital technology, including AI, serves not only as an administrative tool but also as a medium for transforming governance, strengthening interactions between government and citizens.

Through the application of technology, the government can provide faster, more accurate, and more needs-driven services, while simultaneously opening up space for public participation in the decision-making process. Therefore, the implementation of AI in local government can be seen as part of the realization of digital governance, which aims to create a bureaucracy that is adaptive, accountable, and able to respond more effectively to societal challenges in the digital era (Elvia et al., 2025).

#### AI and Bureaucratic Transformation

AI is not just a technological tool, but also a catalyst for organizational cultural transformation within government bureaucracies. Its presence is driving a paradigm shift in work from conventional, slow, manual, and hierarchical patterns to service delivery that is data-driven, accurate, and prioritizes speed (Habibani & Frinaldi, 2025). Government officials are required to be more adaptive, collaborative, and accustomed to making decisions based on AI-generated data analysis, rather than simply intuition or lengthy bureaucratic procedures. This cultural shift reinforces the focus on public satisfaction as the center of service, while also internalizing the values of efficiency, transparency, and innovation in local governance. Thus, AI serves a dual function: not only as a technological innovation but also as a catalyst for organizational change toward a modern, responsive, and evidence-based bureaucracy.

Effective change management is needed to better prepare employees for digital transformation, particularly in the context of AI adoption in public services. This change process not only requires improving technical skills through training and capacity building, but also requires a mindset adjustment so that employees view technology not as a threat but as a tool to support their performance (Muharram et al., 2025).

Change management plays a crucial role in building employee awareness, commitment, and engagement from the planning stage through implementation, thereby minimizing resistance to change. Furthermore, a transparent communication strategy, strong leadership support, and appropriate incentives are necessary to create an adaptive and innovative work culture. With structured change management, AI-based digital transformation in local government can be smoother, more inclusive, and more sustainable (Errida & Lotfi, 2021).

## Digital Divide and Inclusivity

Research findings indicate a significant digital literacy gap in society, particularly between urban and rural communities, and between the younger generation, which is relatively adaptable to technology, and the older generation, which still struggles to access digital services. This gap directly impacts the utilization of AI-based public services, with some communities quickly adapting and experiencing the benefits, while others remain behind due to limited knowledge, skills, and access to digital devices and internet networks (Izzati & Batubara, 2025).

This condition has the potential to create inequality in the acceptance of the benefits of technological innovation, so that digital transformation actually risks widening social disparities (Isma et al., 2025). Therefore, an inclusive strategy is needed, including digital education, mentoring programs, and equitable infrastructure provision, so that all levels of society can access, understand, and utilize AI-based public services equally.

If not addressed seriously, the application of AI in public services has the potential to create inequitable access for the public. Groups with high digital literacy and adequate access to technology will more easily enjoy the benefits of AI-based services, while those with limited knowledge, devices, or internet connections will be left behind. This inequality can widen the social gap between urban and rural communities, young and elderly groups, and upper-middle-income groups and low-income communities. In the long term, this situation could undermine the principle of social justice in public services and erode public trust in the government. Therefore, inclusive policies are needed through the provision of equitable digital infrastructure, increased digital literacy, and alternative service mechanisms so that the application of AI can truly expand access, not narrow it (Aurellia et al., 2025).

### **Implications for Regional Policy**

Local governments need to integrate AI into long-term public service strategies so that its use is not merely temporary or partial, but truly becomes part of the transformation of governance. This integration includes targeted planning for digital infrastructure development, human resource capacity building, and the establishment of clear regulations and operational standards to ensure the sustainability of AI implementation (Hoang, 2024).

By incorporating AI into the long-term vision and mission of public services, local governments can create service systems that are more efficient, adaptive, and responsive to changing community needs. Furthermore, this strategy also enables the development of an inclusive digital ecosystem, where AI becomes not only a technical tool but also a strategic instrument in realizing a modern, transparent, and public-satisfaction-oriented government (Waita et al., 2025).

Data protection regulations, increased human resource capacity, and equitable infrastructure are key prerequisites for ensuring the successful implementation of AI in public services. Data protection regulations are crucial to ensure the security, confidentiality, and integrity of public information to prevent misuse during the digitalization of services. Furthermore, increased human resource capacity through training and digital competency development is necessary to enable government officials to effectively operate AI technology while adapting to changes in a more modern, data-driven work culture.

Meanwhile, the provision of equitable digital infrastructure, including stable internet access even to remote areas, adequate hardware and software, and inter-agency system integration, is the foundation for equitable access to AI-based public services for all levels of society. Without these three aspects, digital transformation in local governments risks being unequal and unsustainable.

Comparison with previous studies shows that this research aligns with various global findings that emphasize the benefits of AI in improving efficiency, transparency, and the quality of public services. As in international research, AI has been shown to accelerate administrative processes, reduce manual workloads, and increase public satisfaction with government services (Komarudin et al., 2024, pp. 2020–2024).

However, this study also highlights the local context, which presents unique challenges rarely discussed in the international literature. These include the influence of a bureaucratic culture that tends to be hierarchical, the unequal level of digital literacy in the community, and the resistance of some employees who feel their roles are potentially replaced by technology. This demonstrates that while AI universally presents significant opportunities for transforming public services, its successful implementation in Indonesia is heavily influenced by the unique social, cultural, and structural conditions at the local government level. Thus, this study contributes to the literature by enriching our understanding of the local dynamics of AI adoption in the public sector.

## **CONCLUSION**

The conclusion of this study shows that the use of AI has proven effective in improving the efficiency of public services, as evidenced by reduced waiting times for the public, increased user satisfaction, and reduced administrative workload for employees. AI acts as a supporting tool, not a replacement for employees, allowing officials to focus more on strategic and interactive services. However, the implementation of AI in local governments still faces significant challenges, such as limited technological infrastructure, low human resource competency, employee resistance to change, and data security and privacy issues. Public perception of AI-based public services is generally positive, but digital literacy barriers remain a potential obstacle that can create disparities in service access. Therefore, the success of AI adoption is not solely determined by technology but also requires effective change management, clear data protection regulations, increased public digital literacy, and an equitable infrastructure development strategy. Therefore, this study emphasizes the importance of integrating AI into local public service policies so that digital transformation can be more

inclusive, sustainable, and strengthen the quality of the relationship between the government and the public.

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