Research on the Intelligent Upgrade of Public Administration and Government Services

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Abstract. With the rapid advancement of information technology, public administration and government services are undergoing a profound intelligent transformation. This paper systematically examines the background, current status, challenges, and pathways of this intelligent upgrade. It first reviews the theoretical foundations and developmental trajectory of intelligent government services, then analyzes major practices and achievements in China's current intelligent government services, identifies bottlenecks in data sharing, technology application, and institutional safeguards, and finally proposes implementation strategies encompassing top-level design, technological integration, standardization, and talent development. The study demonstrates that intelligent upgrading represents not merely technological innovation but a fundamental transformation of governance concepts and models, playing a vital role in enhancing government efficiency, optimizing the business environment, and improving public satisfaction.

Keywords: Public administration; Government services; Intelligence; Digital transformation; Smart government

1 Introduction

Driven by both the global digital transformation and the modernization of national governance, the intelligentization of public administration and government services has become an irreversible trend[1]. The integrated application of next-generation information technologies—such as artificial intelligence, big data, cloud computing, and blockchain—is reshaping government organizational structures, operational workflows, and service delivery models. This intelligent upgrade entails not only the digitization and automation of administrative processes but, more fundamentally, the realization of data-driven precision decision-making, intelligent oversight, and personalized services, thereby establishing a comprehensive, collaborative, and intelligent government operational system[2]. Grounded in China's "streamlining administration, delegating power, improving regulation, and optimizing services" reform and digital government development initiatives, this study aims to provide theoretical insights and practical guidance for advancing the intelligentization of government services[3].

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2 Literature Review and Theoretical Foundations

2.1 Digital Governance Theory

Digital governance theory advances from e-government studies, viewing technology not merely as a tool but as integral to governance—reshaping its values, structures, and mechanisms[4]. It positions digital technology as both a means to improve administrative efficiency and a core driver of governance innovation. Centered on "citizen-centricity" and "data-driven" approaches, it calls for shifting service delivery from departmental logic to user needs, and using data analytics to enable evidence-based decision-making and proactive governance. Ultimately, it provides a pathway toward a more open, responsive, and resilient governance system[5].

2.2 The Theory of the Total Government

Holistic Government Theory addresses the fragmentation, overlapping functions, and disjointed services of traditional bureaucracy by advocating for integrated policy objectives, organizational structures, information resources, and workflows through cross-department collaboration. Intelligent upgrades enable this vision technologically: cloud computing supports shared infrastructure, big data centers integrate government data, blockchain ensures trustworthy cross-agency workflows, and AI assists in coordinating complex operations. Thus, the intelligent transformation of public services operationalizes holistic governance, advancing toward integrated online service and management systems.[6]

2.3 Smart Government Framework

The Smart Government represents the advanced stage of digital governance development, establishing an intelligent closed-loop ecosystem that encompasses the entire governance process. This framework typically consists of four key components: Intelligent Sensing (comprehensively and in real-time collecting socioeconomic data and public demand information through IoT, internet platforms, and public feedback channels); Analytical Decision-Making (conducting deep mining and intelligent analysis of sensor data using AI algorithms and modeling techniques to provide dynamic support and multi-scenario simulations for evidence-based policymaking); Collaborative Execution (intelligently allocating tasks and coordinating resources via integrated platforms to achieve efficient cross-level, cross-regional, cross-system, and cross-departmental collaboration based on analytical insights); and Evaluation & Feedback (employing digital performance metrics and social evaluation systems to monitor and assess policy implementation and service outcomes in real time, with feedback continuously feeding back to the sensing and decision-making processes, forming a self-improving closed loop)[7]. This framework systematically outlines the ideal vision of government operations post-intelligent transformation—a self-learning, self-optimizing intelligent entity[8].

3 Current Status and Achievements of Intelligent Government Services in China

3.1 The Platform Infrastructure is Becoming Increasingly Robust

The framework for a nationally integrated government service infrastructure has been largely established[9]. With the National Government Service Platform serving as the central hub, it connects 31 provinces (autonomous regions, municipalities) and the Xinjiang Production and Construction Corps, linking the government service platforms of dozens of State Council departments and forming a unified national "one-network-for-all" system for government services. Most provinces and cities have implemented five-tier coordinated "one-stop online service" platforms spanning provincial, municipal, county, township, and village levels, achieving standardized management of government service items. Through unified access points, identity authentication, electronic certificates, and standardized service item lists, the vast majority of administrative permits and public services are now fully available online, supporting applications, progress tracking, and result feedback. This marks the fundamental realization of the initial goal— "access one network to handle affairs nationwide" —and lays a solid platform foundation for intelligent applications[10].

3.2 Continuous Innovation in Service Models

With platform support, government services are evolving from being merely "available" to being "easy and intelligent to access," giving rise to a series of landmark smart service scenarios. The "instant approval" service utilizes predefined rules and automated system verification to enable immediate, automated processing for matters with clear requirements and standardized procedures—without human intervention—significantly improving efficiency in processes like business name registration and individual business incorporation. The "application-free benefit delivery" model leverages big data analytics to accurately identify eligible enterprises and citizens, proactively delivering policy incentives and transforming the approach from "people seeking policies" to "policies reaching people," ensuring precise delivery of pro-business and pro-citizen benefits. Additionally, the "one-stop service" integrated reform consolidates cross-departmental and multi-level procedures into a single streamlined process for businesses and citizens. Through workflow optimization and data sharing, it achieves "one-time notification, single-form application, unified documentation, centralized window acceptance, and online processing," substantially reducing institutional transaction costs. In highly standardized sectors, full automation has been initially implemented throughout the entire process from application submission to completion.

3.3 Data Empowerment Begins to Yield Results

The recognition of data as a critical, modern production factor has fundamentally transformed the theory and practice of public service delivery. This shift is most evi-

dent in the strategic construction of a nationwide, multi-layered government data resource system. At its core are foundational, nationally-coordinated databases covering population, legal entities, natural resources and spatial geography, and social credit. These pillars provide the essential, authoritative reference points for all government operations. They are supplemented and enriched by a vast ecosystem of thematic databases—spanning healthcare, education, social security, transportation, and more—which capture the granular details of specific policy domains. Together, this integrated framework forms the indispensable cornerstone for data-driven governance and service innovation.

The true value of this data infrastructure is unlocked through institutional and technological mechanisms for cross-departmental data sharing and exchange. Systematic efforts to dismantle long-standing "data silos" have enabled a seamless flow of verified information across administrative boundaries. Consequently, what was once a cumbersome burden of paperwork for citizens and businesses—providing physical copies of business licenses, identification cards, real estate certificates, and countless other documents—has been largely digitized and streamlined. Through platforms enabling electronic certificate sharing, mutual recognition, and backend data verification, these critical materials can be retrieved and validated online during application processes.

This paradigm shift has given rise to the powerful model of "data running the errands for citizens." Its impact is transformative. It not only simplifies documentation requirements but also fundamentally re-engineers administrative procedures. The direct outcomes are dramatic reductions in the number of procedural stages, processing times, and compliance costs for service users. This efficiency gain has elevated service standards, making "at most one visit" to a service center the common expectation, with a growing number of services achievable entirely online, requiring "zero visits."

4 Major Challenges and Issues

Insufficient data sharing and openness: Data silos between departments persist, and comprehensive data aggregation and high-quality sharing still face institutional and systemic barriers.

Insufficient depth of technology application: In some scenarios, usage remains limited to information queries and form filling, with restricted application of advanced features such as intelligent analysis, predictive modeling, and early warning systems.

Outdated standards and specifications: The lack of unified standards for data interfaces, business processes, and security protections hinders system interoperability and business collaboration.

Digital Literacy and Talent Shortage: Public servants exhibit varying levels of digital skills, with an insufficient pool of interdisciplinary talents proficient in both operational expertise and technical capabilities.

Security and privacy risks: Centralized data storage exacerbates security protection pressures, necessitating further refinement and implementation of personal information protection regulations.

5 Recommendations for Advancing Intelligent Upgrades

5.1 Strengthen Top-level Design and Coordinated Planning

Intelligent transformation constitutes a comprehensive systemic project that requires adherence to a unified national approach, with strengthened strategic planning and coordinated management. First, a medium-to-long-term national plan for intelligent government services should be formulated, outlining development visions, core technology roadmaps, phased objectives, and key performance indicators for the next 5–10 years. Second, robust cross-departmental collaboration mechanisms must be established, including high-level digital leadership and coordination bodies at both central and local levels to break down administrative silos and integrate the planning, construction, and operational management of government data, business systems, and public infrastructure. Clear definitions of responsibilities and authorities for data sharing and operational coordination across departments and levels should be established, creating an integrated closed-loop system for decision-making, implementation, supervision, and evaluation to ensure consistency and coherence in intelligent development.

5.2 Deepening the Integration and Utilization of Data Elements

Data serves as the core driver for intelligent transformation, necessitating fundamental solutions to address the challenges of data reluctance, apprehension, and accessibility barriers in sharing. On one hand, it is essential to refine the data-sharing accountability framework and incentive mechanisms by incorporating data quantity, quality, and timeliness into departmental performance evaluations, while exploring the establishment of data asset registration and internal accounting systems to stimulate intrinsic motivation for sharing. On the other hand, accelerated development of a nationally integrated government data resource system is required to enhance the authority and relevance of national foundational databases and thematic databases, thereby building a high-quality, standardized data supply chain. Under strict safeguards for security and privacy, prudent exploration of public data authorization mechanisms should be pursued alongside clear regulations governing data utilization and a robust regulatory framework. This will facilitate compliant integration and innovation of public data with societal data resources, unlocking the value of data as a key economic driver and enhancing both economic development and social governance.

6 Conclusion

The intelligent upgrading of public administration and government services is a systematic endeavor requiring coordinated efforts from technology, data, institutional frameworks, and talent development. China has now transitioned from "digitalization" to the critical phase of "intelligent transformation," with future priorities focusing on enhancing user experience, restructuring operational processes, and innovating gov-

ernance models. By continuously advancing data interoperability, expanding application scenarios, and fostering collaborative ecosystem development, it is possible to establish a ubiquitous, intelligent, convenient, equitable, and inclusive digital service system, ultimately achieving modernized governance capabilities and elevated public service quality. Subsequent research should address issues such as the ethical boundaries of intelligent technologies, digital inclusivity, and sustainable operational mechanisms.

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