

# Chapter 1

# Fundamentals of Smart Government

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## ABSTRACT

*The emergence of digital technologies — cloud computing, big data analytics, the Internet of Things (IoT), artificial intelligence (AI), and blockchain — has transformed public administration into a data-driven, citizen-centred ecosystem often referred to as smart government. This paper synthesises theoretical foundations and empirical evidence on how these technologies are reshaping governance structures, decision-making processes, service delivery models, and stakeholder engagement. We further examine the policy implications — including regulatory frameworks, capacity building, and ethical considerations — and propose a framework for scaling smart government initiatives while mitigating risks such as privacy erosion, digital exclusion, and governance fragmentation. The paper concludes with recommendations for policymakers, practitioners, and researchers to foster resilient, inclusive, and evidence-based digital public services.*

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# 1. INTRODUCTION

Smart Government refers to an evolution of electronic government that incorporates open data and budget optimisation to ensure efficient public resource management. According to Ruiz-Vanoye et al. (2023), it involves the intelligent management of the city's economy—referred to as smart economics—and the enhancement of government–enterprise relationships to support civil works (smart infrastructure) and priority public services aimed at citizens' well-being. Furthermore, Smart Government integrates domains such as disaster risk management (smart disasters) and technology-driven tourism development (smart tourism), aligning itself with principles of sustainability, resilience, and citizen-centric governance.

Functionally, Smart Government represents the optimal coordination of human, economic, and technological resources within public institutions. Its development relies on the integration of emerging technologies, including combinatorial optimisation, machine learning, big data analytics, data visualisation, and the Internet of Government Things (IoGT), all of which serve to improve the quality, efficiency, and responsiveness of public service delivery.

Ruiz-Vanoye et al. (2023) outline several core technological components of Smart Government. The Internet of Government Things (IoGT) enables digital interconnection between computational and non-computational government assets using sensors and RFID technologies. Smart economics includes mechanisms for price regulation, consumer protection, quality assurance, industrial standardisation, and allocation of government budgets. Meanwhile, smart open government fosters transparent, participatory governance by maintaining continuous communication with citizens, encouraging co-creation of services, and enhancing public trust through openness.

Additionally, smart infrastructure involves the intelligent coordination of critical urban systems—such as energy grids, transport networks, water and waste systems, and telecommunications. Smart disasters utilise data-driven methods and technological tools for risk assessment, emergency logistics, shelter planning, and coordinated response and recovery efforts. Smart tourism leverages ICT to develop cultural assets, improve accessibility, and support the infrastructure of professional and recreational tourism.

Other key pillars include e-government, which digitises state–citizen interactions across domains like virtual justice, online tax administration, and electronic voting, and data science, which supports evidence-based decision-making in areas such as healthcare, crime prevention, environmental monitoring, and transport. Finally, Smart Government Policy refers to adaptive and sustainable public policies that comply with the constitutional and institutional frameworks of governance.

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