Chapter 9
The Role of Emerging Technologies in Shaping the Global Digital Government Landscape

Muhammad Usman Tariq
https://orcid.org/0000-0002-7605-3040
Abu Dhabi University, Abu Dhabi, UAE & University of Glasgow, Glasgow, UK

ABSTRACT

This chapter explores how new technologies are transforming the face of digital governance worldwide. With a particular emphasis on disruptive technologies like blockchain, artificial intelligence (AI), and the Internet of Things (IoT), the report covers the present uses, obstacles, and prospects of these technologies globally. The first section of the chapter examines the idea of "digital government," highlighting technology's role in advancing the development of government functions and services. It offers a basic synopsis of several developing technologies and their significance in digital governance. The sections that follow take a close look at particular technologies. Using illuminating case examples to demonstrate successful implementations and their effects on public service delivery, the topic of artificial intelligence (AI) explains its applications in automated public services, predictive policymaking analytics, and AI-driven citizen engagement platforms.

OVERVIEW

With developing technology at its vanguard, the digital transformation of government operations has emerged as a central topic in today's conversation. The global landscape of digital governance is being shaped by the disruptive impact of blockchain, IoT, and artificial intelligence (AI). This chapter delves further into this topic. Comprehending the consequences of cutting-edge technology for public sector services is crucial, given society's growing reliance on them. In order to improve efficiency and service delivery, information and communication technologies are integrated into governmental operations

DOI: 10.4018/979-8-3693-2363-2.ch009

under the notion of digital government, or e-government (Gil-Garcia et al., 2018). This introduction lays the groundwork for the following study by highlighting the significant influence of technology breakthroughs on the transformation of the conventional governance paradigm.1.2 AI, Blockchain, and IoT are the Main Forces Behind Change.

AI, blockchain, and IoT are three key factors causing significant change in the public sector. AI transforms decision-making processes, increases citizen participation, and simplifies public services. It is typified by machine learning and cognitive computing (Moon et al., 2020). Blockchain, a decentralised and secure ledger technology, guarantees transparency, accountability, and confidence in government processes (Swan, 2015). According to Botta et al. (2016), the Internet of Things (IoT) enables smart government solutions ranging from environmental monitoring and public safety to urban development. A comprehensive analysis is necessary to fully understand the uses, difficulties, and promise of these technologies globally. This chapter explores the many uses of AI in citizen interaction platforms, predictive policymaking analytics, and automated public services (Nam, 2019). It examines how blockchain functions in voting systems, safe transactions, and public record keeping (Yli-Huumo et al., 2016). The examination also covers the Internet of Things (IoT), including issues with security and integration in its applications for smart government solutions (Zanella et al., 2014). The global context is a major area of interest, providing information on how other nations and areas embrace and use these technologies. This comparative research highlights various techniques impacted by cultural, political, and economic variables. The chapter also offers a forward-looking viewpoint on new developments, trends, and the changing role of technology in transforming the public sector. Finally, this review lays the groundwork for a thorough investigation of these technologies by outlining the revolutionary potential, obstacles, and future directions of AI, blockchain, and IoT in the context of digital government.

INTRODUCTION TO EMERGING TECHNOLOGIES IN DIGITAL GOVERNMENT

In contemporary administration, the convergence of Artificial Intelligence (AI), Blockchain, and the Internet of Things (IoT) emerges as a transformative triumvirate, catalyzing significant changes in the public sector. This comprehensive exploration delves into the detailed delineations of these three pivotal elements, elucidating their characteristics and, collectively, their impact on reshaping government processes, services, and citizen interactions. This discussion aims to provide a nuanced understanding of their roles as catalysts for change in the public sector by examining real-world examples and considering the challenges and opportunities each technology presents. “Artificial intelligence” refers to developing computer systems capable of performing tasks that traditionally require human intelligence. It encompasses a range of innovations, including AI, natural language processing, and computer vision, enabling systems to learn, adapt, and make decisions autonomously. In the public sector, AI is transforming various facets of administration, from administrative processes to service delivery and policy formulation. AI’s impact on administrative efficiency is exemplified by chatbots deployed on government websites, providing instant responses to citizen queries and facilitating streamlined interactions. Additionally, AI-driven data analysis enables governments to extract insights from massive datasets, informing evidence-based policymaking. For example, the U.S. Department of Veterans Affairs utilizes AI algorithms to predict and prevent veteran suicides by analyzing diverse data sources (VA, 2021). However, the widespread adoption of AI in the public sector raises ethical concerns, including algorithm biases and potential privacy infringement. Robust regulatory frameworks and ethical guidelines are es-