Chapter 11
AI for Urban Innovation in Developing Cities

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ABSTRACT

The paper explores how artificial intelligence (AI) can support innovative city initiatives and urban planning in developing countries. Using case studies from Accra, Bangalore, Lagos, and Medellín, it examines AI's role in addressing socio-economic, cultural, and infrastructural challenges. Key applications include improving waste management, water distribution, traffic flow, and urban planning, enhancing efficiency and sustainability. The study highlights the importance of robust data systems, community engagement, public-private partnerships, and ethical frameworks. It addresses challenges like data privacy, digital divides, and algorithmic bias, advocating for transparency and participatory decision-making to foster trust. While AI offers immense potential, overcoming barriers is crucial to realizing its full impact in creating innovative and inclusive cities.

INTRODUCTION

Urbanization is one of the most massive structural changes in the progress of humanity since industrialization; it accelerates further, and by 2050, more than two-thirds of the world's population is projected to live in urban areas. As this transition unfolds rapidly, it brings complex challenges right to the doorsteps of developing countries, especially those that often face congestion and traffic, a lack of public services, a shortage of resources, and even environmental degradation. In response to these big challenges, a new solution has been posited in the form of smart cities,

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where advanced technologies are used to make urban governance more efficient and enhance people's quality of life. Among these technologies, perhaps most prominent is Artificial Intelligence (AI) as it has the ability to handle vast volumes of data, recognize patterns, and optimize many city systems in real-time (Ritchie, Samborska & Roser, 2024).

AI offers numerous benefits in innovative city initiative applications that are particularly useful in addressing some of the specific problems of developing countries. For instance, it supports traffic control by enabling real-time analysis of data to lead to enhanced transportation efficiency and the prevention of congestion. It also enhances public safety by means of predictive analytics, allowing for better allocation of law enforcement resources, hence better cities. Moreover, AI facilitates sustainable resource management of valuable resources such as energy and water in regions with limited availability and inadequate infrastructure (Herath & Mittal, 2022).

. Despite these exciting prospects, deploying AI in smart cities is not without its challenges. One key issue is the high likelihood of critical concerns regarding data privacy, cybersecurity, and the digital divide, which may exacerbate disadvantages in developing nations (Almeida, 2023). Furthermore, large parts of the world are still lacking the digital tools and trained personnel to effectively harness these continually more sophisticated AI tools, raising considerable questions as to whether the benefits that have accrued from AI are being equitably shared. Finally, ethical issues, including the need for critical scrutiny of the algorithmic biases and surveillance traditions surrounding AI technologies, are essential to their optimal and inclusive development (El Aynaoui, Magri & Saran, 2023).

Hence, the chapter would be able to assess the revolutionary potential of AI in state-of-the-art city programs and city planning in emerging economies, while keeping in view the prospects and risks of taking advantage of such technologies. One of the key research questions in this context would be: How do the implementation of AI technologies in smart cities address particular challenges facing developing countries, and what are the likely advantages and constraints of integration? This situates the research study within a context that provides useful insights for policymakers and urban planners to make proper choices that can provide sustainable and fair urban growth.

However, even though AI applications for smart cities are present in academic literature, most of these studies are very broad and fail to focus on the specific implications of these technologies in developing nations (Szpilko et al., 2023). To address the said gap above, the research shall study socio-economic, cultural, and infrastructural challenges particular to developing countries that will inform an appropriate way toward the adoption of AI in urban spaces. Data privacy, fairness, and moral implications of data-related concerns owing to AI also shall be looked