Chapter 23
The Dynamic Nexus of Artificial Intelligence and the Co-Creation of Smart Cities Innovations:
The Brazilian Ranking

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ABSTRACT

By providing data-driven insights and facilitating efficient collaboration, AI serves as a catalyst for co-creation, driving more effective and innovative urban planning. The chapter presents case studies that highlight successful integrations of AI and co-creation, demonstrating the tangible benefits and transformative impact on urban development. It also addresses potential challenges such as data privacy concerns and ethical considerations, while outlining the vast opportunities for future advancements. The discussion underscores the need for policymakers and urban planners to adopt strategies that leverage the combined strengths of AI and co-creation for sustainable and inclusive city growth. Ultimately, this chapter offers a comprehensive overview of how AI and co-creation together can foster innovative, sustainable, and responsive urban environments, improving the quality of life for city residents and paving the way for the cities of the future.

1. INTRODUCTION

In the rapidly evolving landscape of urban development, Brazil stands at the forefront of integrating cutting-edge technologies to foster smarter, more sustainable cities. Among these advancements, the dynamic interplay between artificial intelligence (AI) and co-creation emerges as a pivotal force driving innovation. AI, with its capacity to analyze vast datasets and optimize urban processes, complements the collaborative ethos of co-creation, where stakeholders including government, businesses, and citizens collectively shape the urban environment. This synergy not only enhances the efficiency and responsiveness

DOI: 10.4018/979-8-3693-3715-8.ch023

of urban services but also ensures that solutions are tailored to the unique needs of diverse communities. In Brazil, this approach has catalyzed transformative projects, from intelligent transportation systems to energy-efficient infrastructure, positioning the nation as a global leader in smart city initiatives. By harnessing the potential of AI and the inclusive nature of co-creation, Brazilian cities are pioneering a new era of urban living that prioritizes sustainability, resilience, and human-centered design. This complex use of technological advances in society urges interconnectedness in various segments of society, with AI at the center of connection of multiple applications and information systems in a world globalized and assessable via prompt flow of information that outlines the smart cities.

Smart City (SC) is defined by many authors as a technologically equipped, self-sufficient, safe, and hyper-connected city. It infuses technology with every aspect of a city's operation (Settembre, 2012; Greco; Cresta, 2015; De Cremer; Mutiara; Yuniarti; Pratama, 2018; Kasparov, 2021;). The interconnected web of technologies, including cloud computing, big data analytics, and the Internet of Things (IoT), intertwines with AI, amplifying its capabilities and expanding its potential applications (Alam, et al., 2020; Zanella et al., 2014). This integration simplifies everyday tasks and enhances living conditions for citizens worldwide. This chapter highlights the importance of leveraging artificial intelligence (AI) and collaborative innovation (co-creation) in urban planning and policymaking to promote sustainable and inclusive city growth. It emphasizes how these technologies and approaches can improve urban environments by fostering innovation, responsiveness, and quality of life for city residents. The focus is on creating cities that are not only technologically advanced but also environmentally sustainable and socially inclusive, shaping the future of urban development.

2. AI AND WHAT DEFINES SMART CITIES?

Artificial Intelligence applies advanced technological apparatuses in many areas of human activities mimicking human behavior and intelligence to perform tasks, some routinely or strategics. The increase in the number of applications, computing languages, and networking solutions creates a communication global power that significantly alters the lives of communities everywhere.

Artificial intelligence allows automation of decisions, based on the recognition of an event (image, scene, behavior, sound, pattern or sequence of data). Examples of artificial intelligence applications are: image recognition, text, sounds, voice and music, autonomous driving, process optimization, among others. The value of Artificial Intelligence lays in the possibility to automate the analysis of large information volumes (e.g. hour of audio and video, thousands of photos, text and document images). These tasks would take long time for a human to execute or would demand a large amount of workforce, with higher accuracy in comparison to human performance in many situations. (NEC, 2023, p. 31)

AI is significantly impacting smart cities in several key areas enhancing the role of technology in urban development and living. Some of the areas currently strongly affected and benefiting from AI applications in Smart Cities models are listed in Figure 1 below. These are included in the list of sectors which are evaluated by many organizations in ranking smart cities initiatives around the globe: