



Responsible Urban Innovation Working with Local Authorities a Framework for Artificial Intelligence (AI)

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Abstract.

Purpose: By demonstrating that by adopting the principles of responsible urban innovation, we can harness the potential of digital technology to address urbanization issues and can minimize potential negative impacts.

Methods: The paper proposes a conceptual framework for accountable urban innovation, focusing on government AI systems, and draws on a literature review, practical examples, and research. The authors argue that responsible urban innovation must balance the costs, benefits, risks, and impacts of developing, implementing, and using AI systems in local government management. This approach emphasizes the importance of achieving desired urban outcomes while ensuring accountability.

Results: The framework provides potential directions for future research and development, offering an overview of recognized topics and a schedule for analysis. This research may assist urban managers, planners, and decision-makers in understanding the critical role that government AI systems play in achieving accountable outcomes. By adopting responsible urban innovation principles, we can harness the potential of digital technology to address urbanization issues while minimizing potential negative impacts.

Novelty: The conceptual framework presented in this study offers a new view in understanding the role of local government AI systems in achieving accountable outcomes.

Keywords: Responsible urban innovation, artificial intelligence (AI), local government AI, Revolution.

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INTRODUCTION

Technology has advanced significantly during the previous 50 years, advancement has accelerated tremendously. We credit the efforts of participants in the global innovation ecosystem, which sparked two revolutionary digital revolutions, for this outstanding advancement [1], [2]. While some academics believe the First Digital Revolution started when the personal computer was created in the 1970s, the 1980s and 1990s, when it truly happened [3], [4]. Mass digitization, the coding of increased availability of products and services online and widespread use of the internet are the results of these technological breakthroughs [5], [6]. The Second Digital Revolution, which is about to begin, will bring about a rise in the variety of devices and items that can connect to the internet and run computers. The opportunities for open innovation and ubiquitous computing are everywhere in our daily lives [7], [8].

Furthermore, Makridakis predicts that the next digital revolution, dubbed the "artificial intelligence (AI) revolution," will occur within the next few decades [9], [10]. In his opinion, it will also have a bigger influence than the combined effects of digital revolutions one and two. But the revolution in AI is already underway [11], [12]. As an example, Through the Internet of Things (IoT), things are wirelessly connected to a network that allows data sharing, AI processes data from IoT devices and takes independent actions [13], [14]. Despite how cutting-edge the technology is Smart cities and smart communities are being disrupted by Internet of Things with artificial intelligence (AI-IoT), which is also upending Industry 4.0 [15], [16].

Nonetheless, this disruption is not always producing only good externalities and achieving the intended objectives or outcomes for all [17], [18]. One way autonomous vehicles, like self-driving shuttle buses,

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could help reduce carbon emissions from transportation is by increasing the availability and utilization of public transportation [19],[20]. On the other hand, personal cars with autonomous driving capabilities have the potential to increase urban sprawl, mobility, and transportation carbon emissions. Similar problems highlight the necessity for technology innovation in urban settings, or urban innovation, to be accountable for achieving desired results and beneficial effects for all while minimizing unfavorable effects [21]–[23].

Responsible innovation is required to meet the challenges confronting our cities, whether they are connected to climate change and the loss of natural resources, the development of the economy, or social well-being. Von Schomberg asserts "responsible innovation is a transparent, interactive process in which community actors and innovators become responsible actors and innovators [24], [25]. responsible innovation is a transparent, interactive process in which community actors and innovators become mutually responsive to each other with a view to the ethical acceptability, sustainability, and community desirability of the innovation process and its marketable products to enable the embedding of appropriate scientific and technological progress in our society". Innovation in cities that is responsible is "a collective commitment of care for the urban futures through responsive stewardship of science, technology and innovation in the present". This means that responsible urban innovation forces us to Along with driving us to improve science, we must consider and take action to create acceptable urban futures for everyone, Innovation and technology that can now have a positive effect on our cities and communities [26]–[28].

With regard to responsible urban innovation, which is a subject that has not received much attention, With the intention of contributing to the conversation, this perspective piece was written. The article concentrates on artificial intelligence (AI) and its application to municipal government systems, concentrating on technology for moral urban innovation. This decision is justified in the following manner: (a) Artificial intelligence (AI) is one of today's most potent technologies, providing advantages and disadvantages for cities. the externalities of modern cities, both positive and negative; (b) The provision of local infrastructure, services, and community amenities may be done more efficiently and automatically thanks to AI, which a key part of the framework for smart cities; and (c) For routine, challenging, and time-consuming operations, local government entities are increasingly turning to AI. The local workforce's knowledge and experience are needed to solve complex urban concerns. Most of the time, there are very few prospects for ethical innovation [29].

This opinion piece conducts a review of the relevant urban literature using the following methodology, research, advances, trends, and applications builds a conceptual framework and innovates with AI systems for municipal government. Given the conclusions, the report recommends for the necessity to balance costs and benefits. The dangers and consequences of developing, implementing, deploying, and managing artificial intelligence in municipal government systems aiming towards responsible urban innovation.

Literature Review

In previous research, several studies have explored the drivers and barriers of urban innovation, as well as the role of various actors in promoting urban innovation. For example, some studies have identified the importance of government policies and regulations in promoting innovation in urban areas, while others have highlighted the importance of social networks and community engagement in promoting innovation. In addition, previous research has also examined the impact of urban innovation on economic growth, social inclusion and sustainability.

According to Ziegler (p. 195) [30]. Urban innovation can play two different roles in ensuring socio spatial justice. Both of these roles are: "(a) contributing to the long-term stability of society, and thus finding creative responses to socio-spatial challenges such as climate change, and; (b) finding ideas that specifically increase benefits for the most disadvantaged members of society in the present". According to Das and Rad [31] (p. 1), AI-based algorithms are "changing the way we approach real-world tasks performed by humans; where recent years have seen a surge in the use of these algorithms in automating various aspects of science, business, and social workflows". A study by De Sousa et al [32]. found an upward trend in demand for AI in the public sector, with the United States being the most active nation. Several municipal government organizations also fall under this category. According to Wirtz et al [33]. In government organizations, the following are the most often utilized AI applications: (a) AI-based knowledge management software; (b) AI process automation systems; (c) chatbots/virtual agents; (d) predictive analytics and data visualization; (e) identity analysis; (f) cognitive robotics and autonomous systems; (g) recommendation systems; (h) intelligent digital assistants; (i) speech analytics, and; (j) cognitive security analytics and threat intelligence.

METHODS

Conceptual Framework

We have increased the number of conceptual innovations in urban areas that we have with the local government. The main reason for the rapid growth of information is the emergence of new concepts, components, and When referring to government AI. Urban innovation as a concept gains significance [34], [35]. We believe that by making this change, academic institutions will be more interested and driven to further explore this problem and to produce novel insights and valuable solutions that the public sector and industry can employ. Because of this, Figure 1 below depicts the architecture, which should not be interpreted as an operational structure that would drive the creation, application, and use of an AI management system in Indonesia [36].

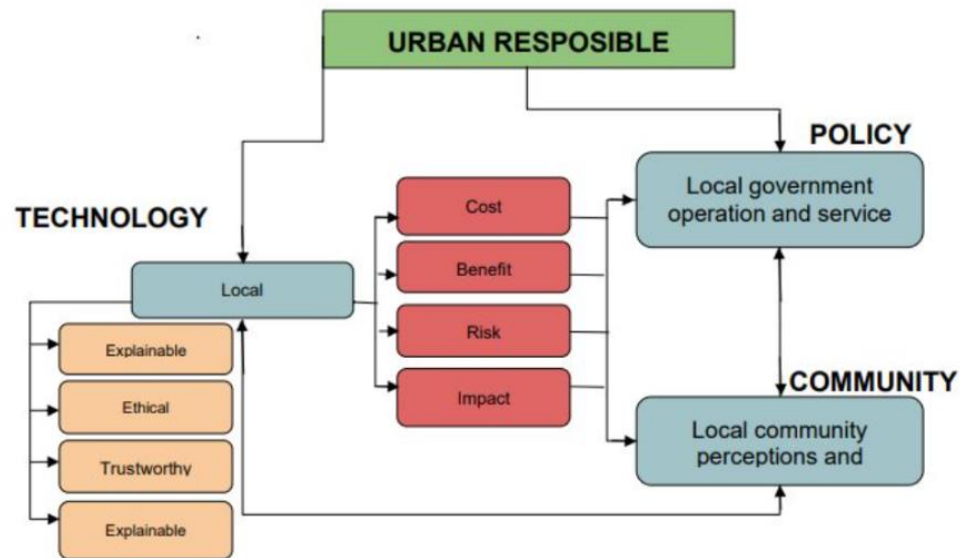


Figure 1. Artificial intelligence in municipal governance with a responsible urban innovation framework (AI)

Work in this field calls for, conceptualizing the phenomenon Technology utilization is necessary for ethical urban innovation, Develop and implement action plans and activities with a range of potential costs, rewards, risks, and repercussions with the help of education and the general public [37].

The framework for responsible urban innovation is shown in Figure 1 and is described above. It highlights key factors, elements, and guiding ideals. Local governance using AI. It clarifies the guiding principles for developing and deploying AI systems, ensuring that desired urban outcomes are delivered in addition to that, but also the achievement of desired urban results for each and every person, stakeholder, user, and environmental factor. When it comes to comprehending the challenges of responsible innovation, the framework presented by this article is crucial for local government organizations; As they continue to experiment with AI technologies, local governments need guidance on how to design, develop, and apply these solutions in an ethical manner that improves public benefit [38], [39]. The conceptual framework offered here aims to advance academic debate on the topic and spark concepts for potential future research goals, however, it needs to be highlighted [40]. Further research is required to create more operational frameworks with precise rules, which will help local governments make educated judgments about their investments in AI systems.

RESULTS AND DISCUSSIONS

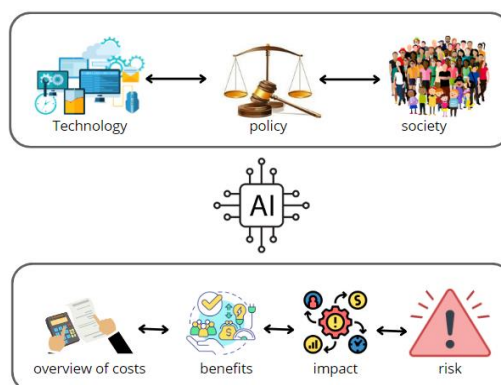


Figure 2. application of AI in daily life and the relationship between technology, impact, society, and the relationship between costs, benefits, risks, and impacts overview for local government AI systems

First, it is believed that technology, policy, and community are what will ultimately determine how a response will be made, AI systems used by local government are the "technology", Local community expectations constitute "community" perspectives and inputs, Considering the planning and delivery decisions made for local government operations and services "policy". This is because an area that uses data and technology to boost economic growth, raise living standards, and boost national security, advance society, and adopt techniques for urban expansion that are technology-based and sustainable in order to increase urban density, which is now widely recognised as a key driver of economic advancement [41].

Second, the framework's key focus was characterized as 'costs, benefits, risks, and impacts' in order to Bring about responsible outcomes for local government AI systems. Work to ensure Bring about responsible outcomes for local government AI systems. This is relevant with the requirement for Before creating, implementing, and using AI systems, perform a cost-benefit analysis to ensure investment viability. Similar to this, risk analysis is essential for identifying potential dangers and ensuring the effectiveness of the AI system. In addition, In order to find both positive and negative externalities, it is essential to evaluate how AI systems affect society and the environment. Aside from merely seeing benefits and drawbacks, users of AI must also consider how to better distribute benefits and drawbacks, as well as whether or not certain groups or locations (for example, remote areas) pose a greater risk. This is the public perception of ethical equality. In addition, this conceptualization implies that the government's AI system must have the following characteristics: (a) be able to be expressed; (b) be able to be trusted;

CONCLUSION

Due to the development of robust technologies and the pervasive attitude of many disruptive technology companies towards Making quick money at all costs, decade three of the twenty-first century will continue to provide considerable problems for ensuring responsible urban innovation. When used with AI for municipal governance, responsible urban innovation, there are three major challenges that demand immediate attention.

In conclusion, already underway, the AI revolution will certainly cause as much disruption as the industrial and agricultural revolutions did, which fundamentally altered the history of human civilization. However, it should not be overlooked that the AI revolution comes with both opportunities and difficulties.

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