

State of the Art of Smart Cities: Multidimensional Approach and Future Perspectives

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Bibliography PRESENTATION

PhD student in a joint program between the University of Sousse (Tunisia) and the Free University of Brussels (Belgium), my research explores innovative urban transformation strategies, particularly smart cities, as well as the role of citizen participation in enhancing sustainability and social inclusion.

Professional Experience

Teaching / Supervision :

- Lecturer, Higher Institute of Arts and Crafts of Mahdia (Tunisia)
- Interior Architect, Kahloun Real Estate Group, Hammem Sousse.
- Interior Architect, Cogeb Real Estate Group, Sousse – Projects “CogebTower” and “Résidence SANA”;
- Interior Architect, Zarrouk Real Estate Group, Hammem Sousse .

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INTRODUCTION

Smart Cities, represent a new and evolving concept shaping urban development in the 21st century. They aim to integrate information and communication technologies (ICT) into urban management, in order to improve citizens' quality of life, enhance the efficiency infrastructures and services, and promoting sustainable economic growth .

This model is applied across various domains including transportation, energy, healthcare, education, governance, mobility, and environment management, with the objective of creating interconnected and intelligent urban spaces .

Our research adopts a multidimensional approach that highlights the social, human, participatory, and governance dimensions, which are still underexplored and rarely mentioned in the literature. It highlights conceptual ambiguities in existing definitions of the smart city and proposes a synthesized definition integrating a citizen- and human-capital-centered concept.

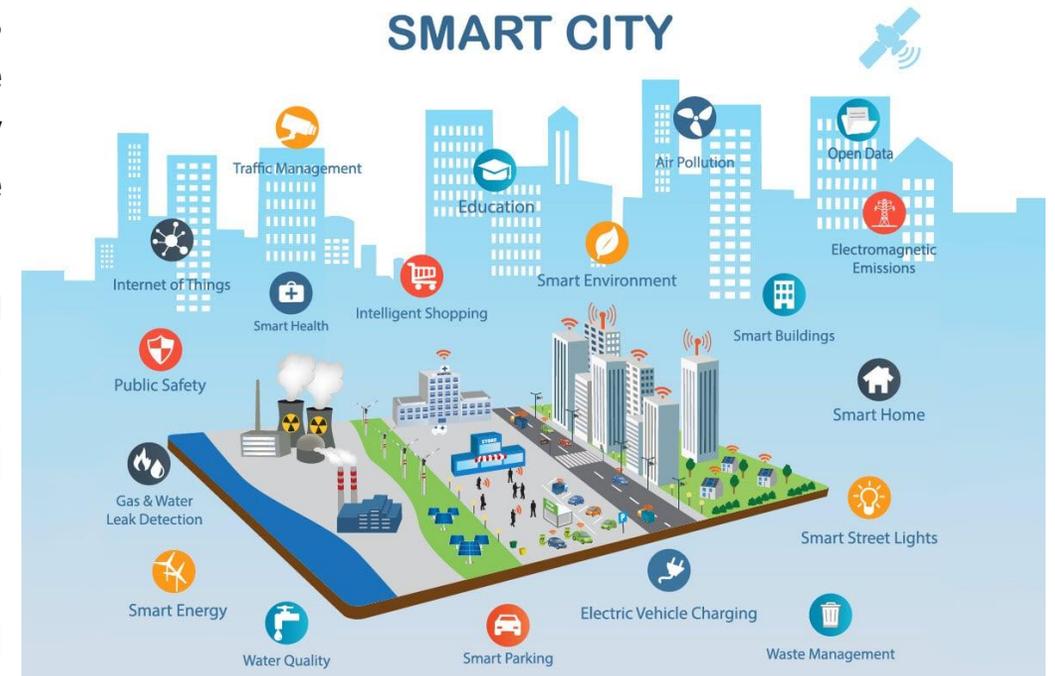


Figure 1. Smart City Concept

METHODOLOGY

The first step of our literature review consisted of formulating the research questions, which helped define the orientation of the analysis process. This systematic review aimed to study the current state of smart cities, by examining their definition and criteria.

Our research questions were as follow:

- What is the definition of the smart city?
- What are the criteria to be considered?
- What are the different typologies of models designed to support these definitions of smart city?
- What types of methodologies are implemented to bring these smart cities into existence?
- Are there levers and barriers for the creation and development of smart cities?



METHODOLOGY



This research contributes to filling this gap by conducting a systematic review, based on the PRISMA methodology, notably of smart city definitions published between 2016 and 2025.



This research emphasizes collaboration and participation within the smart city concept by systematically analyzing citizen involvement in co-creation processes and collaborative governance, which is as reflected in smart city definitions.



This study is deeply anchored in the collaborative framework promoted by the COLLA conference

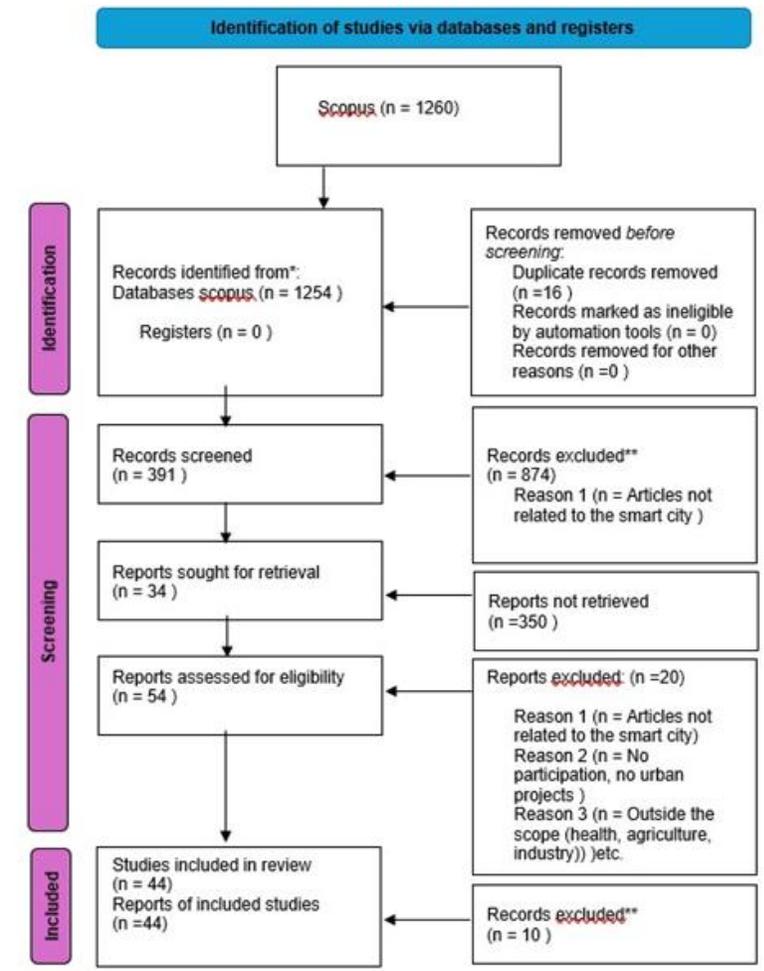


Figure 2. PRISMA method for systematic reviews and meta-analyses(2021)

RESULT AND DISCUSSION

The six main dimensions of a smart city are:

1. Intelligent Citizens – Active participation, use of technology, collaboration with experts, social engagement, and talent development to foster creativity and inclusion.

2. Intelligent Environment – Efficient management of natural resources, energy, waste, and environmental protection, including use of sensors and IoT for sustainability.

3. Intelligent Mobility – Digital and eco-friendly transport solutions improving mobility, safety, and urban flow management through ICT.

4. Intelligent Government – Transparent and efficient governance via digital tools, e-services, electronic voting, and enhanced civic engagement.

5. Intelligent Economy – Innovation, entrepreneurship, and sustainable growth facilitated by collaboration between companies, research centers, government, and citizens.

6. Intelligent Habitat – Smart building systems and predictive management of urban infrastructure to improve quality of life and resource efficiency.

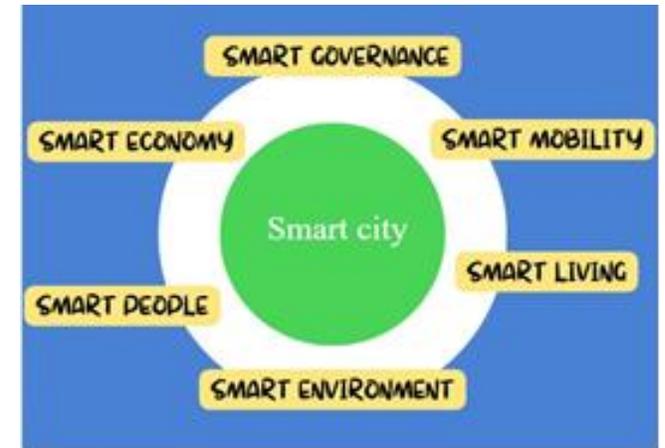


Figure 3 . Conceptual diagram of the smart city dimension



Our Position Regarding These Definitions

Humanistic

citizens are at the heart of the city and use technology as a means, not an end; collaborative, where stakeholder participation is essential to use the skills and intelligence to create effective and sustainable solutions.

Thematic

the city is organized by different domains, such as transport, energy, health, education, or security.

Collaborative:

the smart city is based on a process of co-creation and participation, founded on active collaboration among citizens, public authorities, and private stakeholders in the design, implementation, and evaluation of urban initiatives.

Contextual

centered on citizens, mobilizing all stakeholders to find effective and high-performance technological solutions applied to local needs.



Figure 4. Conceptual Framework of the Smart City

CONCLUSION

This systematic literature review on smart cities highlights the plurality of definitions and approaches in this field. Studies predominantly focus on the technological dimension, whereas human, social, and environmental aspects are less studied. The analysis of publications also reveals a lack of empirical validation of existing conceptual frameworks. First, the literature review relies on publications in English and French available in the Scopus and Google Scholar databases, which may have excluded research published in other languages or in less accessible journals.

Next, the study focuses only on the period 2016-2025 and on smart cities, which limits the generalization of the conclusions on a larger scale. Nevertheless, this approach opens perspectives and avenues for future research on smart cities, based notably on socio-technical and collaborative systems rather than focusing solely on simple digital devices.



Thank you for your attention and interest

