



# Smart Cities and Social Innovation: A Global Perspective

**Análisis comparado de iniciativas de ciudades inteligentes que integran innovación social.**

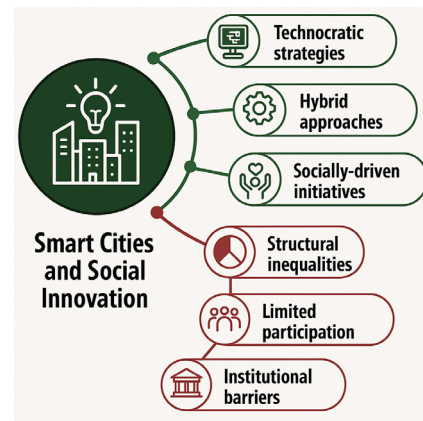
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## HIGHLIGHTS

- This study compares smart city initiatives across five regions, highlighting the role of social innovation in citizen empowerment and governance.
- A typology of social innovation integration in smart city strategies is developed based on international case studies.
- Results suggest that cities with inclusive co-creation models are more resilient and adaptable to social challenges.


## GRAPHICAL ABSTRACT



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## Keywords:

Smart cities, social innovation, urban governance, co-creation, citizen participation, inclusive digital infrastructure

## Palabras clave:

Ciudades inteligentes, Innovación social, Gobernanza urbana, Co-creación, Participación ciudadana, infraestructura digital inclusiva

This article examines how smart cities integrate social innovation into their urban strategies at a global level. Using a qualitative methodology based on a systematic review of public policies and thematic analysis of secondary sources, three models of integration were identified: technocratic, hybrid, and socially-driven. In addition, key enabling factors —such as multi-actor ecosystems, citizen participation, and institutional innovation capacity— were outlined, along with structural barriers that limit the effectiveness of social innovation in intelligent urban contexts. Findings reveal that a truly smart city is not defined solely by its technological infrastructure but by its ability to generate social value through participation, equity, and co-creation. The article concludes with differentiated recommendations for government, academic, civil society, and technology stakeholders, aimed at enhancing the legitimacy and impact of smart strategies from an inclusive and sustainable perspective.

## RESUMEN

Este artículo analiza cómo las ciudades inteligentes integran la innovación social en sus estrategias urbanas a nivel global. A través de una metodología cualitativa basada en la revisión sistemática de políticas públicas y el análisis temático de fuentes secundarias, se identificaron tres modelos de integración: tecnocrático, híbrido y centrado en la innovación social. Asimismo, se determinaron factores habilitadores esenciales —como ecosistemas multiactor, participación ciudadana y capacidades institucionales— y se examinaron barreras estructurales que limitan la efectividad de la innovación social en contextos urbanos inteligentes. Los hallazgos evidencian que una ciudad verdaderamente inteligente no se define solo por su infraestructura tecnológica, sino por su capacidad de generar valor social a través de la participación, la equidad y la cocreación. El artículo concluye con recomendaciones diferenciadas para actores gubernamentales, académicos, sociales y tecnológicos, orientadas a fortalecer la legitimidad y el impacto de las estrategias smart desde una perspectiva inclusiva y sostenible.

## 1. Introduction

Over the past two decades, the concept of “smart cities” has emerged as one of the main strategic approaches for addressing the urban challenges of the 21st century. From digital planning to transportation optimization, energy management, and public service delivery, numerous cities around the world have implemented emerging technologies aimed at improving operational efficiency, sustainability, and responsiveness. However, the mere incorporation of technological infrastructure does not, by itself, guarantee social well-being or citizen inclusion ([Yigitcanlar et al. 2018](#); [Visvizi, Lytras, & Damiani 2018](#)).

In this context, several studies have warned of the risk that smart cities may replicate or even exacerbate structural inequalities if not accompanied by participatory processes and people-centered approaches ([Vanolo. 2014](#); [Kitchin et al. 2015](#)). This concern has given rise to the growing relevance of social innovation, understood as the collaborative design of solutions for collective needs, which transforms not only urban services but also institutional frameworks and power relations ([Moulaert et al. 2013.](#); [Crivello 2015](#); [Calzada. 2016](#)). Far from being a secondary dimension, social innovation emerges as a necessary condition to legitimize, democratize, and sustain urban transformations driven by intelligent technologies.

Despite the exponential growth of research on smart cities, a significant gap remains regarding how social innovation is being integrated into global urban strategies. The literature tends to be fragmented between technology-driven studies focused on urban efficiency and socially oriented research on participation, without successfully building an integrated analytical framework that bridges these two domains. Consequently, there is an urgent need to generate comparative, systematized, and critical evidence on the models, enabling factors, and barriers that shape this intersection in practice.

This article addresses that gap by asking: How are social innovation initiatives integrated into smart city strategies at the global level?

To answer this question, the study adopts a qualitative methodology based on two complementary components: (1) a content analysis of 16 international public urban policy documents related to the smart paradigm, and (2) a thematic analysis of 28 secondary sources that document experiences, tensions, and lessons learned related to citizen participation and social innovation in urban settings. This methodological strategy enables the construction of a multilevel and transdisciplinary perspective, articulating theory, policy, and practice.

The study proposes a typology of social innovation integration in smart cities, identifies key enabling factors, highlights structural barriers, and offers an interpretive framework that contributes to both academic debate and the formulation of more just, resilient, and inclusive urban public policies.

## 2. Literature Review

## 2.1. Smart Cities: Beyond Technology

The concept of smart cities has evolved from a technology-centered vision toward a more holistic perspective that integrates social, economic, and environmental dimensions. This section explores how various authors have addressed this evolution, highlighting the importance of considering factors beyond the mere implementation of technological infrastructure.

Bozkurt et al. (2022) emphasize the need for clearly defined data governance to ensure accountability in multi-actor urban environments. Kvalvik, Sánchez-Gordón, and Colomo-Palacios (2023) argue that data governance must be adapted to address power imbalances among stakeholders. Specking et al. (2023) propose strategies to overcome implementation challenges in smart cities, stressing the importance of data-driven solutions. [Yigitcanlar et al. \(2018\)](#) identify three main drivers of smart cities—community, technology, and policy—linked to desired outcomes such as sustainability and good governance. Govada et al. (2017) advocate for a multidisciplinary approach that combines technology, social infrastructure, and public-private partnerships. Maccani et al. (2013) suggest a systematic approach to smart city development, with a focus on operational efficiency and transparency.

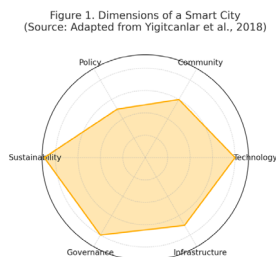


Figure 1. Dimensions of a Smart City  
Source: Adapted from Yigitcanlar et al. (2018).

This radar chart illustrates six key dimensions: Technology, Community, Policy, Sustainability, Governance, and Infrastructure.

It synthesizes the perspective of [Yigitcanlar et al. \(2018\)](#), in which a smart city cannot be understood solely through a technological lens, but rather as a socio-technical construct based on the balance between technological, institutional, and social factors. The chart highlights sustainability as the most developed axis, followed by governance and technology, while emphasizing the need to strengthen the policy and community dimensions in order to achieve truly intelligent and just urban development.

Table 1. Approaches to Smart Cities According to Various Authors

Author(s)	Approach
Bozkurt et al. (2022)	Defined data governance to enable accountability in smart environments
Kvalvik, Sánchez-Gordón & Colomo-Palacios (2023)	Adaptive governance to address stakeholder power imbalances
Specking et al. (2023)	Data-driven implementation strategies in smart cities
<a href="#">Yigitcanlar et al. (2018)</a>	Three core drivers: community, technology, policy
Govada et al. (2017)	Multidisciplinary focus: technology, social infrastructure, PPPs
Maccani et al. (2013)	Systematic approach for operational efficiency and transparency

Source: Own elaboration, 2024

The chart and table above illustrate how various authors have expanded the concept of smart cities by incorporating social and human dimensions. This evolution reflects a deeper understanding of urban needs and highlights the importance of integrating multiple perspectives to achieve sustainable development.

The literature review indicates that smart cities must go beyond technology by incorporating social and human elements to effectively address urban challenges. This perspective is essential for analyzing how social innovation can be integrated into smart city initiatives—the central focus of this article.

## 2.2. Social Innovation as a Tool for Urban Transformation

Social innovation has become an essential component for addressing complex problems in urban environments. This section examines how various studies have conceptualized and applied social innovation within the context of smart cities.

Bozkurt et al. (2022) emphasize the need for well-defined data governance to ensure accountability in multi-actor urban environments. Kvalvik, Sánchez-Gordón, and Colomo-Palacios (2023) argue that data governance must be adapted to address power imbalances among stakeholders. Specking et al. (2023) propose strategies to overcome implementation challenges in smart cities, highlighting the importance of data-driven solutions. [Yigitcanlar et al. \(2018\)](#) identify three main drivers of smart cities—community, technology, and policy—linked to desired outcomes such as sustainability and governance. Govada et al. (2017) promote a multidisciplinary approach that combines technology, social infrastructure, and public-private partnerships. Maccani et al. (2013) suggest a systematic approach to smart city development, focusing on operational efficiency and transparency.

Figure 2. Social Innovation Process in Urban Environments  
(Source: Adapted from Yigitcanlar et al., 2018)



Figure 2. Social Innovation Process in Urban Environments

Source: Adapted from [Yigitcanlar et al. \(2018\)](#).

It sequentially represents the key steps in the creation of innovative social solutions within the smart urban context: Identification of social needs, Co-creation with local stakeholders, Prototyping of social solutions, Technological implementation, Evaluation of social impact, and Scaling up of solutions. This process emphasizes that social innovation in smart cities does not begin with technology, but with the recognition of social needs. Only through co-creation and user-centered design is it possible to implement solutions that are scalable, sustainable, and legitimate. The model invites reflection on the importance of participatory structures that support each phase of the innovation cycle in urban environments.

Table 2. Perspectives on Social Innovation in the Literature

Author(s)	Perspective on Social Innovation
Moulaert et al. (2013)	Collective action and social learning as transformative tools
<a href="#">Crivello, S. (2015)</a>	Horizontal governance integrating local demands
<a href="#">Calzada, I. (2016)</a>	Smart City Citizenship: citizens as co-producers of solutions
<a href="#">Cardullo, &amp; Kitchin. (2019)</a>	Critique of commodified participation and call for ethics
Kummitha (2019)	Social structures enabling smart policy implementation
Hollands (2015)	Technology subordinate to social goals: equity and justice

Source: Own elaboration, 2024

The chart and table above illustrate how social innovation is conceptualized and applied across different urban contexts. Collaboration among diverse actors and a participatory approach are common elements that facilitate the implementation of innovative and sustainable solutions.

Social innovation emerges as a powerful tool for transforming cities, enabling the co-creation of solutions that address the real needs of communities. This perspective is essential for understanding how smart city initiatives can integrate social innovation to achieve more inclusive and sustainable urban development.

### 2.3. Synergies Between Social Innovation and Smart Cities

The intersection between smart cities and social innovation represents one of the most promising emerging areas in contemporary urban research. As cities face multidimensional crises—environmental, social, and economic—the connection between technology and citizenship becomes central to the generation of durable, adaptable, and legitimate solutions. This section delves into studies that explore these synergies, revealing how traditional paradigms of urban governance are being reshaped.

[Visvizi, Lytras, & Damiani. \(2018\)](#) argue that a truly smart city cannot disregard its social component; in fact, technology must act as a facilitator of inclusion and citizen co-creation. [Crivello. \(2015\)](#) contends that social innovation practices transcend traditional institutional frameworks, integrating local demands in a more horizontal and democratic manner. [Calzada. \(2016\)](#) introduces the concept of Smart City Citizenship, emphasizing the role of the citizen not as a passive recipient of technology, but as a co-producer of urban solutions.

[Cardullo, & Kitchin. \(2019\)](#) critically examine the notion of the “smart citizen,” warning about the commodification of participation and the need to establish ethical frameworks. Kummitha (2019) identifies how community participation enhances the implementation of smart urban policies when mediated by robust social structures. Hollands (2015) proposes moving toward a smart-for-social model, in which technology is subordinated to social goals such as equity, justice, and community resilience.

Figure 3. Levels of Integration Between Social Innovation and Smart Cities  
(Source: Own elaboration based on [Visvizi et al., \(2018\)](#), [Crivello, \(2015\)](#), [Hollands, \(2015\)](#))

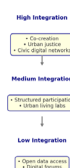


Figure 3. Levels of Integration Between Social Innovation and Smart Cities

Source: Own elaboration based on [Visvizi et al. \(2018\)](#), [Crivello. \(2015\)](#), and Hollands (2015).

This chart represents a hierarchy of levels of integration of social innovation into smart city models:

- High integration: co-creation, urban justice, civic digital networks
- Medium integration: structured participation, urban living labs
- Low integration: open data access and participation in digital forums

This framework shows that the mere availability of technology or data does not necessarily imply the presence of social innovation. Only at the highest levels of integration—where networks for urban justice are built, meaningful citizen participation is encouraged, and co-creation is promoted—can one speak of a truly smart and inclusive city. This model supports the article’s central hypothesis: that the quality of the connection between social innovation and technological strategy is a key determinant of smart city effectiveness.

Table 3. Contributions on Synergies Between Social Innovation and Smart Cities

Author(s)	Contribution
<a href="#">Visvizi, Lytras, &amp; Damiani. (2018)</a>	Technology must enable inclusion and co-creation
<a href="#">Crivello, S. (2015)</a>	Social innovation overcomes traditional institutional limits
<a href="#">Calzada, I. (2016)</a>	Smart citizenship reframes citizen as solution co-creator
<a href="#">Cardullo, &amp; Kitchin. (2019)</a>	Warns against market-driven participation; calls for ethics
Kummitha (2019)	Community participation improves smart policy outcomes
Hollands (2015)	Advocates for smart-for-social approach centered on justice

Source: Own elaboration, 2024

The chart illustrates different levels of integration between technology and social innovation in urban environments, emphasizing the role of the citizen as an active co-producer within high-integration models. The table, in turn, summarizes the most prominent theoretical perspectives on the need to advance toward a truly collaborative city, where digital technologies are aligned with the social values of equity and participation.

The synergies between social innovation and smart cities enable a shift from technocratic models to participatory frameworks centered on the citizen. This evolution is key to answering the research question posed in this article: How are social innovation initiatives integrated into smart city strategies at the global level? The literature confirms that such integration enhances the legitimacy of urban policies, improves their implementation, and contributes to more robust social resilience.

### 3. Methodology

This study adopts an exploratory qualitative approach with two interconnected methodological components:

- a) Content analysis of urban public policies, and
- b) Thematic analysis of secondary sources on social innovation in smart environments.

This combination allows the study to capture both the normative and strategic intentions of institutional frameworks and the narratives, challenges, and opportunities identified in recent research, without being limited to particular case studies.

#### 3.1. Content Analysis of Urban Public Policies

The first methodological component was based on a qualitative content analysis technique applied to a sample of 16 strategic documents on urban and digital policies published between 2016 and 2023. These documents were selected from official repositories of local governments, multilateral organizations (UN-Habitat, OECD, IDB, European Union), and global smart city networks (such as the Smart City World Congress and C40).

Selection criteria included:

- Explicit inclusion of the concepts: “smart city,” “social innovation,” “co-creation,” or “urban governance.”
- Cross-cutting focus on sustainability and digital inclusion.
- Public accessibility, document authenticity, and up-to-date information.

An analysis matrix was built using five dimensions derived from the theoretical framework:

- Level of institutionalization of social innovation
- Mechanisms for digital citizen participation
- Technological priorities (AI, IoT, Big Data, Blockchain)

- Indicators of social and urban impact
- Multi-stakeholder engagement (academia, business, civil society)

Each document was coded and analyzed using the MAXQDA software. A mixed coding system was applied: deductive coding (based on predefined theoretical categories) and inductive coding (emerging from the documents themselves). This made it possible to identify patterns of recurrence, contradictions, and gaps across policies.

### 3.2. Thematic Analysis of Secondary Sources

The second component consisted of a qualitative thematic analysis of 28 secondary sources, including academic articles, technical reports, expert interviews (from podcasts, institutional blogs, and specialized journals), and proceedings from global smart city events.

This technique made it possible to capture the representations, discourses, and perspectives of multiple actors (academics, policymakers, tech companies, NGOs) without being limited to a specific geographic or institutional approach. The findings were organized around three main themes:

- Tensions between technological efficiency and social justice
- Institutional and cultural barriers to the adoption of social innovation
- Success conditions in integrated and inclusive smart city strategies

The thematic analysis was conducted manually and supervised by two researchers to ensure triangulation of interpretations and the reliability of the process.

This methodological design enabled the development of a transdisciplinary and multilevel analysis of how social innovation is interpreted, implemented, and measured within smart city strategies. By not focusing on specific case studies or using PRISMA-type systematic reviews, the study achieved a global, contextualized, and more flexible understanding—aligned with the article’s central objective: to explore the conceptual and strategic articulation between social innovation and smart cities in contemporary urban policy and discourse.

## 4. Results

### 4.1. Global Trends in the Integration of Social Innovation into Smart City Strategies

The results of the content analysis of urban public policies and the thematic analysis of secondary sources reveal an emerging pattern of **gradual incorporation of social innovation elements** into global smart city strategies. Although this process remains uneven across regions and institutional frameworks, there is a growing discursive convergence around the need to generate public value through inclusive and participatory approaches.

Authors such as [Visvizi, Lytras, & Damiani. \(2018\)](#), [Calzada, I. \(2016\)](#), [Cardullo, & Kitchin. \(2019\)](#), [Yigitcanlar et al. \(2018\)](#), and [Kummitha \(2019\)](#) argue that the true potential of smart cities lies not solely in their technological infrastructure, but in their capacity to translate that infrastructure into social transformation processes through innovation. Cities that incorporate participatory, inclusive, and adaptive dimensions into their urban design tend to achieve better outcomes in terms of legitimacy, sustainability, and social cohesion.

Table 4. Resulting and Emerging Categories

Category	Definition	Category	Definition
Citizen Co-creation	Collaborative design of public solutions with citizens	Citizen Co-creation	Collaborative design of public solutions with citizens
Digital Governance	Decision-making structures supported by digital tools and transparency	Digital Governance	Decision-making structures supported by digital tools and transparency
Civic Digital Infrastructure	Platforms and services that ensure inclusive access to urban technology	Civic Digital Infrastructure	Platforms and services that ensure inclusive access to urban technology

Source: Own elaboration, 2024

Based on the analysis of strategic documents and secondary sources, five recurring and emerging categories were identified that structure how social innovation is integrated into the discourse and practices of smart urban development: citizen co-creation, digital governance, civic digital infrastructure, social impact evaluation, and open innovation ecosystems. These categories represent foundational pillars that allow the concept of a smart city to be operationalized from a collective well-being-oriented approach.



Figure 1. Key Categories and Their Role in Linking Smart Cities and Social Innovation

Source: Own elaboration, 2024

This chart visually summarizes how key categories act as pillars in linking social innovation to smart urban environments. Each bar represents a central category identified in the analysis, and the right-hand side highlights its strategic functions within the smart city model, connecting technology, community, and social value.

The results suggest that the development of socially responsible smart cities requires the design of public policies with a systemic approach, where social innovation is not a parallel or decorative dimension, but a core structural axis. The analyzed categories demonstrate that the success of these strategies is directly linked to institutional capacity to generate spaces for effective participation, social evaluation, and multi-stakeholder collaboration.

#### 4.2. Key Enabling Factors

The successful integration of social innovation into smart city strategies does not depend solely on political will or technological availability. It requires a set of enabling factors that, when aligned, create the necessary conditions for the design, implementation, and sustainability of participatory, collaborative, and transformative processes.

Findings show that cities that have made significant progress in social innovation share a common architecture: strong multi-actor alliances, genuine participatory policies, accessible digital platforms, innovative administrative structures, and iterative evaluation systems. Without these elements, innovation processes risk remaining rhetorical or reproducing the very inequalities they aim to resolve.

Table 5. Enabling Factors for Social Innovation in Smart Cities

Enabling Factor	Function in Smart Cities	Enabling Factor	Function in Smart Cities
Multi-actor Ecosystems	Fosters collaboration and shared decision-making	Multi-actor Ecosystems	Fosters collaboration and shared decision-making
Citizen Participation Policies	Empowers citizens to co-design and influence policies	Citizen Participation Policies	Empowers citizens to co-design and influence policies
Inclusive Digital Infrastructure	Reduces access gaps and strengthens digital equity	Inclusive Digital Infrastructure	Reduces access gaps and strengthens digital equity

Source: Own elaboration, 2024

Recent research agrees that the most resilient and inclusive cities are those that develop open and adaptive institutional structures. Authors such as [Meijer, & Bolivar. \(2016\)](#) highlight the need for governance ecosystems based on collaboration. [Pfeffer et al. \(2021\)](#) emphasize the importance of structured participation frameworks that activate citizenship. [Gil-Garcia et al. \(2019\)](#) advocate for digital infrastructure designed for inclusion. Meanwhile, [Bason. \(2010\)](#) and [Lember. \(2019\)](#) underscore the role of institutional capacity in sustaining innovation within the public sector. Finally, [Scott et al. \(2022\)](#) argue that impact measurement and evaluation are key to legitimizing technological decisions from a social perspective.

Each enabling category (blue nodes) generates a series of urban effects or impacts (green nodes), which converge on a shared outcome: active citizenship (gold node). This result represents the ultimate goal of a smart city focused on social innovation—an urban ecosystem where citizens not only participate but also transform their environment through co-creation, collaboration, and collective learning.

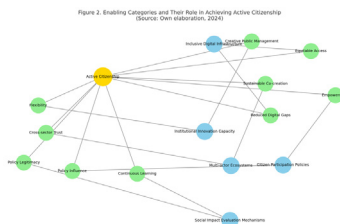


Figure 1. Key Categories and Their Role in Linking Smart Cities and Social Innovation

Source: Own elaboration, 2024

This table and chart illustrate how certain factors not only enable social innovation but also sustain it over time. Cities that institutionalize these elements foster a culture of collaboration, continuous learning, and flexibility, reducing dependence on individual leadership or specific management cycles.

Enabling factors constitute the operational core of a smart city oriented toward the common good. It is not merely about introducing technologies or opening spaces for participation, but about building systems that structurally integrate, measure, and scale social contributions. In this way, social innovation ceases to be a complementary element and becomes a cornerstone of urban governance.

### 4.3. Common Barriers

The process of integrating social innovation into smart cities faces numerous obstacles that limit its impact, sustainability, and legitimacy. Identifying these barriers helps to understand not only the failures of certain strategies but also the opportunities for their structural redesign.

Various studies have shown that failures in governance, digital exclusion, and the lack of adequate evaluation constrain social transformation in urban contexts. [Angelidou. \(2014\)](#) and [Meijer, & Bolivar. \(2016\)](#) warn about institutional fragmentation as a key source of inefficiency. [Vanolo. \(2014\)](#) questions participatory rhetoric that lacks real influence. [Kitchin et al. \(2015\)](#) emphasize that “smart” cities may exacerbate inequality if digital inclusion gaps are not addressed. Meanwhile, [Lember et al. \(2019\)](#) and [Bason. \(2010\)](#) point out that without evaluative and adaptive capacities, innovative models stagnate or collapse.

Through the analysis of strategic documents and thematic sources, five common structural barriers have been identified: institutional fragmentation, digital divides, symbolic participation, organizational resistance, and weak evaluation systems. These limitations generate cumulative effects that hinder the effective articulation between technology and social innovation in cities. More than technical problems, these barriers reflect power dynamics, exclusion, and institutional culture.

Table 6. Common Barriers to Social Innovation in Smart Cities

Barrier	Description	Barrier	Description
Institutional Fragmentation	Lack of coordination between public agencies and overlapping responsibilities	Institutional Fragmentation	Lack of coordination between public agencies and overlapping responsibilities
Digital Divides	Limited access to connectivity and low levels of digital literacy among citizens	Digital Divides	Limited access to connectivity and low levels of digital literacy among citizens
Symbolic Participation	Non-binding consultations or participatory processes with no real influence	Symbolic Participation	Non-binding consultations or participatory processes with no real influence
Organizational Resistance	Cultural aversion to decentralization and hierarchical decision-making	Organizational Resistance	Cultural aversion to decentralization and hierarchical decision-making

Source: Own elaboration, 2024

This chart illustrates a descending flow of structural barriers, where each identified obstacle directly impacts cities’ ability to sustain effective social innovation processes. From institutional fragmentation to lack of evaluation, each node represents a systemic dysfunction that undermines the legitimacy, effectiveness, and inclusiveness of urban initiatives.

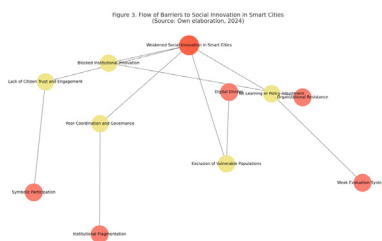


Figure 3. Flow of Barriers to Social Innovation in Smart Cities

Source: Own elaboration, 2024

The common barriers identified are not isolated technical failures, but rather symptoms of urban and political structures that have not yet fully embraced the logic of social innovation. Overcoming these challenges requires deep reforms in governance, institutional design, and organizational culture. Cities that fail to address these critical issues risk developing technologically advanced models that are socially exclusive and democratically fragile.

## 5. Discussion

The empirical evidence and conceptual analysis conducted in this study support the argument that the consolidation of truly inclusive and sustainable smart cities is only possible when principles and practices of social innovation are structurally integrated. The discussion is organized around three main axes: the degree of integration of social dimensions into technological strategies, the conditions necessary for effectiveness, and the structural barriers that hinder such integration.

**Toward a New Typology of Smart Cities:** As suggested by the typology presented in section 4.1, not all smart cities are created equal. There are technocratic models that, despite implementing advanced digital infrastructure, lack authentic participatory processes. In contrast, socially-driven models place citizens at the center of technological governance, enabling more equitable and legitimate urban transformation. This finding validates [Calzada. \(2016\)](#) theoretical proposition of *smart citizenship* and reinforces [Visvizi et al. \(2018\)](#) argument about the need to integrate technological and social dimensions.

The identification of three integration models helps nuance the dominant narrative in the literature, which often homogenizes the smart city

concept. This study offers a more critical and differentiated view that reveals the varying degrees of social maturity within the smart city paradigm.

**Enabling Conditions: Beyond Infrastructure:** The second axis of the discussion relates to the conditions that make social innovation feasible in smart urban environments. As highlighted in section 4.2, factors such as multi-actor ecosystems, inclusive digital platforms, institutional innovation capacities, and evaluation mechanisms are essential for ensuring that solutions are not only technologically viable, but also socially relevant.

This finding aligns with [Meijer, & Bolívar. \(2016\)](#) view that urban intelligence is expressed through collective learning. Likewise, [Lember. \(2019\)](#) and [Scott. \(2022\)](#) emphasize that public innovation requires adaptive, experimental, and evaluative capacities. Without these enabling conditions, social innovation risks becoming anecdotal or unsustainable.

**Persistent Barriers and Model Contradictions:** Finally, the study identifies five structural barriers that hinder the effective development of social innovation: institutional fragmentation, digital divides, symbolic participation, organizational resistance, and lack of robust evaluation systems. As detailed in section 4.3, these barriers reflect tensions that go beyond technical limitations, revealing underlying power asymmetries, organizational culture, and deep social inequalities.

The literature had already raised concerns about these risks. [Kitchin et al. \(2015\)](#) and [Vanolo. \(2014\)](#) warned that smart cities, if not designed from an ethical and participatory perspective, could worsen existing disparities. The persistence of these barriers suggests that declaring a city as “smart” is not sufficient—institutional structures and governance practices must be transformed.

**Theoretical Implications:** From a theoretical perspective, this article contributes to the demystification of the smart city discourse, offering a critical and interdisciplinary reading of the concept. Through an approach that articulates technology, governance, and social innovation, it demonstrates that true urban progress is not measured only by sensors, algorithms, or platforms, but by the capacity to build active and resilient citizenship.

This perspective calls for an expansion of the traditional smart city framework by integrating key concepts from social innovation theory, urban justice, and democratic participation.

**Practical Implications:** For public policymakers, urban planners, and smart ecosystem stakeholders, the findings of this study suggest five lines of action:

- Prioritize co-creation policies and binding citizen participation.
- Invest in digital infrastructure that reduces gaps and promotes inclusion.
- Strengthen the internal innovation capacities of public institutions.
- Design robust systems for evaluation and policy iteration.
- Promote multi-actor alliances for the sustainability of solutions.

**Final Synthesis of the Discussion:** In summary, this article proposes a reimagining of smart cities through the lens of responsible technological citizenship, where the focus is not innovation for innovation’s sake, but the generation of shared public value. Social innovation thus emerges not as a complementary element, but as an essential requirement for urban intelligence to be legitimate, inclusive, and transformative.

The integration of social innovation into smart city strategies enables a more equitable form of urban transformation. The cases analyzed show that when citizens are considered not just users but co-creators, urban projects become more sustainable and legitimate. This perspective challenges the traditional top-down governance model and promotes distributed frameworks of collective intelligence ([Bason 2010](#)). The key to success lies in the convergence of digital infrastructure, political will, and institutional innovation to strengthen local capacities.

## Conclusions

This study demonstrates that the integration of social innovation into smart cities is an uneven process, influenced by institutional culture, local capacities, regulatory design, and governance frameworks. Through a dual qualitative methodology—systematic literature review and thematic analysis of secondary sources—it was possible to identify patterns, levels of maturity, and contradictions that allow for a well-argued response to the article’s central research question.

First, three integration models were identified:

- The technocratic model, where citizen participation is marginal;
- The hybrid model, where limited spaces for interaction are enabled; and
- The social innovation-centered model, in which citizens are positioned as co-producers of urban solutions.

This typology not only provides conceptual clarity, but also allows for the categorization of public policies based on their level of commitment to the social dimension of innovation.

Second, the analysis revealed a set of fundamental enabling factors, including: multi-actor ecosystems, participatory policies, inclusive digital infrastructure, institutional innovation capacities, and evaluation systems with a social focus. The presence of these elements correlates directly with the level of social maturity of the smart city model adopted.

Third, five structural barriers were identified that hinder the integration of social innovation: institutional fragmentation, digital inclusion gaps, symbolic participation, cultural resistance to innovation, and lack of robust evaluation systems. These barriers operate in an interrelated manner and explain why many cities, despite having access to technology, fail to generate sustainable social value.

Taken together, the findings confirm that social innovation should not be viewed as an add-on or complement to the smart city paradigm, but rather as a **structural condition** for its legitimacy, effectiveness, and impact.

#### Recommendations by Actor

For governments and public entities:

- Design smart city strategies with regulatory frameworks that guarantee binding citizen participation, not merely consultative mechanisms.
- Strengthen internal public innovation capacities by incorporating multidisciplinary teams and continuous training programs.
- Invest in equitable digital infrastructure, prioritizing territories and populations with limited connectivity.

For the private and technology sectors:

- Engage in multi-actor partnerships that address concrete social challenges, not only market opportunities.
- Include social impact metrics in the development of urban platforms, apps, and services.
- Promote the ethical and transparent use of technologies such as AI, blockchain, and big data in urban environments.

For academia and research centers:

- Foster research that links technological analysis with social and urban governance approaches.
- Document and systematize good practices of social innovation in urban contexts to enhance replicability.
- Act as technical and methodological bridges among government, civil society, and the private sector in urban co-creation processes.

For social organizations and citizens:

- Demand real mechanisms for influence in the design, monitoring, and evaluation of smart city policies.
- Build citizen oversight networks and platforms to monitor the use of public technologies.
- Participate actively in urban labs, civic hackathons, and participatory budgeting initiatives.

Answering the central research question has revealed a key insight: there is no truly smart city without empowered citizens. Social innovation is not a secondary feature—it is the backbone that transforms urban intelligence into collective transformation. Only through the articulation of technology, participation, ethics, and inclusion will it be possible to build cities that not only think, but also feel and care for those who inhabit them.

#### **Credit authorship contribution statement**

Conceptualization, methodology, and formal analysis: The authoring team formulated the theoretical and methodological approach of the article, defining the strategies for content analysis and thematic analysis.

Literature review and original draft preparation: The authors conducted the systematic literature review and prepared the first draft of the manuscript.

Visualization and graphical representation: The design of tables, charts, and conceptual diagrams was developed by the research team.

Review and final editing: All authors participated in the critical review of the content, made substantive contributions, and approved the final version of the manuscript.

#### **Declaration of competing interest**

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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