Citizens' Voice as a Cornerstone of Making Territories Smart

Anna D'AURIA
Marco TREGUA
Manuel Carlos VALLEJO-MARTOS
Rocio MARTÍNEZ-JIMÉNEZ

Abstract

This paper aims to answer the call for studies on smart transformation in small and rural municipalities. It focuses on the 'smart territory' concept, which includes all the features of the smart city but considers a larger and less delimited urban area, as well as the intricacy of effects among towns and cities. To address such a space, the authors conducted an in-depth analysis of the Province of Jaén in Spain through a content analysis of interviews with representatives from local associations of citizens. The results confirmed that a participatory approach supports the territory management thanks to the government-to-citizens interactions that allow getting direct information: The citizens' voice is about perspectives and opinions related to the status of different neighborhoods, towns, or villages, as well as the city, and real opportunities to shape a smart territory as theorized. The study's contribution stems mostly from the category of actors involved, as the critical issues, as well as the opportunities in local development, are usually investigated by involving either local administrations or politicians and citizens. Listening to citizens' voices also addresses the intricacies of a territory overcoming the limits of an approach based on a single town or city. Furthermore, detecting problems and opportunities in an urban context in this way can help in planning local smart development.

Keywords: smart territory, associations of citizens, citizens' voices, participation, splintering urbanism.

Anna D'AURIA (corresponding author)

Assistant professor, Department of Human and Social Sciences, University of Naples L'Orientale, Naples, Italy
Tel.: 0039-081-6909.000
E-mail: adauria@unior.it

Marco TREGUA

Associate professor, Department of Economics, Management and Institutions, University of Naples Federico II, Naples, Italy
Tel.: 0039-081-675.091
E-mail: marco.tregua@unina.it

Manuel Carlos VALLEJO-MARTOS

Professor, Department of Management, Marketing and Sociology, University of Jaén, Jaén, Spain
Tel.: 0034-953-213.012
E-mail: mvallejo@ujaen.es

Rocio MARTÍNEZ -JIMÉNEZ

Associate professor, Department of Management, Marketing and Sociology, University of Jaén, Jaén, Spain
Tel.: 0034-953-212.340
E-mail: rmartine@ujaen.es

1. Introduction

The conceptualization of the urban context has evolved throughout the decades. Social and economic changes, including those due to globalization, have created several new challenges for local administrations (Chumakova, 2017). The European Commission, through initiatives and projects such as the Europe 2020 Strategy, aims to achieve 'smart, sustainable and inclusive growth' (European Union, 2010).

The smartization process considers the transformation of all aspects of everyday life for local growth based on six pillars (smart people, smart governance, smart living, smart environment, smart economy, and smart mobility) and two transversal drivers (sustainability and ICTs) (Giffinger *et al.*, 2007).

Scholars and practitioners proposed different approaches for cities, and urban areas in general, to confront these challenges (Kabisch *et al.*, 2018). Considering new ways to listen to citizens' voices is one of these challenges (Nguyen *et al.*, 2022), even beyond what Living Labs offer, as the imbalance in entities' power is at the core of such a challenge. Most of the interventions in the smartization of urban contexts aim at achieving better conditions by providing high-quality services to improve citizens' quality of life (QoL) (Kabisch *et al.*, 2018). Additionally, new technologies have created a new scenario for cities, as services can be provided more efficiently, data can be analyzed for further improvements (Khan *et al.*, 2017), and citizens are more involved in the decision-making process together with other actors, such as local agencies and firms (Horgan and Dimitrijević, 2019).

The concept of a smart city has a strong theoretical philosophy, but its concrete and complete application is still difficult; a solution might be to challenge such a concept to evolve toward the broader and more comprehensive concept of 'smart territory' (Garcia-Ayllon and Miralles, 2015). Recent studies have highlighted the necessity of enlarging such objectives to a broader context, leading to the 'smart territory', namely, a complex system involving several different resources, including both urban and rural contexts (Robledo *et al.*, 2014). Spicer *et al.* (2019) found that collaboration is essential for rural and remote areas pursuing smart development and can counteract the limitations of capacity, scale, and digital divides. In line with this, Navío-Marco *et al.* (2020) stressed the limitations of geographical boundaries in deploying smart initiatives; they observed the smartization of territories through a double perspective: (a) as an evolution of the smart city; and (b) as the opposite to the smart city. The former 'implies the extension of the concept of smart city to a more comprehensive geographic scope, such as the surrounding territory, which is also more consistent with the very purpose of sustainability and efficiency of smartization'; the latter is 'opposed to smart cities by association with non-urban spaces' (Navío-Marco *et al.*, 2020, pp. 1–2). Similarly, Ates (2020) stressed the relevance of smart territories due to the integration of connected smart areas (i.e., towns, villages).

One of the main difficulties in smart city projects is the integration of actors and actions at different levels to obtain comprehensive and coherent urban contexts. Single initiatives such as improving infrastructures or territorial governance programs are not effective when geographically limited (Garcia-Ayllon and Miralles, 2015).

The development of smart cities via upgrading existing cities or designing new cities requires a comprehensive approach to service design and city transformations (Kumar *et al.*, 2020). Thus, this research investigates the factors conditioning the smartization of the province of Jaén (Spain) through the cooperation of local citizens' associations aimed at identifying: (1) What are the obstacles to smart development?; (2) Which are the levers catalyzing the smart transformation?

Furthermore, this research answers a call for studies on smart transformation in small and rural municipalities (Rivza and Kruzmetra, 2017; Desdemoustier *et al.*, 2019), the role of multiple actors' associations or contexts in this domain (such as Living Labs) in facilitating the improvement of daily lives through smart changes (McPhee *et al.*, 2016), and changes' effects on social inclusion and urban polarization (Gupta *et al.*, 2019), with smart territories challenging the latter due to the innate limitations of smart villages or smart cities.

2. Literature review

2.1. The smartization of urban contexts

Scholars' attention has favored the emergence of a wide debate over cities' transformation, resulting in several definitions and labels describing how urban areas are set up to guarantee high-quality life conditions for people through the implementation of new solutions (i.e., cyber, virtual, digital, intelligent, eco, smart, sharing, sustainable) (D'Auria *et al.*, 2018), although the large number of labels has created a terminological confusion that often emerges when one is scanning the literature.

In conceptualizing a smart city, a reference to Giffinger *et al.* (2007) should be made, as they provided one of the most recognized definitions: as an urban context in which the combination of innovative interventions and citizen participation is vital to achieving local sustainable development. Within this framework, Martin *et al.* (2018) recommended promoting social equity in smart cities by moving beyond current initiatives and favoring economic equity (Gabriel and Painter, 2020) in which municipalities and hi-tech companies provide tools and spaces to make citizens heard (Wang and Clarke, 2021). The citizens' voice has been proven to help prioritize needs (Charalabidis and Theocharopoulou, 2019) and understand local perceptions (Adikari and Alahakoon, 2021).

Also, firms have joined this debate, with a technology-based perspective, due to their core business. Cisco—a pioneer in this debate—proposed an ICT-based solution in partnership with the public agency in Milan (as in Vanolo, 2014). KPMG (2018) described smart cities as an example of the benefits provided by the Internet of Things (IoT), while EY (2015) framed the smart city as the context in which cloud technologies can improve QoL.

2.2. Beyond smart city borders: Smart territory and smart region

Recently, geographical borders have become more fluid due to social and political dynamics. Therefore, scholars have introduced the concept of 'smart territory', considering

all the features of smart cities in a less delimited urban area and describing 'a smart and inclusive sustainable territory, above all oriented towards an intelligent fruition' (Cialdea, 2018, p. 26). This view became relevant in scholars' debate, as it might counteract splintering urbanism. Indeed, splintering urbanism (Graham and Marvin, 2001; Coutard, 2008; Selod and Shilpi, 2021) is regarded as the widening of a problem known as peripheralization, or polarization, as changes in central areas of a city might improve QoL and enlarge the gap with the outskirts. Vanolo (2014) offered considerations on what smart transformation can do for territories while avoiding the trap of splintering urbanism as he expanded the discourse on the smart city toward sustainability. Thoroughly, he referred to the contextualization of interventions (i.e., smart interventions differ from one another), the managing of tensions between various local forces, and the construction of a smart identity, making smart interventions sustainable for the whole context instead of being centered on limited areas.

According to other perspectives, the smart territory is a complex system containing the city and its rural areas, exploiting and sharing resources in a sustainable perspective (Garcia-Ayllon and Miralles, 2015) and preventing migration flows toward urban zones, leading to the spooling of rural territories (Busso *et al.*, 2021). A smart territory supports increases in efficiency due to the performance of effects on areas wider than city centers; therefore, the integration of villages (or towns) shapes a context overcoming geographical or administrative barriers, leading to greater effects than before (Ates, 2020). Similarly, it is about more than efficiency; widening the scope of interventions can positively affect the contribution of multiple actors. Nguyen *et al.* (2022) identified mechanisms to restore the balance among actors in decision-making processes, avoiding some voices being unheard and worsening the condition of peripheral areas.

Another conceptualization widening the focus is the smart region (Morandi *et al.*, 2016), as this new configuration is broader, though still dependent on geographical or administrative boundaries. This notion has been discussed from different perspectives and recalling models already applied to modern conceptualizations of urban contexts. In general, 'system' is among the most common features in describing smart regions, in line with frameworks such as the Triple-Helix model (Leydesdorff and Deakin, 2011) applied to cities to further innovate through multiple actors' contributions (McPhee *et al.*, 2016).

Interestingly, Jucevičius *et al.* (2017) shaped a smart region as an open social system consisting of three main areas and eight general characteristics (Figure 1).

Figure 1: The model of the smart region as a social system

Source: Jucevičius *et al.* (2017)

In conclusion, as with the smart city, human capital, knowledge, and technology emerge as relevant features for the 'smart region', described as 'a place that provides inspiration [and] shares culture, knowledge, and life' (Jucevičius *et al.*, 2017, p. 3).

3. Aim and methodology

Stemming from the need for further research emerging from the literature review, a project was funded dealing with a territory, aimed at empirically understanding smart characteristics, the role of local actors' voices in calling for interventions to improve QoL, and the linkages among various areas of a territory larger than a city to further the balanced development for which scholars advocate (Graham and Marvin, 2001; Busso *et al.*, 2021). Scholars called for studies on smart transformation in small and rural municipalities (Desdemoustier *et al.*, 2019), the role of multiple actors' associations in improving QoL through smart changes (McPhee *et al.*, 2016), and the effects on social inclusion and urban polarization (Gupta *et al.*, 2019).

Due to these calls for research, the authors' prior knowledge in the area, the ongoing smart transformation of the province, and the opportunity for research funding, the authors chose the area of Jaén (Spain) and surrounding counties. Jaén is known as the World Capital of Olive Oil due to its many olive trees and the significant amount of olive oil produced, including world-prized varieties. The province counts 654,170 inhabitants and is divided into 97 municipalities and 10 counties. The capital city has 113,000 inhabitants. Its rural features, the existence of local citizens' associations, and the risk of urban polarization—recalled above as splintering urbanism—make this context suitable for this research.

In line with the area's territorial division, interviews were scheduled to investigate the interplay among actors and the intricacies of a territory. Thus, the research unit is represented by local citizens' associations, as they are involved in amplifying citizens' voices toward political institutions. Citizens associations consist of independent groups of people joining over local issues in order to get bargaining power when asking institutions for support. They have been recalled in research in the social sciences, including on smart cities (e.g., Navarro-Galera *et al.*, 2019). Although these associations serve many goals, one key concern is civic empowerment (Zandbergen and Uitermark, 2019), which has played a dominant role in smart cities.

A semi-structured interview was proposed to focus respondents' attention on certain issues and enable the emergence of issues depending on respondents' role and perception (Schmidt, 2004), as in extant research on smart cities (e.g., Fernandez-Anez *et al.*, 2018), proving its effectiveness. The themes in the interviews were derived from the literature. Two main themes per each smart characteristic were selected according to Giffinger *et al.* (2007), highlighting the key features, as listed in the interview guide (Annex 1).

Next, local citizens' associations were identified. One association was selected to pilot the interview; after fine-tuning the questions, data collection started with answers from 21 out of 47 local associations (response rate 44.68%). Reasons for missing answers included

unavailable respondents or no answer at all. The 21 associations providing answers represented a good variety, as most of the cities' sub-areas were represented.

The interviews lasted 70 minutes on average, with the shortest lasting 48 minutes and the longest lasting 85 minutes; they were performed over eight months as face-to-face interviews with at least two of the authors participating. The respondents were asked for permission to record their answers. Data analysis consisted of two levels: authors' interpretation, to offer an overview of the insights, and a confirmatory content analysis, with transcripts analyzed using NVivo (version 12.6.0.959) to provide an objective and unbiased analysis (Cogin and Ng, 2016). The content analysis enables confirmation of what is already believed and what is affirmed or denied, besides implicitly (Krippendorff, 2004); thus, evidence from the software is shown to review the insights of the introductory analysis, balancing the shortcomings of manual coding to limit subjectivity. To that end, the authors ran a word frequency for every section, each representing the six characteristics of a smart city. The word analysis took place on 'similar words'; thus, words with the same root were considered together. Due to the risk of considering together words with a similar root but different meanings, the authors double-checked the grouped words. Then a qualitative cluster analysis evaluated verbatims (Kelly, 1985); queries were launched on each section to grasp meaning from the relationships (Pearson index >0.8) among the words that the interviewees used. Finally, the analyses were run in separate sections to consider the questions' sequence.

4. Findings

This section first presents the findings regarding the authors' interpretation, then the evidence of the computer-aided content analysis with a confirmatory goal. The results are ramified in six sub-paragraphs, with evidence from data analysis—including excerpts—and a content analysis to gain confirmation.

4.1. Overall interpretation of results

This section describes the interplay among actors and needs, and the intricacies emerging in the wide domain of a smart territory. Citizens' associations expressed their voice on needs perceived, the assessment of previous and ongoing interventions, and social dynamics.

Citizens' associations are aware of their role and would prefer to be heard by local governments ('From the city hall none call us, we have to persist to meet someone or we solicit the opposition parties': interview n. 1); their being in touch with citizens leads to better knowledge on local needs than local administrators. Needs are also emerging because of incomplete works ('Our block consists of 27,000 people, but there is only one school, so either students move, or they have to opt for the private school': interview n. 2), making more evident the misalignment with other districts. The same feeling arises considering outskirts and villages, mostly because of transport ('Bus lines are being reduced, some roads are poorly maintained, while works are in progress in the capital': interview n. 11),

tourism ('There's a sort of paralysis in tourism activities since the city councilor just focused on the castle recently': interview n. 21), and culture ('The investment in cultural activities is almost non-existent': interview n. 10). In some cases, making the voice heard became useful in giving the associations a civic role, far from political power ('Here we host meetings with any party and we told them whatever we needed, no matter [whether] this brought irritation, as politicians felt judged': interview n. 14).

Associations also contributed to assessing changes, thus evaluating the ongoing city transformation either positively ('Recently, sidewalks and roads have been refurbished and trees were planted, the results are impressive': interview n. 10) or negatively ('The social center offered services, then its management was changed by the new mayor and now it is inactive': interview n. 16).

4.2. Confirmatory content analysis

This second part of the analysis reviews previous insights and articulates the evidence recalling the six characteristics of smart cities (Giffinger *et al.*, 2007) through a word frequency and cluster analysis.

Economy

The word frequency highlighted both unexpected and expected results, as the most frequent words are strictly connected to the business spheres (business, employment, firms), all frequently mentioned.

The cluster analysis (Figure 2) shows two interesting results: the lack of support from public administrations and the low level of public investment. Accordingly, the content analysis shows that the strongest and most significant connections are 'empresas'+ 'ayuntamiento' (firms+local municipality), 'puesto'+'dinero' (whose combination means to invest money), and 'emprendedores'+'apoyo' (entrepreneurs+support).

The following quotes confirm the evidence above, while the second shows the wide scope of expected interventions since different levels of public government were mentioned:

'The support to local shops and their owners is almost nonexistent since this would contrast with what they recently did to favor the opening of new malls.' [interview n. 3]

'There is no support at all from the local and the provincial government; we stand with small shops in a demonstration they arranged, because they are very close to going bankrupt.' [interview n. 6]

Moreover, the cluster analysis combines 'trabajar' (to work) and 'vida' (life), 'trabajar' (to work) and 'local' (local), and 'trabajar' (to work) and 'negocios' (business). These ties stress the need to improve working opportunities and conditions to improve QoL and the positive effect that work policies would have on the local context, including business opportunities. Some quotes describing these ideas are offered below. In both cases, people would prefer to have their life and job opportunities in their own areas rather than be
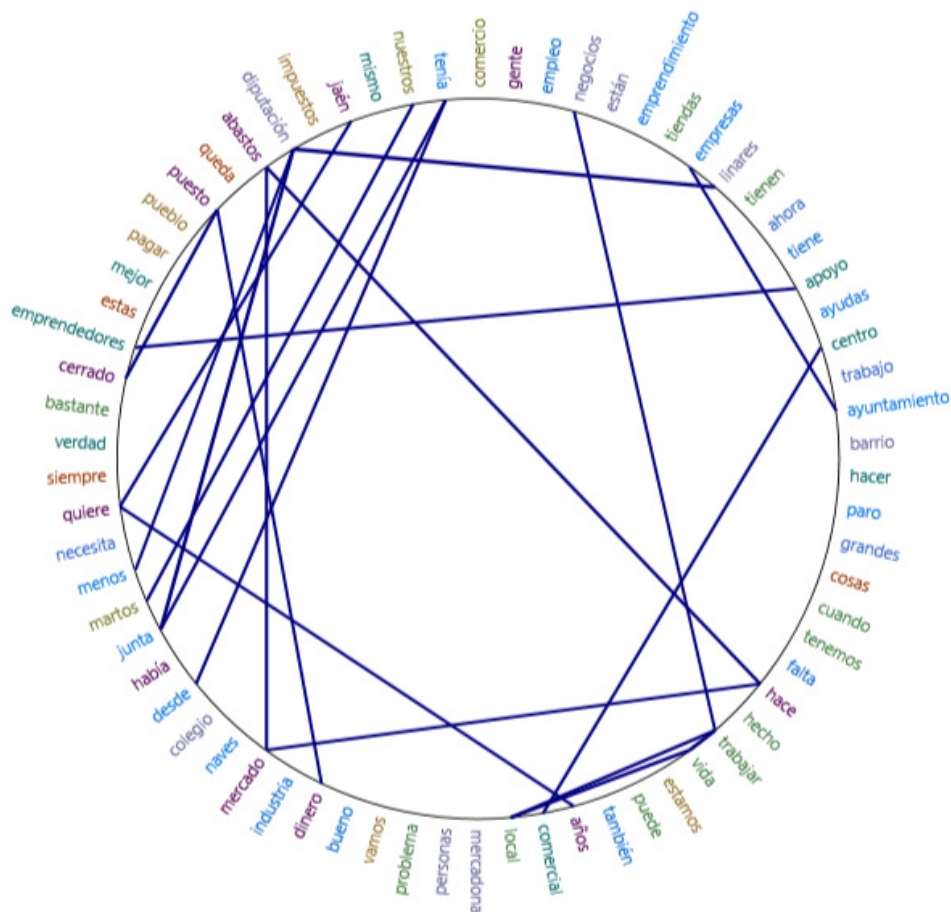
Figure 2: Qualitative cluster analysis of 'economy'

Source: Authors' own contribution

forced to move elsewhere for better conditions:

'In order to improve the quality of life, work is a necessary element; currently, unemployment is lowering, but the local government should act to have people staying in their own cities.' [interview n. 12]

'Skilled people, especially entrepreneurs, should be properly supported by the local government to start their business and create working opportunities in the local context. It is not easy to get this support.' [interview n. 11]

Environment

Regarding the second characteristic, some of the most frequently cited words describe physical areas (e.g., streets or districts), local places (e.g., Andujar and Úbeda), and local institutions, actors, services, and related items and effects (e.g., education and waste management).

Figure 3: Qualitative cluster analysis of 'environment'

Source: Authors' own contribution

The cluster analysis (Figure 3) displays the most frequently cited words.

In detail, the first tie is between 'alcantarillado' and 'papeleras' to highlight the need to dispose of both wastewater and wastepaper; the need for wastepaper bins is confirmed by the tie between 'papel' (paper) and 'alrededor' (around). This tie highlights an issue that the interviewees stressed, as they indicated bins are insufficient, which causes the paper to fall out. The following quotes describe both wastewater and wastepaper issues:

'Boxes are a problem, because shops' owners have to throw away several boxes in paper and the big ones are hard to fold, thus, either they fill the bin at once or they have to leave them around the wastepaper bins.' [interview n. 17]

'Renewing the sewage system is needed, there was a project to transform the old system into a new one to recover water, but nothing was done.' [interview n. 5]

While the considerations above are basic, the interviewees also combined 'residuos'+ 'suficiente' (passable general waste) and 'ejemplo'+'environment' (example for environment), leading to additional considerations. The first tie describes the perception of suitable tools to favor waste collection, while the way operations are managed is not considered adequate. The following excerpts summarize associations' perceptions of waste collection:

'There is an adequate number of bins, but their location is not adequate; additionally, sometimes it is not a good sight to have them next to shops, attractions, or other public areas.' [interview n. 12]

'It often happens [that one] see[s] waste in the streets, because some bins got broken overnight or because people are not aware of how and when to throw away their waste: these are the problems since the bins and the frequency of collection are adequate.' [interview n. 10]

Regarding the second tie, the examples that other cities provided are considered good. Even small towns nearby can offer a good solution of partnerships with local agencies and new ways to collect waste and safeguard the environment. The following excerpts synthesized these ideas and shed light on the advantage of integrating solutions instead of managing services in limited areas such as a village:

'Cuenca is a city providing an example of properly managing an area next to a river, while taking care of the environment; they created an area for sports, a small beach, it is really lovely. The same happened in Villanueva de la Reina.' [interview n. 8]

'Close to where we are, the city of Andujar has exemplary waste management, with trucks going back and forth almost non-stop. They show how much they care about the environment.' [interview n. 21]

Governance

Concerning the third characteristic, viz. governance, the most frequent words describe areas (e.g., parks, towns, and cities), local institutions (e.g., the provincial department), actors (e.g., citizens and local groups), local issues and effects (e.g., parking and infrastructures), and activities (e.g., citizens' participation and governance).

The qualitative cluster analysis (Figure 4) offers more insights through the analysis of ties.

The first ties on which to focus are 'dinero'+'centro' (money+center) and 'dinero' +Jaén. These relations are relevant and mirror what the interviewees perceive about local agencies investing money as well as the problem in interventions leading to an area being smart (or not), thus 'splintering urbanism.' Indeed, people living in the outskirts complain about reduced funding compared to what is spent in the city center. Moreover, people from small towns feel under-considered in comparison to people from the city, showing the limitation of a smart transformation led in a bounded area like a city. The following quote offers more details:

'The center is more taken care of than the blocks in the outskirts; the service taking care of gardens is good, but it is not enough.' [interview n. 19]

Figure 4: Qualitative cluster analysis of 'governance'

Source: Authors' own contribution

One more relevant tie consists of 'reunión'+'ayuntamiento' (meeting+city council), as it shows the willingness of citizens—through local associations—to support the city governance in the decision-making process. Therefore, the associations describe how they tried to express ideas and report on ongoing issues. The following quotes describe their contribution:

'Aiming at participating, we delivered documents to the city council, but no way, we didn't have the chance to meet them. I personally asked to meet one of their representatives, but he answered that he couldn't do a single thing because he deals with the entire province and not just with our village.' [interview n. 2]

'The residents asked to participate, but the only meetings they can join are those of our association. When there is a decision to be made, they don't participate, but they would like to, especially in meetings in which important issues are dealt with.' [interview n. 5]

The previous finding is enforced by another tie, namely, 'participation'+'ciudadana' (citizens' participation); therefore, associations care about participating because they know they can play a crucial role in helping local agencies plan interventions and report problems. They feel that political representatives do not hear them and, thus, that their voice is not listened to. Two more quotes support this understanding:

'We don't know if the issues they [the local agencies] debate about are relevant for us, because there is no way to claim something for the block we live in; thus, the level of participation we would like to achieve is not understood by the local agencies. We simply don't know what they decide.' [interview n. 7]

'Citizens hugely participated, but our association was ignored in a meeting with central institutions, thus they left. Recently, they have restarted attending our meetings.' [interview n. 12]

Living

Regarding living, the most frequently used words recall areas (e.g., districts or the city center), local places (e.g., Andalucía and Jaén), institutions, actors (e.g., people or associations), local issues and effects (e.g., health and education), and activities (e.g., theatres).

The analysis of the ties offers additional insights (Figure 5).

The first relations emerging from the qualitative cluster analysis depend on 'trabajo' +'niños' (work and babies) and on 'trabajo'+ 'personas' (work and people). These relations offer different interpretations because the references to work are multiple, such as what is needed to decrease unemployment and the efforts undertaken to improve local areas. Thus, the relation with 'babies' expresses these efforts, while 'work'+'people' refers to both unemployment and efforts undertaken. The following excerpts clarify these perspectives.

'We propose a new role to the regional government, namely, some citizens may be employed to improve the level of safety in some areas; this would also offer a job opportunity, especially to the unemployed over 45 and to disabled people.' [interview n. 2]

'There are a lot of unemployed and they have to live with the support of their parents, but they receive no support from the public agencies.' [interview n. 7]

'Local associations are working to open schools after the ordinary timetable to give the chance to children to do sports and other cultural activities.' [interview n. 11]

Two more ties offer additional information: 'parques'+'vecinos' (parks and inhabitants), and 'dinero'+ 'casas' (money and houses). The first tie expresses the benefits of having green areas and the need to protect them. Linking 'money'+'house', the interviewees asked for support in refurbishing areas where houses are in poor condition, especially the outskirts—showing, again, unbalanced care for some areas. The following quotes describe these ties:

'We miss some facilities for children, as well as sports areas; we have parks, we enjoy them especially in summertime, it is something we can't complain about, but it is not enough for sports.' [interview n. 1]
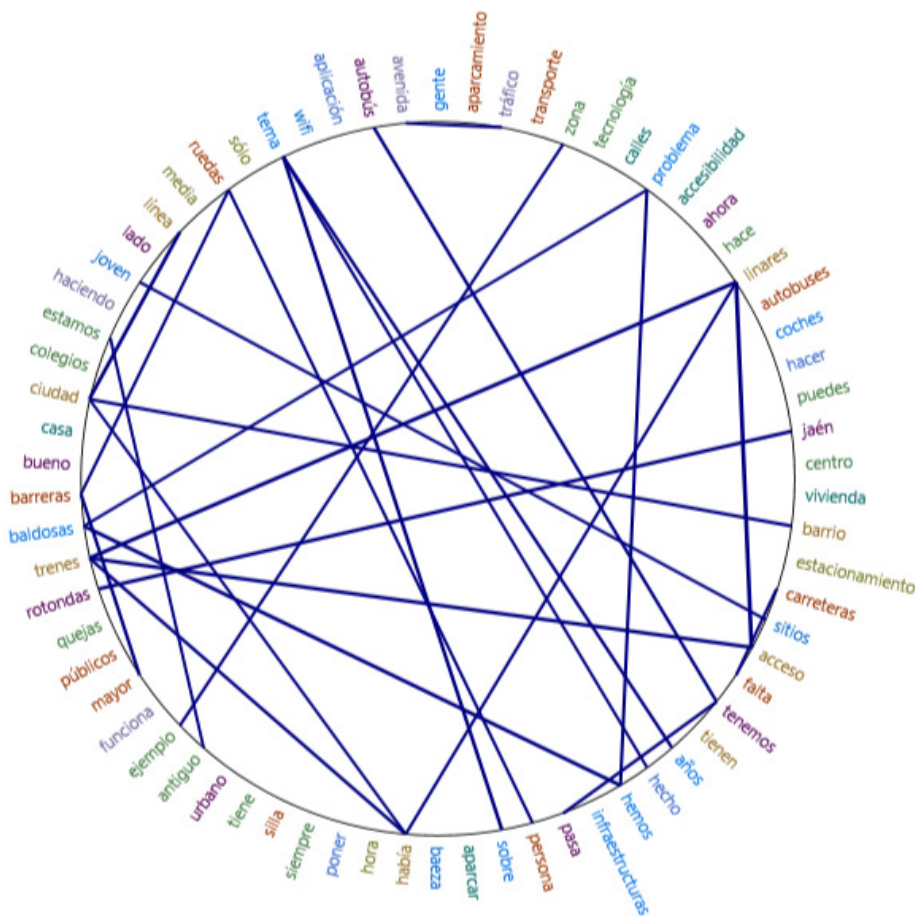
Figure 5: Qualitative cluster analysis of 'living'

Source: Authors' own contribution

'There are houses abandoned because some people are getting old; some others are young and do not have enough money to refurbish them and live there. We had a program some years ago to restore these houses and the results were very positive.' [interview n. 20]

Mobility

Regarding mobility, the most frequent words are areas (e.g., city or streets), local places (e.g., Granada or Jaén), services (e.g., transports or technologies), and actors (e.g., inhabitants or young people).

The qualitative cluster analysis (Figure 6) proposes additional information using the analysis of ties.

The first ties on which to focus are 'ciudad'+'barrio' (city and block, district), 'trenes'+Linares (trains in a town), 'trenes'+'acceso' (access), 'ruedas'+ 'barreras' (wheels and barriers), and 'baldosas'+'problema' (paving stones issue). These relations describe

Figure 6: Qualitative cluster analysis of 'mobility'

Source: Authors' own contribution

what the interviewees consider to be missing or problematic, negatively affecting mobility, as part of smart development.

Concerning the relation between 'city' and 'blocks,' citizens' perception depends on the road connections between the city center and the surrounding blocks; respondents complained about congestion and public transport, though they were quite enthusiastic about the parking spots. The following quotes deepen this evidence, though the two answers are contradictory because the associations are from different areas:

'Congestion is really problematic in the main avenue of our block and the crossroad is even more complicated. It is not a block with the congestion one can have in the city center, but there is enough parking and sooner or later something pops up at a walking distance from home.' [interview n. 16]

'The block is quite animated, especially after setting a track for amateur cyclists; anyway, there is not enough space to park, but it is even more important to stress that it would

be good to act to prevent accidents with new solutions because old ones such as road signs are not considered at all.' [interview n. 9]

The ties related to 'trains' express inhabitants' dissatisfaction with the cancellation of routes connecting with local towns—such as Linares—and routes leading to big cities in Spain. The changes negatively affect accessibility, thus reducing the role the city plays in the country, making the territory unbalanced. The following excerpts show this negative perception and the isolating effect:

'There were few trains, they even canceled a route linking two towns to Jaén; additionally, there is no maintenance.' [interview n. 6]

'The state of the railway network is poor; we often reported that, and this is how we achieved something concerning the routes to the two major cities close to our region. Waiting some more for the moment when transport issues will be solved means to keep watching our city being ranked last when compared to the rest of the country.' [interview n. 20]

The tie 'wheels'+'barriers' explains the relevance of barriers in the lives of people using wheelchairs; people say that many barriers, such as stairs and sidewalks, make travel difficult. The next quotes clarify such impressions: 'There is still work to be done to solve the problem of accessibility since several barriers and sidewalks hinder the normal mobility of elderly as well as disabled people.' [interview n. 18] 'The barriers we found while moving around here are awful. It is also hard to move because of several holes in the streets. Nothing has been done to counteract the problem of accessibility.' [interview n. 20]

Finally, another problem is the poor condition of 'paving stones'; people complained because the situation is risky for everyone, especially the elderly. Additionally, they reported on the need to support a firm addressing this issue, at least by making their voice heard.

'We even discussed in a meeting what to do. There are rumors about a mobile app to be launched on an online store; this app should create the chance to report the problems you encounter through direct communication with the local agency. Unfortunately, these ideas were not implemented.' [interview n. 9]

'We had the chance to arrange a report with photos showing where the paving stones represented a problem. An old man fell down a few days ago because of a broken paving stone. We sent the photos, but nothing happened.' [interview n. 17]

People

Regarding 'people', the most recurring words refer to areas (e.g., the province), actors (e.g., social groups), local institutions (e.g., the city council), local places (e.g., Linares, Baeza, or Jaén), activities, and words describing what people ask for or complain about (e.g., support and needs).

The qualitative cluster analysis initially offered an unsatisfying result. Thus, the authors considered only 20 words. The two analyses are represented, one above the other (Figure 7).
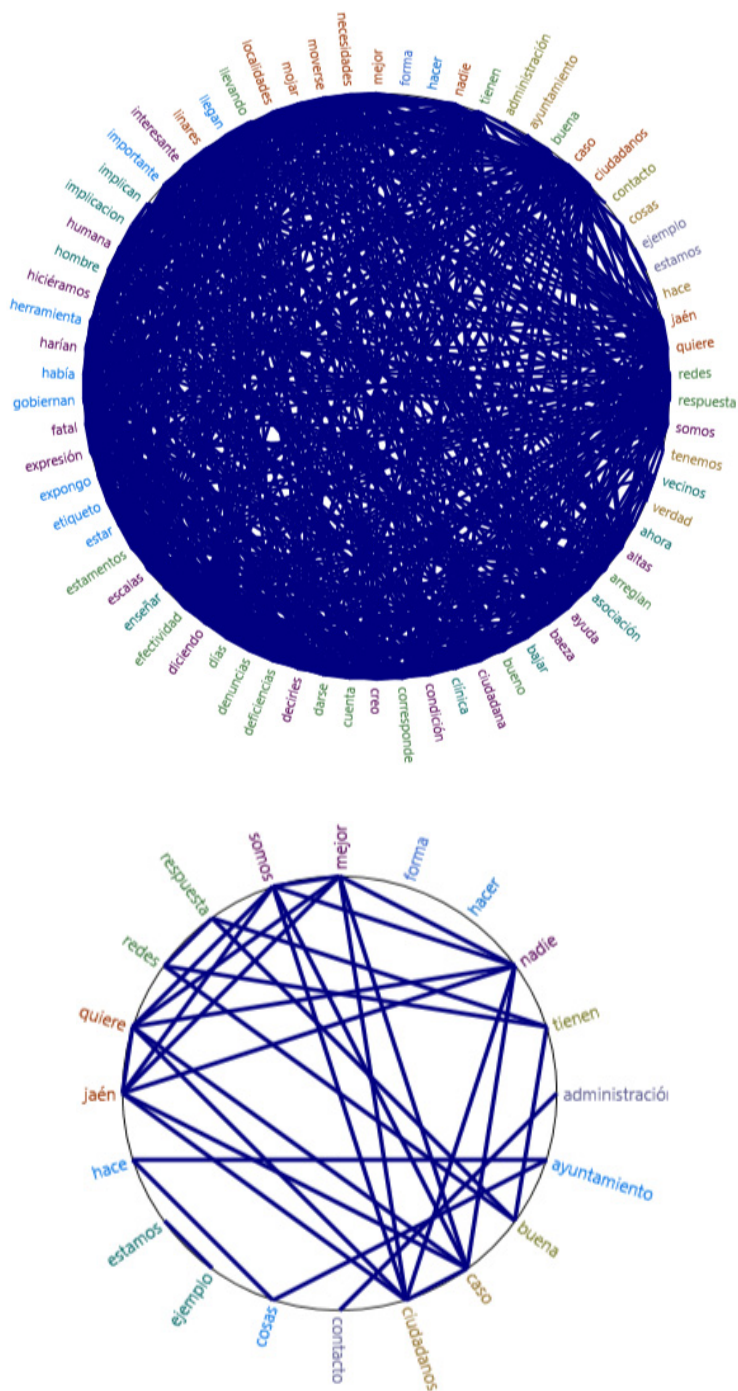
Figure 7: Qualitative cluster analysis of 'people'
(70 most frequent words – up; 20 most frequent words – down)

The characteristic 'people' led to the highlighting of various ties, such as 'ciudadanos' +Jaén (citizens), 'quiere'+'ciudadanos' (like), and 'redes'+'respuesta' (networks and answer).

The first ties describe citizens acting with local agencies for their city or positively evaluating ideas or reporting issues at a regional or national level (thus showing participation in governance) and appreciating the efforts undertaken. Some excerpts offer additional details, including discrepancies between the local level and the wider territory:

'It would be interesting and useful to show at the higher level of the government system what we need. This would solve our doubt about what our local government agencies are doing for us, namely, if the central government is aware of what we need. Moreover, we know our city is less considered by the central government, so our participation for our city may produce an effect.' [interview n. 14]

'We are all interested in the future of our block, no doubt about that. Anyhow, just 20-30% of the citizens in this area are really involved, especially the ones joining local associations. Even in that case, just one out of four would join meetings outside the association itself.' [interview n. 1]

Finally, the interviewees were aware of the potential of new media, as they cited social networks as instruments to empower their reports and deliver them directly to local agencies. The following quote clarifies this evidence: 'Nowadays we have a very powerful instrument: social networks. I got reports from other citizens and I forwarded them to the network to spread the news around. To do that, I always tag the representatives of local agencies. It is better if I know who supervises a certain issue. It is really effective; there are often answers, even if sometimes the issues are not solved.' [interview n. 2]

5. Discussion

In general, the local association representatives mostly highlighted two-speed development both inside the same town (or among different areas or neighborhoods) and between the main cities and the town or villages. These differences mirror what scholars theorized as 'splintering urbanism' (Graham and Marvin, 2001; Vanolo, 2014). Furthermore, several differences in the efforts undertaken to favor local development and an improvement in QoL have been highlighted in different areas of the city of Jaén. The associations stressed that local administrations focus too much on improvements in the new areas, leaving out (partially) the historical center and the poorest neighborhood. The lack of support from public administrations and the low level of public investment are among the most critical issues the interviewees mentioned. Another critical issue is the management of the natural environment, especially regarding waste management and street cleaning; similarly, the interviewees often mentioned the poor quality of buildings and blocks in the poorest areas and stated that they needed more care and refurbishment.

Other often-mentioned issues, highly affecting people's QoL, are unemployment and the difficulties involved in carrying out business, often due to the lack of support among local administrations.

Regarding two-speed development and splintering urbanism, the connections among the different geographical areas hinder the growth of some towns or surrounding blocks; moreover, concerning mobility issues, citizens complained about congestion and public transport, though the parking areas were quite appreciated.

Finally, local associations underlined the fact that citizens are even more positively evaluating the idea of proposing ideas and potential solutions at a regional or national level; they act as a channel to connect single citizens and local administrations. On the other hand, the interviewees mentioned that it is difficult to communicate and be involved in administrative decision-making processes; they wished to be more involved in the future.

In conclusion, the results pointed out that rural areas and historical areas are the most unfavored in smart development, affecting the smartization of the whole province. It must be considered that rural areas are a necessary component of living spaces for the population, as this aspect is gaining attention both in the documents of EU institutions and in research, stressing the need to enhance and maintain rural areas' viability. This latter is ensured—or at least facilitated—by employment opportunities and residents' readiness for active and innovative economic activity (Rivza and Kruzmetra, 2017).

6. Implications

6.1. Theoretical implications

This research is framed in the literature crossing QoL in cities and the transformation of services through the smart paradigm. Its contribution is threefold, though these results are mutually affected due to QoL.

First, public services' transformation affects various areas, leading to more complex decision-making and management. This complexity mirrors what Cialdea (2018) proposed in dealing with resource scarcity and sustainability; it is expanded because of the interplay between multiple domains. Changes do not affect single domains; rather, repercussions arise in connected issues. Mobility affects the environment and the economy; the economy impacts living; living steers governance; and so on. Therefore, although social changes have been investigated (Gupta *et al.*, 2019), these interplays are more evident.

Second, the notion of a 'smart city' is still relevant but its validity in terms of QoL is better understood with a focus on the smart territory (Garcia-Ayllon and Miralles, 2015), as the improvements in a city should be partnered with advances in the surrounding area to avoid the negative effects of splintering urbanism (Graham and Marvin, 2001; Selod and Shilpi, 2021). Thus, public service improvements should be aimed at achieving sustainable balanced development as invoked by Robledo *et al.* (2014) and Navío-Marco *et al.* (2020). Such unbalanced progress occurs in multiple ways, jeopardizing smart transformation goals. This depends on what citizens experience and perceive in comparing areas, providing advances in studies about rural areas and municipalities (Desdemoustier *et al.*, 2019). This work confirms the existence of splintering urbanism that scholars (Graham and Marvin, 2001) highlighted as a phenomenon usually appearing in territorial transformation or smartization. However, unlike what has occurred in practically all extant

research (see Coutard, 2008), it is based on the opinions of neighborhood association representatives. Specifically, the same applies to the same town or village, between different towns, and between the capital city and some of its towns.

Finally, in line with the above contribution, people—mainly citizens and their associations—experience changes in QoL, so they can facilitate change if they are heard; currently, it is hardly like this, though it might be useful according to scholars (Charalabidis and Theocharopoulou, 2019) and as this research confirms in multiple ways and areas. In any event, there is a lack of understanding on how to shape a level concretely affecting changes in cities, namely, a meso level acting as an agent between citizens and local agencies.

6.2. Practical and policy implications

From a practical perspective, the authors encourage the creation of initiatives that nudge local governments. Living Labs emerged to develop proposals to solve—or at least alleviate—problems affecting both the city and rural areas. This arises even more significantly in a 'smart territory' regarding bringing intelligence to the cities while stressing the need to integrate rural areas into a complex system.

Thus, citizens' associations can represent levers catalyzing the change, as they create new ideas based on their experiences, perceive changes in QoL, and make decision-making easier. Regarding the latter, technology might be considered a plus and not a not-to-be-missed feature. This consideration stresses the human side of cities' transformation and should inspire mayors and local decision-makers to seek solutions to increase citizens' participation in suitable and multiple ways favoring social inclusion and avoiding polarization. Public services and smart initiatives cannot be developed without citizens' collaboration, as their voice allows for the detection of information, perceptions, and evaluations. For this reason, and as in previous calls for research, the authors chose to consider a whole province and not only the 'city'.

This research also provides guidelines at the macro level because institutions should support processes leading to improvements in QoL, as the European Union stated (European Union, 2010). The acknowledgment of a role for local associations encourages their activities and paves the way to a knowledge-sharing approach, not only in terms of big data and data collection as in most contributions but also concerning ideas and perceptions to be integrated on-site.

7. Limitations and further research

This research is different from others based on politicians' perspectives, which tend to highlight improvements and advances but not the remaining problems, obstacles, and pending deficiencies that must be overcome to achieve complete territorial smartization. The distinctive element of this study is the category of the actors considered: the local association of citizens, an intermediate level between citizens and local administrations. Consequently, this work breaks from extant research, as the degree of smartization of a territory was usually analyzed based on the opinions of political leaders and public

administrations (Chumakova, 2017) and not of citizens. On the other hand, although this study is based on insightful interviews with local actors, the information they provided is likely biased because of the interviewees' potentially subjective perceptions of the politicians.

To deepen the results, another phase can be performed: fostering direct confrontations and debate among the representatives of the associations. Accordingly, the results can establish a basis upon which to create other initiatives to stimulate collaboration, involving several categories of actors to discuss proposals and critical issues to be solved to facilitate local development. Finally, other research contexts can be considered, aimed at shaping a framework to provide a theoretical contribution aside from the practical one.

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Annex 1

Smart city pillars	Semi-structured interview topics	Main references
Smart Economy	Entrepreneurship, productivity, and trade	Rivza and Kruzmetra (2017); Chumakova (2017)
	Labor market	
Smart Environment	Waste management and sustainability	Garcia-Ayllon and Miralles (2015); Kabisch *et al.* (2018)
	Public green spaces	
Smart Governance	Citizens' participation in decision-making	Robledo *et al.* (2014); Khan *et al.* (2017); Horgan and Dimitrijević (2019); Nguyen *et al.* (2022)
	Availability of local administrators	
Smart Living	Culture (education, tourism, sport, and leisure)	Jucevičius *et al.* (2017); Kabisch *et al.* (2018); KPMG (2018)
	Safety (security, health safety, housing quality)	
Smart Mobility	Accessibility, traffic congestion, and mobility infrastructures	Graham and Marvin (2001); Giffinger *et al.* (2007); Vanolo (2014); Garcia-Ayllon and Miralles (2015)
	ICT infrastructures	
Smart People	Social inclusion and gender issues	European Union (2010); Martin *et al.* (2018); Gupta *et al.* (2019); Horgan and Dimitrijević (2019); Wang and Clarke (2021)
	Participation in public life	