Urban governance in action: Citizen participation in European smart city experiences

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Abstract: In this paper we present a descriptive analysis on how participation has been conducted and promoted in European smart city initiatives and whether those cities that lead urban governance projects advocate for increasing and enhancing the interactions between citizens and local governments. For such purpose, we analyze a total of 108 smart city initiatives from 61 cities of 19 countries, reported in the EUROCITIES Network, according to several variables, such as the addressed smart city dimensions and actions, followed participation types and levels, and used participation tools. Among other issues, we identify a number of citizen participaiton patterns that may be attributed to the administrative culture of the countries where the initiatives where implemented.

Keywords: Smart city, citizen participation, urban governance, EUROCITIES Network.

1. Introduction

In recent years, societies are undergoing a redistribution of power (Meijer, 2016). Specifically, in the smart cities (SC), new forms of collaboration have emerged through ICTs, involving different stakeholders in the decision making arena (Meijer & Rodríguez Bolivar, 2016). This way, ICTs facilitate the transition from traditional forms of government to models of governance with participation dynamics that have changed the relationships between governments and citizens (Brynskov et al., 2014; Willems et al., 2017).

These new models of governance create innovative environments where, through the co-creation of public services, the citizens' quality of life has increased (Rodríguez Bolívar, 2018). Despite of this, there is a lack of understanding of how such models are taking place in the SCs. Although urban governance can be considered as the core and most important challenge of SC initiatives, the fact is that there is a discrepancy on which governance models work and which do not (Smith, Macintosh, & Millard, 2011), and there is a need for investigating the strategies that

governments have followed with respect to citizen participation. In this context, as Rodríguez Bolívar (2018) highlights, the models may differ according to the political and administrative culture where public administrations are embedded. Indeed, although in the European Union all public administrations share the values associated with democracy and the rule of law, the national administrative culture tends to produce important differences in the operationalization of management-oriented principles in public administration (Thijs et al., 2018), in the way that governments are implementing new technologies into their procedures and actions, and in the way that SCs provide information transparency to citizens (Rodríguez Bolívar, 2018).

Hence, in this paper we aim to study how participation initiatives are taking place in the European SCs to achieve a full integration of citizen engagement in public management. For such purpose, we first analyze the empirical experience of citizen participation initiatives in European SCs and obtain a preliminary view of how citizen participation and governance models are characterized. Then, we analyze if the SCs that more prone to introduce innovative governance mechanisms on citizen engagement, as well as those located in European countries with different administrative cultures, have different patterns of citizen participation. We thus seek to analyze the dynamics that citizens have in public sector management to know if SCs are oriented towards real smart urban governance (Meijer & Rodríguez Bolívar, 2016).

To achieve these aims, this paper deals with the following three research questions:
- RQ1. How can citizen participation be characterized in European SCs?
- RQ2. How has citizen participation been promoted in European SCs?
- RQ3. To what extent urban governance working groups in European SCs are promoting different patterns in citizen participation?

In order to answer these questions, we have collected participation initiatives from the SCs that are members of the EUROCITIES Network, which is formed by European cities that, among other issues, coordinate working groups aimed to develop cohesion policies in cities. To answer RQ3, we have focused our analysis in distinguishing SCs members of the EUROCITIES Network that are working in the "urban governance" group.

2. Data collection and empirical methodology

2.1. Data collection

We consider a large number of European SC initiatives entailing some kind of citizen participation through case studies reported by the EUROCITIES Network. As far of March 2019, the network is formed by local governments of over 140 major European cities, and is aimed to offer a platform for sharing knowledge and exchanging ideas. Through 8 thematic forums –cooperation, culture, economy, environment, knowledge society, mobility, social affairs, and urban governance–, the network website provides information about working groups, projects, activities and events.

More specifically, to capture the data about the reported case studies of participation initiatives in SCs member of the EUROCITIES Network, we implemented and executed a computer program

to automatically download and process all the web pages in the EUROCITIES Network platform, publicly available at the end of December 2018. Each case study was identified by the following data: title, description, publication date, forums, and related issues. After that, by means of another computer program, we identified the case studies whose titles or descriptions contained certain keywords that correspond to participative initiatives. In particular, we defined two sets of keywords, and required that, at least, one keyword of each group had to appear in the titles/descriptions of the case studies selected for analysis. The first set contained keywords related to citizen participation, such as citizen* participation , citizen* collaboration, citizen* engagement, electronic participation, e-participation, co-participation, co-production, co-creation and co-decision. The second set, much simpler, just contained the keyword smart cit*.

As a result of this retrieval process, we finally built a dataset with information provided by the EUROCITIES Network about 108 smart city initiatives in 61 cities from 19 countries. Next, we list the considered SCs (and their numbers of initiatives), grouped by administrative cultures or traditions of the countries on which the SCs are located.

- **Scandinavian countries and SCs**. Denmark: Copenhagen (2); Finland: *Tampere* (4), Oulu (3), *Helsinki* (1); Sweden: *Gothenburg* (6), Malmo (1), *Stockholm* (1).
- **Anglo-Saxon countries and SCs**. UK: Birmingham (2), *Glasgow* (2), *Leeds* (2), Belfast (1), Brighton (1), Edinburgh (1), Liverpool (1), Newcastle (1).
- **Germanic countries and SCs**. Austria: Vienna (5); Germany: *Munich* (3), *Dortmund* (2), Leipzig (2), *Berlin* (1), Cologne (1), Dusseldorf (1), Hamburg (1); The Netherlands: *Amsterdam* (2), Rotterdam (2), Almere (1), Eindhoven (1), *The Hague* (1).
- **Central-Eastern countries and SCs**: Bulgaria: Sofia (1); Croatia: Solin (1), *Zagreb* (1); Moldova: Chisinau (1); Poland: Gdansk (2), *Warsaw* (2), Bydgoszcz (1), Krakow (1); Slovenia: Ljubljana (3), Maribor (1).
- **Southern countries and SCs**: Belgium: Ghent (4), Ostend (3), *Antwerp* (2), *Brussels* (1); Cyprus: Nicosia (1); France: *Nantes* (4), Rennes (3), Lille (1), Lyon (1), Nancy (1); Greece: *Athens* (2); Italy: Bologna (2), Milan (2), Genova (1), *Rome* (1); Portugal: Braga (1), Funchal (1); Spain: Barcelona (3), Gijón (3), Málaga (2), *Madrid* (1), Valladolid (1), Zaragoza (1).

2.2. Empirical methodology

Three types of variables have been categorized to capture data for each of the selected initiatives. These variables, named "contextual", "smart city-related" and "participation-related" variables, allowed us to operationalize the data, enabling the analyses of the research questions of this paper. The **contextual variables** aim to contextualize the analysis according to the locations (cities and countries) and implementation time (year) of the initiatives. Based on prior research (Ongaro et al., 2018; Rodríguez Bolívar, 2018), we consider the administrative culture types of European countries to classify the analyzed SCs**,** namely Scandinavian, Anglo-Saxon, Germanic, Central-Eastern and Southern countires. The implementation years of the selected initiatives ranges from 1992 to 2018, and showed a greater, constant increment since 2015.

The **smart city-related variables** allow describing the issues addressed by the SC initiatives. In this case, we consider the dimensions proposed by Giffinger et al. (2007): Smart economy (ECO), Smart

environment (ENV), Smart mobility (MOB), Smart governance (GOV), Smart living (LIV), and Smart people (PEO). For each dimension, we also considered the "actions" (i.e., problems, challenges) addressed by the initiatives.

Finally, **participation-related variables** characterize the citizen participation conducted in the initiatives. The first variable refers to the level of participation achieved in the initiatives, which distinguish different degrees of interaction between stakeholders. In our study, we have taken three levels of participation into account, namely petition level –which occurs when the target stakeholders show their interests in specific city issues–, discussion level –in which the stakeholders are consulted about their opinions–, and collaboration level –which corresponds to a more intense degree of participation where stakeholders are part of the decision making. The second variable included in our study is about the type of participation. Specifically, the participation can be "open" or "selected", depending on the open or restricted access in which stakeholders can participate. Finally, as the third variable, we have considered the participation tools, i.e., the instruments and channels used by the stakeholders in the initiatives. Within the variety of identified tools, we find both human-driven (e.g., meetings, working groups, and social events), and electronic (e.g., e-participation platforms, social media, and Open Data) tools.

3. Analysis of results

3.1. Scope of citizen participation in smart city experiences

RQ1 analyzes where and how participation initiatives have been implemented. SCs in German countries do have the highest rate of participative initiatives reported in the EUROCITIES Network –23 initiatives from 13 cities–, followed by SCs in Southern countries, with 42 initiatives from 23 cities. The countries with more initiatives are Germany in the Germanic administrative culture, and Spain, Belgium and France in the Southern region. At city level, we observe a high interest in implementing participation initiatives for improving citizen participation by Southern cities as Barcelona, Ghent and Nantes, and Germanic cities as Vienna and Munich. Within the Scandinavian countries, Finland –leaded by Tampere– and Sweden –leaded by Gothenburg– also show a relatively high number (8) of participative experiences. As Spain and Germany, UK –which is the only Anglo-Saxon country appearing in our evaluation sample– presents 11 initiatives, showing the strong emphasis of its smart cities on making government open and close to citizenry needs. Birmingham, Glasgow and Leeds are examples of such cities. Finally, Central-Eastern countries are the least represented in the EUROCITIES Network in terms of participative initiatives. Nonetheless, they have several SCs that show relatively high interest in citizen participation such as Ljubljana in Slovenia, and Gdansk and Warsaw in Poland.

With respect to the SC dimensions of the participation initiatives, Smart People (PEO), Smart Governance (GOV) and Smart Living (LIV) are the most frequent dimensions in the initiatives. This was expected for GOV since, as explained in Section 2.1, the surveyed initiatives were obtained from the EUROCITIES Network website by means of a keyword-based query related to citizen participation, considered as one of the main goals of smart governance projects. In fact, the

top 3 GOV actions identified in the analyzed initiatives were bottom-up processes coordinated by municipality (e.g., *Can Local Aspirations Change the World?* initiative in Antwerp), participation in decision making (e.g., *OpenBorough* project in Amsterdam), and complaints and suggestions (e.g., *Youth Election Project* in Berlin). Southern countries –mainly Spain, France and Italy– are those that put the strongest emphasis on GOV. Regarding PEO, Southern countries, followed by Germanic countries, are those that implement more participation processes, mainly oriented to social inclusion policies and actions, such as cultural pluralism (e.g., *A City for All* project in Barcelona), gender equality (e.g., *Shared productions* initiative in Nancy), and pro-poor growth (e.g., *Ghent: Bridges to, on and from The Site* in Ghent). Apart from these countries, Scandinavian and Anglo-Saxon countries show the highest relative percentage of participative initiatives for the LIV dimension. Local cultural programs (e.g., *Brighton & Hove Shapes Future through Creativity* project in Brighton & Hove), family and children aid (e.g., *Project Filur* in Stockholm), long term unemployment (e.g., *Tackling Unemployment at Local Level* in Newcastle), and immigrant services (e.g., *Leeds boosts migrant support* project in Leeds) are among the most popular actions in this case.

Smart Environment (ENV), Smart Economy (ECO), and Smart Mobility (MOB) are the dimensions that show less participative initiatives. For ENV, France (as Southern representative), and The Netherlands and Germany (as Germanic representatives), followed by Finland and Sweden (as Scandinavian representatives) are the countries with the highest number of initiatives. In this case, the most popular actions are the involvement in sustainable activities (e.g., *Lyon develops flagship smart city district* initiative in Lyon), tools for behavioral change (e.g., *Sustainability street by street* in The Hague), and policies and systems to involve people in energy consumption and sustainability of buildings (e.g., *Lille Promotes Circular Economy Construction* project in Lille). With respect to ECO, there are no significant differences between the regions, but Southern countries do have the lowest percentage of initiatives in comparison to the other dimensions. The main goals in this dimension are the creation of entrepreneurial environments and infrastructures (e.g., *Munich Develops Flagship Smart City District* in Munich), actions to foster cooperation between administration, businesses and education (e.g., *Brainport Eindhoven* in Eindhoven), and policies, plans and infrastructures for enhancing innovation (e.g., *Reuse System for Furniture and Equipment* in Brighton & Hove). Finally, in MOB, our research sample presents the lowest number of initiatives. Scandinavian countries, leaded by Denmark, are those that put more emphasis on citizen participation in mobility actions. Clean energy in traffic and parking (e.g., *European Platform on Sustainable Urban Mobility Plan* in Copenhagen) and cycling options (e.g. *Cycle Superhighways* in Copenhagen) are the most popular actions in this dimension.

Regarding the participation levels achieved by the initiatives, we identify 3 main groups of SCs. The first group is composed by SCs located in the Germanic countries, which present the relatively highest percentage of initiatives at petition level. The second group would be composed of SCs located in countries where the number of initiatives at collaboration level is higher than at the other levels. In this regard, SCs located in Scandinavian countries, such as Sweden and Finland, and SCs in the Anglo-Saxon tradition, UK, are included into this second group. Finally, the third group would be formed by SCs located in countries in which the discussion level takes a relatively higher interest. Poland in the Central-Eastern region, and Belgium, France and Italy in the Southern region, are representatives of such group.

## 3.2. Promotion of citizen participation in smart city experiences

Addressing RQ2, we collected information about the participation types (open/selected) in the sample selection case studies. In this regard, we observed a superiority of open participation over selected participation (the former is followed by 65.7% of the analyzed initiatives). SCs in Scandinavian, Anglo-Saxon and Central-Eastern countries show similar preferences for open and selected participation processes, whereas SCs in Southern and Germanic countries promote (much) more open participation initiatives than selected participation initiatives. More specifically, SCs in Belgium, France and Spain, followed by SCs in Italy and The Netherlands, are the sample cities with the highest number of open participation processes.

Regarding participation tools, ad hoc e-platforms and social media as electronic tools, and meetings, talks/seminars, workshops, social activities and working/discussion groups, as human-driven tools, represent the top participation instruments in all SCs. There is not a clear preference for any of such types of tools. As more fine-grained aspects, we notice that digital devices/displays/maps only appear in initiatives of SCs in Scandinavian countries, meetings and social activities are of special interest for SCs in Anglo-Saxon and German countries, and workshops have significant importance in SCs in Central-Eastern and Southern countries.

3.3. Urban governance through citizen participation in smart city experiences

To address RQ3, we conduct an analysis comparing the SCs of our sample that are involved in the Urban Governance forum of the EUROCITIES Network (UGCs) (these cities are in italics in Section 2.1) against the rest of the sample SCs. UGCs represent 31.1% of all sample cities and implement 35.2% of all participation initiatives. On average, UGCs undertake 2.0 initiatives per city, whereas non UGCs present 1.7 participative initiatives per city. SCs in Scandinavian and Germanic countries are the ones that relatively have more UGC: 57.1% and 38.4% respectively. They are followed by SCs located in Southern (26.1%), Anglo-Saxon (25%) and Cen-tral-Eastern (20%) countries. Fig. 1 shows the percentages of UGCs and non UGCs initiatives that address each smart dimension, participation level, and participation type used in RQ1 and RQ2. The horizontal line indicates the percentage of UGCs (31.1%) with respect to the total number of cities.

Figure 1: Percentages of initiatives implemented by UGC and non UGC, addressing each smart city dimension (i.e., ECO, ENV, MOB, GOV, LIV and PEO), participation level (i.e., petition, discussion and collaboration), and participation type (i.e., open and selected).
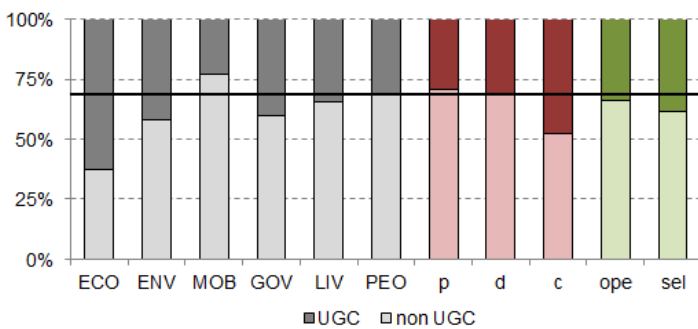
Regarding smart city dimensions, we first observe that UGCs implement 62.5%, 42.1%, 40.0% and 34% of the total ECO, ENV, GOV and LIV initiatives. These results reveal that SCs located in those European cities are considered to promote urban governance in a higher degree and implement a significant number of innovation initiatives entailing participation. In particular, core actions of these cities are the creation of entrepreneurial and innovation environments, infrastructures, policies and plans, as well as business and commerce networks at the ECO dimension (e.g., *Grondstoffen Collectief Almere* project in Almere), policies and systems that involve people in energy consumption and sustainability at the ENV dimension (e.g., *Sustainability Street by Street* in The Hague), and bottom-up processes coordinated by municipalities, participation in decision making, and collaborative production of services at the GOV dimension (e.g., Decide *Madrid* in Madrid). At the LIV dimension, we also find initiatives aimed to enhance the interconnection between government and other stakeholders, such as citizens, ONGs and universities (e.g., *Investing in Children and their Families* in Nantes).

As for the participation levels, Figure 1 shows that UGCs implement a high percentage (47.6%) of the initiatives at collaboration level, which reinforces the idea that UGCs put citizen participation into practice. Regarding the participation types, there are no significant differences in the number of open and selected participation initiatives. The slightly greater percentage of selected participation initiatives is due to the fact that 47.3% of the UGCs belong to the Scandinavian and Germanic administrative cultures, which, as discussed in Section 3.2, have leaded the use of such type of participation.

Finally, as an additional indicator of the high citizen participation in UGCs, we also consider the percentage of initiatives involving government with other stakeholders. For non UGCs, we identified that 58.8% and 54.4% of the initiatives considered government interactions with citizens and business actors, respectively. For UGCs, on the other hand, such percentages were higher: 70.3% and 56.8% for citizens and business actors, respectively.

4. Conclusions

Analyzing 109 case studies from 61 cities of 19 countries reported by the EUROCITIES Network, we have shown that specific national administrative cultures, traditions and management trends have implications for participation initiatives. In this regard, SCs in Southern countries, followed by SCs in Germanic countries, represent the European SCs where open participation has been most promoted; predominantly at the petition and discussion levels, and mainly focusing on Smart People and Smart Governance actions, such as social inclusion policies, and bottom-up processes coordinated by municipality, participation in decision making, complaints and suggestions.

We have also found that, in contrast, SCs in Scandinavian and in Anglo-Saxon countries more advocate for selected participation processes, and achieve the collaboration level in a higher degree. The former are the countries that put more emphasis on Smart Environment and Smart Mobility actions, whereas the latter focus on Smart Living actions, like local cultural programs, family and children aid, long term unemployment, and immigrant services. Finally, our analysis has revealed that SCs in Central-Eastern countries, with a relatively low number of participative

initiatives for all smart city dimensions, tend to conduct open and selected participation at petition and discussion levels. With regards the SCs that are leading urban governance in the EUROCITIES Network, our findings show that such cities put in practice a relatively high number of participation initiatives where citizens play a key role of the initiatives, mainly for the Smart Economy, Smart Environment and Smart Governance dimensions.

Future research should develop our study in depth considering additional factors that may promote and engage citizens to be active participants in SC projects and policies. In particular, we propose to analyze the stakeholders involved in the initiatives, as well as the relationships between them. We plan to characterize (if any) the feedback given by government and citizens during and after the participation processes. Moreover, we would like to go further in our analysis, and investigate the effects and impact that citizen participation has on the urban governance of SCs. For this purpose, the citizens' opinions in social networks and the news published in the media may be valuable sources of information. Measuring user engagement metrics and the analysis of the participation tools are more effective for the interactions could help on that purpose (Cortés-Cediel et al., 2018).

References

Brynskov, M., Carvajal Bermúdez, J. C., Fernández, M., Korsgaard, H., Mulder, I. J., Pis-korek, K., De Waal, M. (2014) *Urban interaction design: Towards city making*.

Cortés-Cediel, M. E., Gil, O., Cantador, I. (2018) *Defining the engagement life cycle in e-participation*. Proceedings of the 19th Annual International Conference on Digital Government Research, Article 93

Giffinger, R., Fertner, C., Kramar, H., Meijers, E., & Pichler-Milanović, N. (2007) *Ranking of European medium-sized cities*.

Meijer, A. (2016) *Smart city governance: A local emergent perspective*. Smarter as the New Urban Agenda, 73-85.

Meijer, A., Rodríguez Bolívar, M. P. (2016) *Governing the smart city: A review of the literature on smart urban governance*. International Review of Administrative Sciences, 82(2), 392-408.

Ongaro, E., Van Thiel, S., Massey, A., Pierre, J., Wollmann, H. (2018) *Public administration and public management research in Europe: Traditions and trends*. The Palgrave Handbook of Public Administration and Management in Europe, 11-39.

Rodríguez Bolívar, M. P. (2018) *Creative citizenship: The new wave for collaborative environments in smart cities*. Academia, Revista Latinoamericana de Administración 31(1), 277-302.

Smith, S., Macintosh, A., Millard, J. (2011) *A three-layered framework for evaluating e-participation*. International Journal of Electronic Governance 4(4), 304.

Thijs, N., G. Hammerschmid, Palaric, E. (2018) *A Comparative Overview of Public Administration Characteristics and Performance in EU28*.

Willems, J., Van den Bergh, J., Viaene, S. (2017) *Smart city projects and citizen participation: The case of London*. Public Sector Management in a Globalized World, 249-266.