

# The role of citizens in transforming cities into smart cities: The case of Greece\*

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## Abstract

In recent years, the concept of "smart cities" has increasingly emerged. Various issues are explored regarding their development in both international and domestic literature. One of the most popular issues at the center of research is the participation of citizens at every stage of urban development. However, although the literature recognizes the value of citizen participation, ultimately little research has been conducted regarding the actual practices of citizen participation and the responsiveness of relevant policies to their real needs. From this point of view, the present work aims to investigate the degree of citizen participation in Greek "smart cities" under development, based on bibliographic data and sources. In the Greek literature it is observed that the expected contribution of citizens during the development of smart cities is small. New technologies are used as a means to guide citizens, change their behavior and accept public services and projects. Therefore, conducting research on city representatives involved in the decision-making process regarding the transformation and development of cities into smart cities is deemed necessary and essential.

## Keywords

Smart cities, citizen participation, Greece

## 1. Introduction

In recent years, the concept of the "smart city" has been widely discussed both in the field of research and in self-identification as smart. The various definitions recorded are often related both to the perspective of the researchers and to their research field [1].

Although the interest of smart cities was initially closely linked to new technologies to solve various urban issues [2], the interest soon shifted to citizens and how they can contribute to shaping policies in developing smart cities [3]. Indeed, there is increasingly a growing focus on the role of citizen participation in the development of smart cities as they are recognized as important actors in the aforementioned process. However, the question of mobilizing citizens and their active participation during the planning and development of smart cities is often related to the benefits they can enjoy from the projects during the development of smart cities [4,5].

In addition, digital participatory planning [6,7], as well as the role of governments, play a central role in the aforementioned process, in addition to citizen participation. In particular, the role of the governors is important during the development of smart cities, since they will cultivate the enthusiasm of citizens to participate in the development process during the construction of smart cities [4,6,8].

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\* Short Paper Proceedings, Volume I of the 11<sup>th</sup> International Conference on Information and Communication Technologies in Agriculture, Food & Environment (HAICTA 2024), Karlovasi, Samos, Greece, 17-20 October 2024.

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Therefore, it is particularly important to investigate the factors that influence citizens' willingness to participate in the transformation of cities into smart cities, as well as the quality and degree of their participation.

The purpose of this paper is to investigate the extent to which the Greek literature has focused on citizen participation, mainly in decision-making for the formation of a smart city and secondarily in the smart services that are available.

## **2. Outlining citizen participation in smart cities**

Today, most research on smart cities has focused on the 'supply side', i.e. the smart actions provided by cities. On the other hand, there is limited research on the "demand side", i.e. the actions of each smart city that citizens find useful, valuable and important [9].

The participation of citizens in the management of a smart city is essential for its proper development [10]. Citizens are the fuel and foundation of smart cities in order for them to function and grow [11].

Citizen input is recorded at various phases/stages of a project, including research, conceptual approach, design, construction and operation [12]. Within cities, citizens assume active roles by providing experiences, knowledge and data, actively participating in democratic processes [13] and making decisions on issues that concern them [14].

In this context of communication and interface between citizens and leadership, modern technological means and infrastructures play a decisive role, facilitating and speeding up individual communication processes [1, 15]. In particular, social media are important tools, which enhance the activation of citizens, ensure their engagement and participation [16], offer information about their preferences, popular topics of discussion [17], their needs and priorities [18].

In addition, city governments play a key role in the formation of smart cities as influencers [19], but also as custodians of processes of transparency, cooperation and participation of citizens and government [20]. According to research by Eskelinen, García Robles, Lindy, Marsh, Muentekunigam [21], city mayors have already understood that the best solution to develop their smart cities is to collaborate and co-create with their citizens. In addition, the administrative staff of each city must interact with its citizens, through discussions, workshops or research, on how technological changes can affect the lives and livelihoods of citizens [11].

From what has been mentioned above, it can be seen how important the contribution of all stakeholders (citizens, new technologies, governments and staff) is in order for smart cities to function and develop for the benefit of all. But a critical question that emerges and is attempted to be answered in this work is what is happening in the Greek reality? In the section that follows, we record how citizens' participation is shaped in the literature, during the transition of cities into smart cities.

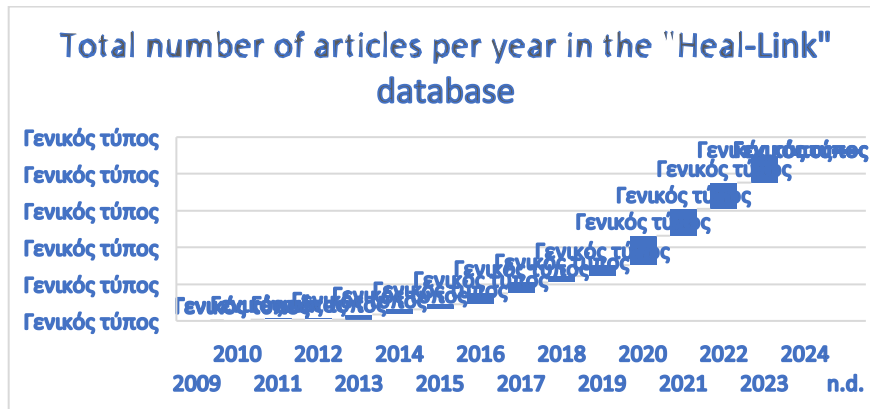
## **3. Formation of smart cities in Greece and citizens' participation**

Today, the field of smart cities in Greece seems to be a rapidly emerging subject of research. In this context, a bibliometric analysis was carried out using the Heal-Link database, which is a consortium of the Association of Greek Academic Libraries (SEAB). The interest in the application of bibliometric methods and techniques is to investigate the developments of research on smart cities which as it turns out have increased significantly in the last decade [22]. To limit the search criteria, the keywords "Smart City", "Smart citizens" were selected, both in the titles and in the keywords of the articles. There was no filtering/restriction in author, in the country of origin of the articles, etc.

The analysis showed that for the period 2009-2024, about 234 scientific articles (for the terms "Smart City", "Smart citizens") are recorded, out of the total of 4, articles for the terms "Smart City". The 1st related article was recorded in 2009 and subsequently there is a growing research interest, an increasing writing trend (Figure 1). In particular, for the year 2020 the largest number of papers

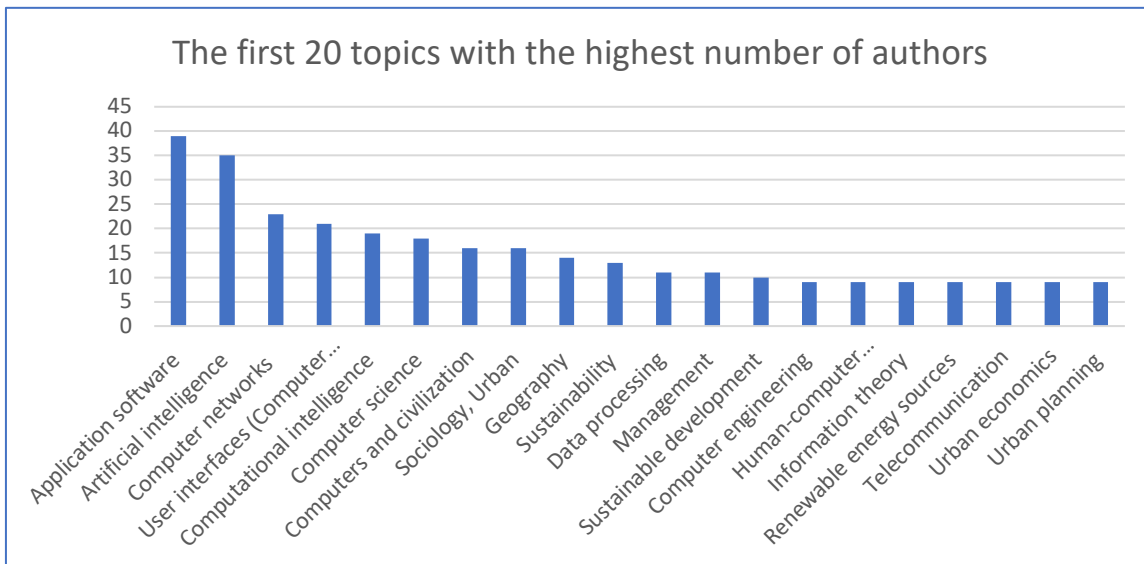
is recorded (40 papers), while in the years 2021, 2022, 2023 we have equally important writing (36, 36, & 37 papers respectively).

From these data we conclude that there is an ever-increasing interest in smart cities, with an emphasis in many cases on the participation of citizens in them.



**Figure 1:** Articles covering the body of research on smart cities & citizen participation. Source: Editing of Own Research Data

We then focused on the thematic area of the articles in order to determine where the researchers' research interest is directed. The following graph (Figure 2) lists the first 20 categories/topics with the highest number of authors. We notice that most of the writings concern topics related to new technologies and sustainability. There are few books that approach the concept of citizen participation, analyzing their views and positions.



**Figure 2:** The first 20 topics with the highest number of authors

However, we should note that there is a growing interest in the issues of smart cities in the wider academic Greek community as well. In particular, we searched in Greek institutional repositories (Digital Library, Panteion University - Pandimos, Institutional Repository of Scientific Works of the Aristotle University of Thessaloniki - IKEE, Digital Repository of the University of Piraeus - Dioni, etc.) undergraduate theses, postgraduate theses and theses with the same terms / words- keys ("Smart City", "Smart citizens").

From the analysis of the data, it emerged that the majority of the content of the writings refers to the citizens, relating them to issues of new technologies, privacy, etc. either as users or as

beneficiaries of the services, while there are few writings related to the views of the citizens during the transforming cities into smart cities.

For the needs of this work, we will focus on some of these findings. In particular, in a research by Paxinou [23], citizens seem to present a relevant training on the concept of a smart city, citing relevant examples of successful smart cities, as well as definitions thereof. In addition, in the same survey, citizens appeared to attach great importance to education, digital infrastructure and telecommunications. However, the available resources are at an early stage, they do not take full advantage of them and, by extension, they do not actively participate in the life of the city.

In a research by Tsarchopoulos [24], it is found that every original idea starts from the municipality administration, presenting the goal of improving the living standard of the citizens, without actually taking the citizens into account. In other surveys in Greece, such as that of Makrygianni, it is recorded that "it is necessary to facilitate the information and participation of citizens in the commons and for the city to acquire a strong participatory character by serving their needs". In fact, it is emphasized that this must be done in the right way, in order to avoid misunderstandings or incorrect communication. In particular, it is recorded that "the studies and actions that have already been done, have not been properly communicated or implemented so that they are perceived by the citizens" [25]. In addition, a number of studies converge on the fact that it is essential and necessary to conduct new studies focused on the needs of citizens and on whether these needs are satisfied during the smartening of cities [26].

From what was discussed above, the usefulness of researching the needs of citizens during the development of smart cities and focusing on the citizens themselves or on those who effectively represent them, i.e. the administrators - elected officials of the cities, becomes evident. However, the geographical heterogeneity and urban diversity of cities makes a single "smart recipe" for developing smart cities difficult. After all, smart thinking presupposes an understanding of the complexity of the city and its interrelated components. Therefore, we should ask ourselves what kind of city is to be analyzed and in which sector and within which context.

Citizen participation in shaping smart cities can be viewed as an evolving, technologically mediated practice shaped by various factors [27]. The lack of empirical work on existing citizen participation in smart cities makes it difficult to draw definitive conclusions [27,28].

## 4. Conclusions

Smart cities are a fresh idea in the Greek reality. Therefore, the existing literature receives a more extensive investigation regarding the role of citizens and how it is outlined during the development of smart cities.

In particular, an in-depth investigation of the ways and means used by municipalities as a whole is required in order to transform cities into smart ones and operate by providing better quality services while being more competitive in the context of the global economy. In addition, it is important to focus on the ways in which residents participate in the transformation of cities into smart cities, on the inhibiting factors of urban development, on the role of local authorities in encouraging citizen participation in the "intelligence" of cities, on the usability- friendliness of new technologies to encourage citizen participation in cities, etc.

The literature data validates the fact that in order to put the citizen at the center of smart cities, it is necessary to have a strong participation in the decision-making process and to align government decisions with the real needs of citizens, as well as a real/substantial recognition of the value of their participation [ 22,29]. Besides, important factors for achieving sustainable development include energy efficiency, reduction of carbon dioxide emissions, reduction of resource wastage and development of innovations [30-32]. In any case, the contribution of citizens to achieve the above is extremely important [33-36]. Probably, focusing on one of the Regions of the country (Greece) would have provided more qualitative results, which could then be generalized to all the municipalities of the country.

Finally, conducting research on city representatives (elected officials) involved in decision-making regarding the transformation and development of cities into smart cities, but also regarding how they deal with participatory processes, is deemed necessary and essential.

## Declaration on Generative AI

The author(s) have not employed any Generative AI tools.

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