

THE HUMAN ELEMENT IN THE CONTEXT OF SMART CITIES

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Abstract:

The smart city concept, influenced by societal changes, technology, and geopolitics, is transitioning towards a human-centered model—Smart City 3.0. Emphasizing community engagement, this model ensures that new technologies are tailored to each city's unique needs. The creation of a participatory society is essential for this approach, fostering public involvement in decision-making. Core mechanisms include public consultations and participatory budgeting, as legislated, enhancing co-management between authorities and residents. To successfully implement Smart City 3.0, it is vital to build a partnership based on mutual trust between local authorities and communities. Opinions must not only be expressed, but factored into city planning and development. Advisory bodies like city youth councils illustrate this approach, engaging youth in meaningful roles and ensuring their interests are represented. This paper investigates the vital role of community members in the creating of smart city. Additionally, the paper conducts a comprehensive review of various models of participation, evaluating their respective strengths and weaknesses within the context of smart city development.

Key words: *smart city, participation, public consultation, co-rule, human*

INTRODUCTION

The advancement of scientific research in the realm of smart cities strives to firmly emphasize the role of individuals, alongside the role of new technologies, throughout the pursuit of a new dimension of the modern city [1]. The individual, as a unit, should be at the forefront of this conceptualization, while simultaneously developing alongside growing industries, management models, or Information and Communication Technologies (ICT). Thus, the individual within the smart city process must adopt an active role. This will be feasible if the city administrators foster the necessary conditions. The foremost among these conditions is the education of society towards the active utilization of forms of social participation.

However, it is always important to remember that the primary objective of constructing a smart city is the enhancement of the quality of life of its inhabitants. This improvement should manifest in various dimensions, particularly at the individual and socio-economic levels [2, 3]. In order to be able to conclude that the authorities of a local government unit are aiming for the goal of a smart city, it is first necessary to identify the individual and collective issues of the local community, understand their needs, evaluate the current standard of living, and collectively define the future development directions. Hence, the starting point involves gathering information from the

residents, followed by actively involving them in expressing their opinions and, as a consequence, in decision-making.

LITERATURE REVIEW

The scientific development of the smart city theme has only recently begun to address the issue of resident participation in shaping the modern city. While the subject of social participation has been addressed by scholars for years, the impact of its influence on the creation of a smart city still requires research. It is therefore necessary to pay attention to the various forms of participation, how they evolve, and how this transfers to the scientific concept of the smart city. The literature on this subject does not answer many questions, particularly about how to strengthen the role of the individual in the smart city concept in practice. It is also crucial to analyze residents' engagement in legally prescribed forms of participation, especially in the context of participatory budgeting.

Understanding the role of human beings in the smart city concept necessitates tracing how this issue has changed over time through scientific research, an endeavor undertaken by [1, 2], and [4]. This will lead to the third-generation smart city concept, which focuses on resident engagement in decision-making critical for a given territorial unit. The issue and definition of the features of social

participation were presented in the literature by [5] and [6]. When establishing the framework for participation, it is important to remember that the literature, particularly emphasized by [7], has long advocated for the absence of coercion throughout the entire process.

Polish legal order leaves some freedom in choosing the form of resident engagement in city affairs. However, to strengthen this institution, it provides for a certain minimum of obligatory social consultations important for the general public, as emphasized in the literature by [8, 9], and [10]. At the same time, legal regulations indicate only the consulting role of residents in this process, as pointed out by authors [11]. For identifying the group of recipients of forms of participation presented by the legislator, defining the status of a resident is crucial, as discussed by authors [12] and [13], considering the role of bodies [14]. Specific forms are particularly discussed in the works of [15, 16, 17, 18]. For the city's development, striving for it to reach further levels of maturity, the integration of new forms of participation is essential. The benefits and usefulness of participation's development to an active form in relation to an analysis of its key features is considered by [15] and [19]. In considerations, the role of digital solutions and their impact on the smart city, addressed by [20] and [21, 22], cannot be overlooked. All these aspects, however, are united by individual engagement in shaping the smart city, both on the side of the residents and public authorities.

METHODOLOGY OF RESEARCH

This article is based on publicly available domestic and foreign literature, as well as Polish legal regulations. It also incorporates data regarding citizen budgets published in the Public Information Bulletins of selected cities. Initially, data concerning the concept of a smart city were collected, and a review was conducted to determine how the intelligent city concept has evolved over time. The second part of the study focused on enhancing the role of individuals within the aforementioned concept, particularly by examining various forms of social participation and their consequences. The research encompassed both an analysis of forms introduced by Polish lawmakers, and those that have emerged as a result of urban practices. The article also concentrates on a crucial element determining the level of smart city maturity in cities, which is the co-decision making process by the citizens themselves, including the use of modern electronic tools. Finally, an assessment was made of the impact of individual solutions on shaping the element of social participation as a domain within the smart city concept.

RESULTS

Evolution of the Smart City definition

To comprehend the role of an individual at the current level of smart city concept development, it is necessary to refer to the original assumptions behind the construction of so-called smart cities. Initially, the term Smart City was predominantly synonymous with the concept of modernity, primarily contemporary technology. This perspective

was mostly propagated by entities offering Information and Communication Technology (ICT) based solutions. In the main, companies offered cities pre-designed solutions. This does not imply that the products brought to market were subpar. However, the products themselves defined what could be suitable for a given community, instead of the community's issues determining the products a city should seek. Hence, in many instances, there was no inquiry into the real needs of the residents and whether new technologies were essential for addressing them. As a result, cities largely implemented solutions promoted by their creators. This approach to the smart city concept is considered its first generation (i.e., Smart City 1.0). Hence, this model primarily concerned technology and infrastructure.

A second-generation Smart City (Smart City 2.0) is recognized as such where local authority implements new solutions based on its assessment of local community needs. The change entails that external entities no longer dictate the city's needs; instead, city managers create a vision of development based on strengths and weaknesses. Technologies are thus considered supportive tools for its realization.

Smart City 3.0 significantly shifts the approach to intelligent city building. The focus is less on new technologies and more on social capital. Development concepts are not created by the authority, but by residents themselves, entrepreneurs, representatives of the third sector, or other stakeholder groups. The goal is to improve living conditions using new management techniques or new ICTs, but not these alone. The key element of this generation is the individual and the bonds they create among different social groups. Hence, participation, a grassroots form of decision-making, becomes vital. In this framework, local authorities play the role of project coordinators. At this level, emphasis is placed on social, equality, and educational issues. Citizens' positions rise mainly due to their growing self-awareness, primarily leading to a mental shift [1]. In this model, active residents co-create the way cities function, and the local authority is tasked with facilitating the use of their diverse potential. Concurrently, education is promoted and encouraged to use modern solutions, such as e-services [2]. A close linkage develops where both the authorities are close to the residents, and the residents are close to the authorities. Therefore, in this model, it is essential to develop tools facilitating this two-way communication [4].

Social Participation as the Foundation of Smart City 3.0

The new generation of smart cities places human beings at the core of its interests. It involves citizens who, by building various forms of social communication, participate in the co-management of the city. The fundamental manifestation of this interaction is social participation, a process carried out through a variety of tools where representatives of society influence local government decisions that directly or indirectly impact their interests [5]. Social participation is based on a bilateral communication between local government representatives and residents.

It primarily allows for understanding the needs of the local community and fostering awareness of shared interests between the two groups [6]. It is important to emphasize the voluntary nature of individual engagement in city affairs. Public participation is based on the foundation of non-coercive participation in city co-management [7].

From the perspective of the development of a new generation of smart cities, elections and referendums should be the primary form of participation, involving the largest number of eligible residents. However, to achieve the flourishing of intelligent cities, it is necessary to focus on other possibilities for participation. One such form of involvement in managing a local government unit is social consultations provided for by law, which are mandatory in few instances and often do not have a binding nature. Therefore, they are seen as a kind of opinion expressed by residents. However, it is worthwhile to note participatory budgets as an intriguing and, simultaneously, binding form of social consultations for the authorities.

In the Polish legal system, social consultations find general support in the Constitution of the Republic of Poland. Article 4 of the Constitution states that the supreme power belongs to the Nation and it exercises it, either through representatives elected in general elections or directly. However, no single legislative act describes them, nor has their framework been described in detail. This is largely due to the need to adapt the forms of consultation to specific cases. These forms are diverse, and the adoption of a normative act in this regard could limit them [8]. However, it should be emphasized that at the local level, both the Act on Municipal Self-Government and the County Self-Government introduced a legal basis for conducting consultations with residents. In particular, Art. 5a of the Act of March 8, 1990 on Municipal Self-Government (i.e. Journal of Laws of 2023, item 40), hereinafter referred to as A.M.S.-G.) (respectively Art. 3d of the Act of June 5, 1998 on County Self-Government (i.e. Journal of Laws of 2022, item 1526) states that consultations with residents can be conducted in cases specified in other acts and if there are important issues for the municipality (county). In relation to these frameworks introduced by the legislator, it is worth paying attention to three elements: the premises for conducting consultations, the territorial scope, and the subjective scope. The linguistic construction of the first element might suggest that there is a possibility, not an obligation, to conduct consultations in cases provided for by law. However, it must be emphasized that these legal provisions impose an obligation to conduct them [9]. This situation might seem contrary to the essence of social participation as a voluntary form. However, it should be emphasized here that it is an obligation for local authorities to conduct them, but there is no obligation for residents to participate in them. The requirement of non-coercion thus applies to the participation of social groups. This means that if the law provides for social consultations, the public authority is obliged to conduct them. Such situations occur, for example, in the case of plans to establish a city auxiliary unit (Art. 5 para. 2 of the A.M.S.-G.) or establishing an additional place

name in the language of an ethnic minority (Art. 12 para. 7 of the Act of January 6, 2005 on national and ethnic minorities and the regional language - Journal of Laws of 2017, item 823). The facultative character of consultations applies to matters important for the local community. Matters important for the municipality will always be within the scope of tasks covered by the competence of the municipality's bodies. It should be emphasized that consultations as a rule cover matters important for the entire local community, not for individual units. Therefore, they do not occur in cases involving individual administrative acts [10]. Importantly, there is no catalogue of important matters introduced by the legislator. Thus, they will depend on the specific territorial unit. In practice, it is often highlighted that the local authorities' freedom to recognize a matter as important might be too far-reaching. However, it is worth bearing in mind that residents can request such consultations themselves. At the same time, there is no mechanism that would obligate the municipal or county bodies to actually conduct consultations at the residents' request. The territorial scope usually covers a given local government unit or part thereof. However, consultations between municipalities, for example, are possible. The territorial scope will therefore correspond to the problem or proposed solution that local authorities present to the local community.

Within the framework of the smart city concept, the subjective scope tightly intertwines two critical players: the local authorities and the residents or other groups of stakeholders. Although the current legal provisions have not fully embraced the spirit of the latest generation approach to the smart city, they distinctly emphasize the advisory and non-binding nature of social consultations [11], except for instances such as participatory budgeting in cities with district rights. It is also worth noting that the consulting body (municipal council or mayor/city president) inherently possesses the authority to decide on the method of performing public tasks. The other involved party is the residents, who are to communicate their stance to the authorities during consultations.

Considering the legislation and the arising practical questions, it becomes evident that the definition of who may belong to the group of residents or the local community is multifaceted. From the legislative perspective, the reference to residents will be closely tied to the definition given in the Civil Code. However, in practice, social consultations can take various forms, and it is crucial to remember that although decisions are made about matters within a defined territorial scope, other individuals, such as experts, may participate.

Article 25 of the Act of April 23, 1964 - Civil Code (Journal of Laws of 2022, item 1360 as amended) states that a place of residence is the locality where a person stays with the intention of permanent residence. Doctrine unanimously accepts that the place of residence is determined by two factors: the factual residence in a particular locality, the external factor, and the intent to reside, the internal factor [12]. This implies that one loses resident status only when both factors cease, for instance, long-term

absence in a given city does not predetermine resident status [13]. In many cases, participation in social consultations will also not be dependent on reaching the age of majority or having a specific citizenship.

The idea of the new generation smart city underlines the need to take into account the needs of various environments forming the city. Restricting the catalogue of people participating in social consultations would, for example, prevent listening to the voice of young people. Participation in this regard could take many forms, ranging from formalized Youth City Councils, through debates organized in schools or youth associations, to the positions of youth sports clubs.

It is crucial to highlight that the entity responsible for conducting social consultations in the city is the president as the executive body [14]. Although the legislator specifies in Art. 5a para. 2 of the Act on Municipal Self-Government that the municipal council is obliged to define the rules and procedure for conducting consultations with residents by resolution, this does not influence the group of people entitled to participate in consultations. In the content of the resolution, the authority does not have the competence to specify the categories of entities entitled to participate in social consultations [11]. This means that the legislator's intention was to involve as broad a group of people as possible in this form of social participation. The aim is to allow the local authorities to become familiar with the most accurate social opinion on the subject of consultations, such as the will of the residents.

In the new generation smart city concept, emphasis is placed on the human being, the resident, who has certain wishes or expectations in relation to the people holding positions in the authorities. Social participation, including consultations, is a way of gaining knowledge about the needs of this individual to ensure city management that takes into account the actual specifics of a given area.

The participatory budget stands as a formal dimension of consultation, as well as an actual mechanism for involving residents in the process of making financial decisions [15]. Its introduction in 2018 to the self-government acts has created a real opportunity for residents to make binding decisions regarding the creation of a part of the budget of local government units and the determination of its expenditures. This stems directly from legal provisions, which state that, within the framework of participatory budget, residents decide annually about a portion of the municipal budget expenditures in a direct vote. Furthermore, tasks selected within this budget are included in the municipal budget resolution.

It is also noteworthy that in the context of this form of consultation, the municipal council cannot remove or significantly alter tasks chosen within the framework of participatory budgeting during its work on the budget resolution project (art. 5a para. 4 of the Act on Municipal Self-Government). It should be emphasized that many Polish local government units (e.g., Zabrze, Kalisz, Krakow) have been implementing participatory budgeting as a form of consultation since 2011, especially when it was not mandatory for cities with county rights. According to

conducted research, residents' interest in participating in the voting for the selection of projects to be implemented within the framework of participatory budgeting is relatively low. However, in some cities (e.g., Zabrze, Krakow), it is gradually increasing, as shown in Figure 1 (digital sources 1, 2, 3).

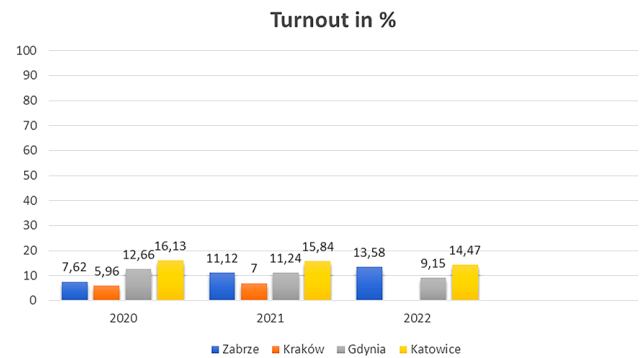


Fig. 1 Turnout of residents' participation in participatory budget voting on the example of Zabrze, Kraków, Gdynia and Katowice

Despite consultations being non-binding in nature, their outputs is information gathered from residents which should be taken into consideration by the consulting body. Importantly, when the legislator imposes an obligation to conduct social consultations, local authorities should interpret it as a real discussion with the residents about the topic and gathering their opinions, rather than merely organizing one or several meetings and considering that this fulfills the features of social consultations (Supervisory decision of the Łódź Voivode of May 5, 2000, PR-01374/15/00, OwSS 2000/4, item 101).

The form of social consultations can be flexible. For the development of society in the spirit of Smart City 3.0, it is beneficial to propose to residents various ways to express their opinions. It does not always have to take the form that is in accordance with the resolution adopted by the municipal or city council. Although it may not then be a manifestation of legally regulated social consultations, it will still fulfill the essence of the smart city concept – residents' participation in city governance.

One of the modern forms of participation that leverages new technologies are online platforms used to obtain the opinions of local communities. Currently, both groups on social media platforms and dedicated platforms commercially offered by external entities are utilized. These digital forums are indicative of an evolving landscape of public participation, providing novel ways to facilitate civic engagement in a digitally driven world.

DISCUSSION

Just as the development of the smart city concept is relatively novel, so is the notion of social participation. In the preceding sections, social consultations directly regulated by law have been discussed. Nonetheless, it is essential to remember that public participation can include all political and social practices through which citizens have the possibility of influencing public matters [16]. Undertaking actions that engage residents or stakeholder groups in

public life, particularly those leading to decision-making by authorities as a result of gathered opinions, whether at the district, municipal, or city level, falls under the newly evolving definition of a smart city. Within this model, the ultimate aim is to achieve the highest form of participation, which is not only informing about planned initiatives by offices or even consulting, but also striving for co-decision making. The most mature form of participation will be co-decision making by residents about the city's development directions. This will manifest itself in a partnership between local authorities and residents, who will be equipped with certain competencies allowing them to influence decision-making. An example of this is the participatory budget. It is emphasized that the development of this model must be grounded in legal regulations. On the one hand, this provides a genuine impact on the city's actions, and on the other hand, in the absence of regulations, it could lead to paralysis of overall actions or chaos. It is therefore necessary to define responsibilities that will simultaneously protect cities from negative consequences [7, p. 6].

It is noteworthy that in legal sciences, social participation is understood as the right of an individual or group to actively participate in the decision-making process in actions carried out by the authorities [17]. Moreover, the concept of "right to the city" not only covers the right to territory or the opportunity to use urban resources, but also the right to co-determine its development [18]. It is essential to highlight that in the developed concept of the smart city, the city strives to activate social participation, which can be divided into passive and active forms. Both types should not be treated in terms of better or worse. Although we strive for active participation, it cannot exist without the passive form. Passive participation involves the right to information, or the right to lodge complaints, applications, and petitions. Active participation, on the other hand, involves the right to express consent or opposition, but above all, it involves resolving public matters jointly with residents.

Cities striving towards the realization of the smart city paradigm underscore the role of advisory and opinion-giving bodies. These entities can be appointed by either municipal councils or the executive body, i.e., the mayor, town mayor, or president. Such bodies can range from economic councils to senior citizen councils. A remarkable example of such forms of participation and early-age inclusion in city co-management is the youth city council. The modus operandi of these councils is also subject to statutory regulations. One of the goals of establishing a youth council is to engage young people living in the area in matters significant to them [19]. Beyond its educational value, this council is endowed with actual consultative powers. The educational aspect is indispensable, as it is against this backdrop that future mature local societies are shaped, societies that should actively engage in the city's affairs. Article 5b of the Municipal Self-Government Act obligates the municipal council to adopt a statute for the youth council, which should specifically outline the principles of its operation, mode and criteria for the

selection of its members, grounds for the termination of the mandate, and removal of a council member. However, the competencies attributed to the council are critical, particularly:

1. submitting legislative initiative proposals to authorized entities,
2. directing queries and applications to the municipal executive body,
3. reviewing draft resolutions concerning the youth,
4. participating in the development of strategic municipal documents for the youth and monitoring them,
5. taking actions on behalf of the youth, especially in the field of civic education, based on principles established by the municipal council,
6. co-participating in activities related to the creation and implementation of government strategic documents on youth policy (Article 5b, sections 8 and 9 of the Municipal Self-Government Act).

From the guaranteed statutory powers emerges another form of participation. It is maintained in an advisory and auxiliary direction, yet considering it concerns the youth, it should be positively evaluated. First, it engages young people in active participation in indicating the city's development directions, and it takes care of matters important to this age group. It should also be positively assessed that a member of the youth council can be a person studying outside the city. The deciding factor is residence in a given municipality, not school attendance [20].

Social participation should also take other forms. Conducting consultations with residents in the form of a participatory budget through an online platform that allows voting, ensures the possibility of voter verification, and then counts these votes, is no longer an exception. Cities are also opening up to so-called e-polls. These examples constitute manifestations of e-participation, the role of which is to enable residents to participate in decision-making processes, provide opinions, and take responsibility for decisions in public matters using information tools [21].

In particular, the development of new technologies, which can be used to gather suggestions from residents, and thus the development of modern forms of social participation, should be considered. Artificial intelligence or blockchain are mechanisms that will facilitate the transmission of information to residents, but particularly allow for its collection, for example, through chatbots or voicebots. While currently used primarily for customer service, they can eventually assist in advancing actions to gather opinions. In all these endeavors, the human aspect must always be considered, as well as the organization in which solutions dedicated to residents are implemented [22].

CONCLUSION

The new generation of smart cities is closely tied to the human being as an entity being part of a local community, presenting their needs to the authorities with an aim to improve the quality of life. Consequently, the modern smart city approach embraces active participation, which is grounded on the human both as an individual and as a

social group. Cities, utilizing statutory possibilities and generating their own solutions in this respect, strive to fulfill elements of the smart city definition. However, they continuously – especially given the changing circumstances – must search for ways to facilitate active and responsible co-management of the city with the inhabitants. An example of such solutions is the participatory budget, which is mandatory in cities with county rights. However, this is only the first step towards a third-generation smart city.

It is crucial to underscore that the level of engagement of individuals will depend as strongly on the actions of local authorities as to whether one can indicate a higher level of maturity of both participation and the intelligent city itself. In particular, without processing received information, participation in meetings, expressing opinions, passing on suggestions, willingness to sit on created councils, voting for the selection of a specific solution by individual units at the highest possible turnout, one cannot speak of an intelligent city regardless of new technologies implemented by it in various areas (e.g., traffic signalization, sharing economy, e-administration).

However, the creation of a smart city should also be supported by legal provisions. As in every case, they will not always be positively evaluated by all interested parties, yet they constitute a bilateral mechanism for influencing actions taken both by the authorities and the local community. Especially at the beginning of the path towards creating cities in the spirit of the new generation of smart cities, such institutions as the participatory budget help in educating the society. They demonstrate what co-management of the city entails. It is, however, very important that while determining future directions of changes in legal provisions, the responsibility and mechanisms ensuring the realization of the actual will of residents should be specified, for example, on the model of electoral thresholds. Nonetheless, the legislator should bear in mind the interest of the whole community, as an essence of city functioning. Cities are intended to satisfy the needs of local communities, without concurrently paralyzing the work of public administration.

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