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# USE OF THE SMART CITIES CONCEPT TO RETHINK THE MUNICIPAL COUNCIL COMMUNICATION PROCESSES

## UTILIZAÇÃO DO CONCEITO DE CIDADES INTELIGENTES PARA REPENSAR OS PROCESSOS DE COMUNICAÇÃO DOS CONSELHOS MUNICIPAIS

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### ABSTRACT

The concept of smart cities addresses how information technology can improve a city's processes and suggests greater participation among the population in these processes. The purpose of this article was to use this concept as a support to rethink the communication processes of municipal councils, seeking ways to improve them through the use of information technologies, which would allow improving the structure for the dissemination of actions taken by the councils and increasing social control over public policy planning and implementation. For this, the communication processes of the municipal councils of a small city were analyzed. These processes were then evaluated and discussed in light of the concept of smart cities. As a result, it was found that the communication processes analyzed are flawed and need improvement, especially regarding their scope, which should include the possibility of manifestation by society. Initiatives related to the concept of smart cities that could solve the identified problems are also discussed. Based on the collected data, the requirements and functionalities for the development of a technology-based communication tool that could enable faster and more effective communication between the counselors, between the councils and society and between the councils and their government departments are suggested. Finally, it is suggested that future research assesses within the population the reasons why social participation in municipal councils is low.

**Keywords:** Smart Cities, Social Participation, Municipal Council, Information and Communication Technology.

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## RESUMO

*O conceito de cidades inteligentes aborda como a tecnologia da informação pode melhorar os processos de uma cidade e sugere maior participação da população nestes processos. O objetivo deste artigo foi utilizar esse conceito como suporte para se repensar os processos de comunicação dos conselhos municipais, buscando formas de aprimorá-los por meio da utilização de tecnologias da informação, o que possibilitaria melhorar a estrutura para divulgação das ações realizadas pelos conselhos e aumentar o controle por parte da sociedade sobre o planejamento e a implementação de políticas públicas. Para isso, foram analisados os processos de comunicação dos conselhos municipais de um município de pequeno porte. Esses processos foram então avaliados e discutidos à luz do conceito de cidades inteligentes. Como resultado, verificou-se que os processos de comunicação analisados são falhos e carecem de melhorias, principalmente em relação a alcance e escopo da comunicação, a qual deveria incluir a possibilidade de manifestação por parte da sociedade. Também foram discutidas iniciativas ligadas ao conceito de cidades inteligentes que poderiam resolver os problemas identificados. Com base nos dados coletados, listou-se ainda os requisitos e as funcionalidades para o desenvolvimento de uma ferramenta de comunicação baseada em tecnologia que poderia viabilizar uma comunicação mais rápida e efetiva entre os conselheiros, entre os conselhos e a sociedade e entre os conselhos e as respectivas secretarias de governo. Por fim, sugere-se que pesquisas futuras avaliem junto à população as razões pelas quais a participação social nos conselhos municipais é baixa.*

**Palavras-chave:** Cidades Inteligentes. Participação Social. Conselho Municipal. Tecnologia de Informação e Comunicação.

## 1. INTRODUCTION

The Federal Constitution of 1988 (CF/88) advocated the Democratic Rule of Law, creating public spaces—the municipal councils—that allow the population to participate in the formulation of Brazilian public policies and function as a bridge between the aspirations of the population and local managers. Thus, by strengthening the autonomy of municipalities and social intervention, the result of this process has provided an environment for change in the thinking and acting of citizens, who can become aware of the importance of their collaboration in city policy and be able to intervene in the deliberation of their interests before the state (Rocha, 2011).

Social participation in municipal public management, through the relationship between the various social actors and the state, should act in the supervision, guidance and formulation of public policies in various sectors, working in a transparent manner and establishing a safe relationship with civil society.

In this context, the concept of smart cities, which highlights the application of information technology favoring the efficiency of urban services (Fu & Zhang, 2017), is based on the idea that social inclusion and the internet are essential in creating new business and work, providing high-quality services and empowering citizens with information, which makes this approach a driver of urban sustainability (DeJong, Joss, Schraven, Zhan & Weijnen, 2015). For Batty et al. (2012), smart cities can drive new forms of public policy analysis and planning in the Information Age, and the biggest impact would be on how we plan to organize ourselves in cities. We seek to articulate various socioeconomic problems, discussing how to improve economic and administrative efficiency through the use of better relationship networks and technologies, with a view to both social inclusion and cohesion, among other objectives (Fu & Zhang, 2017).

Although there are several concepts of smart cities, a point of convergence among several of them is the feasibility of increasing social participation in the management process of municipalities, which may occur through (i) more transparent management, depending on the increased information available; (ii) more participative management, thanks to tools that enable

citizens to propose and follow-up suggestions; and (iii) the possibility of developing instruments that make the participation process more efficient through the use of discussion environments and the availability of information about certain processes (Afzalan, Sanchez & Evans-Cowley, 2017; Caragliu, DelBo & Nijkamp, 2011; Cury & Marques, 2016; DeJong et al., 2015).

Thus, considering both the concept of smart cities and the challenges related to social participation, using the concept of smart cities becomes an appropriate strategy to rethink the communication processes of municipal councils, seeking to improve them through the use of information technologies in order to implement a structure for the dissemination of actions taken, to allow greater control by society over the policies carried out and to enable social participation in decisions. However, before making any effort to create and implement a technology-based tool, one must know whether it would be useful and how best to develop it, as the adoption of social participation tools must meet the specificities of each case (Afzalan et al., 2017).

This article stems from this need to understand how the communication processes performed by the municipal councils of a small city in the state of Minas Gerais work. The following objectives are expected to be achieved: (a) to study how the communication engaged in by municipal councils occurs; (b) to investigate whether there are problems related to communication between the councils, City Hall and the population; and (c) to identify how the concept of smart cities could help solve these problems, if any. The result of this research is expected to support the development of technologies and processes that make the communication processes of municipal councils smarter and societal participation more effective.

In addition to the introduction, this work is composed of a brief review of the scientific literature on municipal councils, social participation and smart cities, followed by a methodology section, presentation and discussion of the results and the conclusion.

## 2. LITERATURE REVIEW

### 2.1. The Role of Municipal Councils in Promoting Social Participation

Cury (2000) states that the word “council”, derived from the Latin *consilium*, which comes from the verb *consulere*, means to hear and to be heard. Additionally, it means to consider, reflect upon, ask the advice of. Thus, the author defines municipal council as a body where decisions, preceded by analysis and debates with civil society, are taken from dialogue and understanding, where civil society can interfere in political decisions and make their demands be entered in local government agendas.

According to Gohn (2001, p. 31):

The Councils are analyzed as agents of innovation public policy because, by mediating between organized civil society and governmental bodies, they are [...] building a new public sphere of power and social control. As such, they represent organized social forces and contribute to the strengthening of new political subjects.

The Federal Government Transparency Portal offers the following definition about councils:

Public policy management councils are effective channels for participation, which allow us to establish a society in which citizenship is no longer just a right, but a reality. The importance of the councils lies in their role in strengthening the democratic participation of the population in the formulation and implementation of public policies (Controladoria-Geral da União *apud* Mendonça e Franceschinelli, 2015).

Also, present within Brazilian municipalities, public policy management councils are one of the experiences of participatory democracy. They have a wide range of topics such as health, education, social assistance, housing, environment, transportation, culture, among others, and represent an achievement from the point of view of building a democratic institutionalization (Tatagiba, 2002).

Councils are important decision-making spaces for the practice of social management (Tenório, 2008). As stated by Tatagiba (2002), councils constitute public spaces with plural and equal composition, which guarantee the participation of civil society through their representatives with the state. They have the legal competence to formulate policies and supervise their construction, as well as to deliberate actions, thereby meeting the democratization of management. In addition, they are guided by a discussion process based on dialogic action in their search for consensus and the resolution of conflicts inherent to the various interests at stake. Participation happens everywhere and is part of society's daily life in social relations when participating in groups, communities and associations (Tenório, 2005).

With the promulgation of the Brazilian Federal Constitution in 1988, the performance of municipal councils was institutionalized; this was the legal framework that proclaimed an advance in the instruments for guaranteeing social participation in public management. The sole paragraph of the first article of C.F.88 carries the following message: "All power emanates from the people, who exercise it through elected representatives or directly under this Constitution" (Brasil, 1988). Thus, social participation is understood as the dialogue between civil society and the state in the various instances of public spaces (Behring & Boschetti, 2011).

There is a tendency for society to participate more in state decisions when primarily motivated by discontent; this is not the case for the majority of decisions that interest everyone, in which participation could possibly generate greater awareness in the population, greater control, greater claiming power and greater power for the public society (Bordenave, 1994). Participation is known by various names: social participation, popular participation, citizen participation and democratic participation; it always carries the idea of including the population in public policy decisions (Milani, 2008). Behring and Boschetti (2011, p. 179.) state that "[...] it was precisely to perfect the democratic process [...] that strategic instances were created, such as councils: arenas for discussing the demands and interests present in areas determined".

Popular participation in the rule of law provides an advance in the administration's forms of control. The process of participation gives citizens opportunities to participate in public life. By engaging residents and other sectors of organized society in partnerships to deal with basic development challenges such as housing, unemployment, waste, water and pollution, new resources can be mobilized to solve these problems and create a more participatory, transparent and responsible culture (Bordenave, 1994). In this sense, Côrrea et al. (2017) also highlight the participation of the population as fundamental in the discussion and definition of the direct plan, city planning, the proposition of laws and the resolution of conflicts over the ownership and use of urban space.

Based on the perspective that municipal councils are institutionalized paths of social participation and that they should promote it among the population, this study was developed.

## **2.2. Smart Cities**

The Inter-American Development Bank (IDB) conceptualizes a smart city as one that puts people at the center of its development, incorporating information and communication technologies in urban management and using these elements as tools to stimulate the formation

of efficient government that includes collaborative planning and citizen participation processes (Bouskela, Casseb, Bassi, De Luca, & Facchina, 2016).

Thus, smart cities are responsive cities, capable of receiving, processing and returning efficient information and services. Cities that speak, question and respond, placing the citizen at the center of any initiative. According to Caragliu et al. (2011), a city can be considered smart when investments in human and social capital and the traditional and modern information and communication technology (ICT) infrastructures are drivers of sustainable economic growth, high quality of life and sound management of natural resources through participatory governance.

The use of information technology to improve the quality and management of cities has become increasingly common. “Smart city” is the term used to designate cities that invest in the use of information technology (IT) to improve their infrastructure, economic development and sustainability levels to improve the quality of life of their inhabitants and the experience of their visitors.

Thus, the smart city stands out as a new approach to promoting social inclusion, creating new businesses, jobs and high-quality services, and empowering citizens through integrated, synthesized data used to enhance and make the society a healthy and happy place for people to live, learn and develop (ACATECH, 2011; Chen, 2013; Dammann, 2013; DeJong et al., 2015).

It is worth noting that some smart cities’ objectives are aligned with the recommendations of Rolnik (2009), who advocates a political reform based on strengthening social participation and controlling municipal management by society and development. As enumerated by Weiss, Bernades, and Consoni (2015, p. 312):

The smart city approach includes technologies that promote greater energy efficiency and optimization in the production of goods and services; intelligent systems for monitoring and managing urban infrastructure and anticipating natural accidents; collaboration solutions and social networks; integrated systems for asset management; specialized health and education systems that enable interaction with actors through the internet; systems, methods, and practices for integrated service management of any nature; systems for handling large volumes of structured and unstructured data; georeferencing systems; smart applications embedded in all sorts of goods; radio frequency identification technologies and digital labels placed on products and cargo, optimizing logistics processes and business transactions; sensors and artificial intelligence systems that quickly perceive and respond to events in the physical world, triggering digital processes that are having increasingly immediate and significant consequences in the world, connecting people, businesses, and the public at anytime and anywhere.

### **2.3. Possible Contributions of the Smart City Concept to Municipal Councils**

Freitas, Freitas and Ferreira (2016) defend, as a consequence of a process of democratization and administrative decentralization, real social participation in public management, which would result in so-called social management in counterpoint to the domain of private interests hidden in managerialism in public management. This requires “collective decision-making without coercion based on language intelligibility, dialogicity and enlightened understanding”, “transparency as an assumption”, “emancipation as an ultimate end” (Cançado, Tenório & Pereira, 2011, p. 681), and enabling public spaces “for citizen participation in public decisions” (Freitas, Freitas & Ferreira, 2016, pp. 278–292). The emergence of councils, “thematic forums, participatory budgets”, and “goal plan[s]”, among other participatory experiences, are the result of this process (Freitas et al., 2016; Gasparido & Ferreira, 2017; Moreira, 2016).

According to Van Laerhoven (2014), Brazil offers interesting opportunities to study the process of democratic decentralization and increased participatory governance by in-

creasing the responsibility of municipal administrations and implementing municipal councils, which allow everyone the opportunity to participate in the discussion and planning of public policies.

It is known, however, that the use of participatory instruments such as these are often only intended to legitimize the state's action in the pursuit of its interests (Freitas et al. 2016) or are implemented unplanned. In this way, they do not obtain the desired popular participation due to a lack of preparation or political will (Couto & Ckagnazaroff, 2016). In this sense, the concept of smart cities is a possible path in the search for solutions to these problems since it must be thought to meet the context in which it will be applied, observing the intended participation objectives and the characteristics of the community involved (Afzalan et al., 2017).

Another point worth mentioning related to the problems in municipal management identified in the literature concerns one of the principles of smart cities: that of providing access to a large amount of information concerning various aspects of a city to enable better decision-making (Cury & Marques, 2016). This would solve some difficulties pointed out by municipal managers as described in the work of Couto and Ckagnazaroff (2016).

For example, Ribeiro, Cortese, Kniess and Conti (2019) demonstrated how indicators, such as management tools for sustainability, can enhance adequate governance to make cities more sustainable. In the study they discussed some relevant aspects about the communication of these indicators to society: (i) it is important for the legitimization of the indicators and governance; (ii) it is required for a governance process with greater accountability and context-sensitivity; (iii) it is a way of promoting the involvement and learning of people and organizations about environmental problems; and (iv) it facilitates the exchange of information between government and citizens. All these notes can be facilitated through municipal councils and the use of ICTs or other elements of smart city design.

Despite the advancement that the creation of municipal councils represented in the empowerment of citizens related to the possibility of participation and control by society, there are still many challenges for these bodies to completely fulfill their function. Among them, we can highlight inequalities regarding the ability to include representation, subordination to the state, low popular participation, lack of support from the municipal government, in addition to the need for improvement in the administrative, technical and political dimensions, the difficulties in which result in low disclosure of their actions, low frequency of counselors and lack of structure, among other points, as pointed out by the study by Rodrigues, Silva, Pechim, and Barros (2017).

### 3. METHODOLOGY

To understand how the communication processes performed by the municipal councils work and how the concept of smart cities could be used, if necessary, a small city of the state of Minas Gerais was chosen to carry out the research presented in Figure 1.

<b>Research problem:</b> How do the communication processes performed by the municipal councils of the small city of Minas Gerais work?			
<b>General objective</b>	<b>Specific objectives</b>	<b>Data collection</b>	<b>Analysis</b>
Analyze the communication processes of the municipal councils of the studied city.	<p>Study how the communication performed by the municipal councils occurs.</p> <p>Investigate whether there are problems related to communication between councils, City Hall and the population.</p> <p>Identify how the concept of smart cities could help solve such potential problems.</p>	<p>Interviews with municipal council presidents and city counselors.</p> <p>Materials provided by the councils themselves and the public administration.</p>	<p>Content analysis through categorization performed a posteriori.</p>

Figure 1. Summary of the research structure.

Source: Authors (2020).

To achieve the stated objectives, this research, which can be classified as qualitative and exploratory, collected data through interviews with municipal council presidents and city counselors. The interviews lasted an average of one hour and a semi-structured script containing the following questions was used:

1. What are the main duties of the municipal council?
2. How does the municipal council work?
3. What are the difficulties faced?
4. What is the internal communication process like?
5. How is the communication process between the municipal council and City Hall (secretariats and other organs)?
6. How does the communication process between the municipal council and the population work?

For the analysis of the interviews, given the characteristics of the research, the content analysis method described by Vergara (2010, p. 7) as “a data processing technique that aims to identify what is being said about a certain theme” was used. Bardin (2011) divides this technique into three stages: (a) pre-analysis, (b) material exploration, and (c) treatment of results.

The pre-analysis stage consisted of a survey of the material to be analyzed and the preparation for its exploration. At this time, the notes made by the researchers were typed and consolidated, and the collected documents were sorted. Also in the pre-analysis, a posteriori categorization was decided upon, which means that the analysis categories to be used to classify the data found were defined only during the reading of the material, given the exploratory character of the research and the need to understand the specificities of the city (Bardin, 2011; Vergara, 2010). Thus, the answers were classified into categories created during the analysis of the material and grouped by question asked. Finally, even in the pre-analysis, the theme “registry unit” was chosen for use. It is worth mentioning that registry unit is the content segment that will be considered the basic unit to be categorized, and theme is defined by Berelson (1971, apud Bardin, 2011, p. 135) as “a statement about a subject, that is to say a sentence, or a compound sentence, usually a summary or a condensed sentence”. The purpose of this technique is to cut the text into ideas rather than parts, mainly because d’Unrug (1974 apud Bardin, 2011) states that any fragment can refer to various themes.

After the pre-analysis, the material reading and the coding process began, which consisted of “cutting” the interview notes according to the “themes” addressed and grouping them

into categories (Bardin, 2011). After the exploration of the material, the treatment of the results was undertaken through their presentation, analysis, and discussion in light of the literature on the subject.

The city used as a case study has 18 formally created municipal councils, of which 16 are active. Among these active councils, 8 were interviewed: CME—Conselho Municipal de Educação (Municipal Education Council), CACS-Fundeb—Conselho do Fundo e Manutenção da Educação Básica (Fund and Maintenance Council for Basic Education), CMAS—Conselho Municipal de Assistência Social (Municipal Council for Social Assistance), CMDCA—Conselho Municipal do Direito da Criança e Adolescente (Municipal Council for Child and Adolescent Law), CMS—Conselho Municipal de Saúde (Municipal Health Council), COMCIDADE—Conselho Municipal de Cidades, Conselho do Patrimônio Cultural (Municipal Council of Cities, Council of Cultural Heritage) and CODEMA—Conselho Municipal do Meio Ambiente (Municipal Council of the Environment), which was considered appropriate since their structures and the operation did not present many differences among them.

## 4. PRESENTATION AND DISCUSSION OF RESULTS

The data collected in the interviews through notes from all researchers involved were typed and consolidated in a Microsoft Word file, including information collected through files received (laws, guides and manuals), separated by council and by question, with respect to which had more of a relationship. Then, we proceeded to read the material and extract the topics covered, which became the categories of analysis created. In this section, these categories are presented, grouped according to the question of the interview script whence they originated. Each subsection contains the data presentation and a table listing the categories created.

### 4.1. Main Attributions of the Municipal Councils

When asked what the main duties of municipal councils are, respondents highlighted the activities listed in the national and municipal laws that created each council. In Figure 2, a list the functions of a council is given in a generic way. In general, councils should function as a deliberative, normative and consultative body that assists in the planning, supervision and control of the actions of the municipal department responsible for the area—health, education, environment, etc.—with which the respective council deals, as well as the monitoring of activities that take place in the city and that are within its scope, such as, for example, taking care of monitoring the quality of the services provided and receiving complaints and suggestions.

Given the objective of this project, it is interesting to highlight the functions related to the communication processes to be performed among councils: to improve the relationship with the constituted powers, the public prosecution service, the municipal council, the media and other sectors; to speak with other councils; to receive complaints; to comment on matters within its competence; to publicize its actions.



<b>ATTRIBUTIONS</b>
Be a deliberative body.
Supervise and approve the accounts of the respective secretariat.
Be an advisory body.
Act in planning the actions of the respective secretariat.
Be a normative body.
Act in controlling the actions of the respective secretariat.
Improve the relationship with the constituted powers, the public prosecution service, the municipal council, the media and other sectors.
Engage with other council.
Disseminate its actions/information on the status of a subject.
Comment on/oversee all matters within its competence.
Act in public awareness on matters within its realm of responsibility.
Decide on environmental licensing.
Receive reports.
Ensure universal access to services within the realm of the respective secretariat's responsibility.
Control the council's budget.
Take care of the conclusion of contracts and agreements between the public sector and private entities that provide services related to the respective secretariat (establishing criteria or suggesting partnerships).
Assist in planning continued employee training.

Figure 2. List of main attributions of municipal councils.  
Source: Authors (2020).

It should be noted that there was no specific highlighting of functions related to communication with society at large, to bring discussions to it, gather opinions, and pass these opinions on to the municipal administration.

Considering that the concept of smart cities promotes greater citizen participation and collaborative planning (Bouskela et al., 2016), the lack of communication with the population as one of the council's main attributions draws attention to one factor that might work. A possible solution to assist in facilitating this process would be to use ICT (information and communication technology) tools, the use of which is one of the foundations of smart cities (Caragliu et al., 2011). However, for this to be accomplished, the planning of this technology must be in accordance with the context in which it will be inserted (Afzalan et al., 2017). The following topics move in this direction and allow the requirements of this technology that could be developed to promote greater social participation in municipal councils to be understood.

#### **4.2. How Municipal Councils Work**

Regarding how the councils work, respondents highlighted the composition of the council and the holding of monthly meetings, as shown in Figure 3. By law, half of municipal counselors are representatives of the public administration and half are representatives of civil society, who are elected at assemblies (events) promoted by the municipal secretariats and/or the councils.

In general, municipal councils should follow a regular meeting schedule, as required by law, in a publicly accessible location, and the agenda which will be discussed should be forwarded at least one week in advance. Also, there should be times in meetings when the right to speak will be free for any meeting participant, including invited or non-counselors.

<b>HOW THE COUNCIL WORKS</b>
Half of the council is made up of representatives of society and the other half is made up of representatives of the municipal government and civil servants in the area where the council operates.
The representatives are chosen by vote by the represented, except the government representatives, who are chosen by the rulers.
Monthly meetings are held, and deliberations occur if there is a minimal percentage of counselors.
At meetings, deliberations take place, and there is time reserved for anyone to speak.
The meetings are open to the public.
The agenda must be submitted one week in advance.
Physical and human resources must be provided by the respective secretariat.

Figure 3. List of categories formulated related to how municipal councils work.

Source: Authors (2020).

The work of counselors is voluntary and unpaid, but various resources are required to perform the functions of a council. It was reported that all necessary infrastructure should be provided by City Hall (meeting space, office supplies and equipment).

With the attributions listed and the mode of operation described, it is possible to affirm that the planning of the municipal councils would be able to assure greater social participation of the population through greater access to information, the right to opine, and the possibility of supervising the actions of the secretariats' municipal and municipal governments, which follows the objectives of a municipal council and the concept of smart cities. However, many difficulties are faced that hamper the fulfillment of councils' missions. These difficulties were raised in the third question of the semi-structured script used and are presented in the next section.

### **4.3. Reported Difficulties**

When asked about the difficulties faced by councils, respondents highlighted problems related to a lack of structure, low popular participation, a lack of technical support and training and poor dissemination of their actions (Figure 4), thus confirming the results of Rodrigues et al. (2017). In addition, problems in the communication process between counselors, between the council and the public administration, and between the council and the population were also identified.

Regarding the lack of structure, it is known that, by law, municipal councils should have spaces for their activities that are available for the days scheduled for monthly meetings and where they can store files and documents; however, this does not occur in the city being analyzed. One respondent said that "the city government does not provide the right infrastructure and aids, which are in the law, such as a room, a place to file documents, a desk, meeting place, computer, printer, minimal things to operate." It was observed that for five of the eight councils analyzed, the meetings do not have a fixed place or dates scheduled well in advance. About the scheduling of the meeting place, one of the interviewees said: "We try to make each meeting in a place to be better for everyone. After it is set, we also confirm by message". In some cases, the final place for each meeting is set very close to the date of the meeting, and there is no way for the population to know. In addition, councils do not have computers or systems to store information or adequate places for documents to be kept by counselors.

<b>WHAT DIFFICULTIES WERE REPORTED</b>
Availability of members for ordinary sessions and lack of quorum for deliberations.
Difficulties in the communication process between the council and City Hall (lack of standard).
Difficulties in the communication process between counselors (lack of standard).
Lack of communication with society.
No channel for complaints or suggestions.
Lack of technical support to guide deliberations.
Lack of technical staff to handle and monitor complaints.
Public administration decision-making without the participation or knowledge of the council.
Lack of structure (physical space and information storage) and operating logic.
Lack of communication between the municipal council and existing committees.
Lack of dedicated council support staff (as provided by law).
Lack of knowledge/interest/participation in the council on the part of the population.
Absence of council house as support for centralization of councils, venue for discussions and meetings.
Bureaucratization hinders the prompt development and/or performance of the duties, thus stifling the process.
Difficulty accessing the transparency portal and outdated information.
Lack of training and capacity for counselors.
Delays in returning information requested from the municipal administration.
Lack of communication between the programs developed within the councils.

Figure 4. List of main difficulties faced by municipal councils.

Source: Authors (2020).

Regarding the lack of technical support for the council and training for the counselors, two situations were reported: i) there are difficulties regarding the task of supervising and forming opinions based on technical data and legislation since their realization requires a lot of time and hard-to-reach information. For this, the need to have technical personnel available to perform such tasks was pointed out. Furthermore, ii) counselors encounter issues related to approving, for example, financial reporting and complying with legal obligations of which they are unaware or for which they aren't trained. Thus, as this competence ends up being developed throughout the management (two years) and during the realization of the processes (performance), each management ends up having its own way of working. Therefore, if there were training and better definition of processes, the time required to organize administrative activities would be shorter, which would then allow the counselors to focus on actions related to the core functions of the councils. One respondent stated: "There is no capacity for counselors. We learn over time, what it really is, how it works, and we remain very dependent on the government." The respondent further added that: "Several counselors, especially novices, do not know what the councils are, their duties and their rights. Some are nominated by the government or as representatives of civil society institutions, but they come without a clue."

Another problem pointed out was low popular participation and the lack of disclosure concerning actions undertaken. For Behring and Boschetti (2011), councils should be arenas of discussion for dialogue between civil society and the state; however, respondents reported that few people know about the existence of councils and their usefulness, and even less have an interest in acting as counselors. Once representatives have been chosen, it is quite difficult to obtain a quorum for meetings and deliberations. Among several factors, it was mentioned that it is difficult to reconcile schedules—civil servants have availability during the day (city office hours) and representatives of the population have availability at night. It was also pointed out that many end up losing interest in participating as it is an activity that requires a reasonable investment of time and energy. Additionally, it is not common for non-counselors to attend meetings. Among

the reasons, it was mentioned that they do not have access to information such as the date, time or place of these meetings and that they are not aware of the operation of the councils nor do they have interest in the subject.

Problems related to the infrastructure and lack of technical capacity of the counselors are related to the lack of resources and/or investments of the municipal government, which are beyond the smart cities' aspects related to communication and management processes, the focus of this research. However, low popular participation and difficulty in accessing information is believed to be problems that can be addressed through the adoption of smart city principles, adopting changes and with relatively low ICT investments.

The problems related to the communication processes performed by the municipal councils—the main focus of this study—are the subject of the next three subsections, which discuss the aspects related to each of the types of communication performed: internal communication (between the counselors), communication between the council and City Hall (including the secretariat and others), and communication between the council and the population.

#### 4.4. How the Internal Communication Process Is

As reported by respondents (Figure 5), there is no standard or rule for how communication unfolds between counselors of the same council. Email and instant messaging applications are usually used. They are an effective but very informal process for contacting each other, and their use risks important information going unnoticed. These communication mechanisms, especially messaging applications, are used for scheduling meetings (some councils use email to formalize calls) and for conducting discussions on specific issues. For example, it was stated by one of the respondents: “We have prebooked the meeting, an estimated date, but if some can’t make it, we will talk through WhatsApp and change it to another day that will work for most”.

This method of communication seems to be effective in informing counselors and obtaining feedback. However, it does not contribute to increased transparency and disclosure of council actions. As part of the objective of using the concept of smart cities to rethink the communication processes of municipal councils, one of the options is the development of a technology-based tool (smartphone application and website, for example) that allows communication between counselors for scheduling meetings, proposing agendas, proposing discussions, sharing meeting minutes, communicating actions taken or being carried out, etc. The advantage of using a specific tool for this type of communication between counselors is that it can be more structured and standardized, making the management of administrative processes more standardized.

Given counselors' access to email and messaging applications, the development of such a tool would be aligned with the limitations and context in which it would be used (Afzalan et al., 2017). Additionally, such a tool may contain features that allow the communication with the city for requests for various information and accountability and the population's access to information and forms of participation, without leading to a high increase in the activities of directors. These additional possibilities are discussed in the following subsections.

HOW IS THE INTERNAL COMMUNICATION PROCESS?
Through Email.
Through messaging applications.
There is no pattern or rule.

Figure 5. List of main internal media used by municipal councils.

Source: Authors (2020).

#### 4.5. How the Communication Process Between the Municipal Council and the City Hall (Secretariat and Other Bodies) Unfolds

As with the internal communication process, respondents said there was no standard or rule concerning how municipal council should communicate with the city, its secretariat or any other body, or when or how it should occur. Commonly used media are email, phone, memo, legal letter and protocol, as listed in Figure 6.

It was noted that this process is quite flawed for communication in both directions. When the council requests information or a document, the delay in return is very long and, as mentioned earlier, information that should be available on the transparency portal is not; when the municipal administration needs to request something from the council, they do so informally, over the phone, for example, and without the necessary notice. This was mainly highlighted by councils whose areas/sectors have funds or related resources and therefore depend on council approval of the accounts for new releases of funds to take place. It has been reported that documentation for review and approval reaches the council at a date very close to the approval deadline, with no time for in-depth review. They stated: “Communication with City Hall is very flawed. They send documents requiring an urgent response, with minimal time to review them in a technical and appropriate manner. Always on time. And when we send a legal letter requesting documents, they take their time or do not respond.”

The transparency portal, cited by respondents, is a federal government system that allows the release of and access to data related to investments made by all levels of public management, including municipal. This tool can be classified as an instrument of smart cities as it uses ICTs to make data available to citizens and allow more oversight by society (Weiss et al., 2015, p. 312). However, often its interpretation does not make it accessible to everyone; this represents a flaw related to the need for available tools to be aligned with user characteristics (Afzalan et al., 2017). In addition, the system is not properly powered for reasons beyond the scope of this research.

HOW THE COMMUNICATION PROCESS BETWEEN THE MUNICIPAL COUNCIL AND THE CITY UNFOLDS
Through email.
Through phone.
There is no pattern or rule.
Through memo.
Through legal letter.
Through protocol.
There is bureaucratization in accessing information.

Figure 6. List of main media used by the municipal councils.  
Source: Authors (2020).

One respondent suggested: “It needed something like the transparency website for the councils to publish the information they requested from the government and not have delays. And also, to show decisions, making everything clearer”. A communication tool that records the communication, dates and deadlines could discipline the processes and facilitate the daily life of both the city and the councils. Dates and shipping content could be planned and additional efforts like calling, charging and emailing would become unnecessary in everyday life. Also, it would facilitate the monitoring, by the municipal administration, of all processes that take place between councils and municipal secretariats, since all would be within one tool. This would follow what Cury and Marques (2016) state regarding the need for more information for decision-making.

#### 4.6. How the Communication Process Between the Municipal Council and the Population Unfolds

It was reported that there is no standard for communication between municipal councils and the population or an open channel for the dissemination of the agendas, discussions and meetings. One of the councils discloses information about their actions through the City Hall bulletin board, but access to this information is very restricted. Respondents also said that few people know about the existence and function of municipal councils (Figure 7). One of the respondents also said: “We can’t say exactly, but I don’t see that there is communication between the counselor and the group he represents, let alone the counselors with the population. There is no way to do this, and City Hall does not support it”.

<b>HOW THE COMMUNICATION PROCESS BETWEEN THE MUNICIPAL COUNCIL AND THE POPULATION UNFOLDS</b>
There is no default communication network.
Most of the population is unaware of the existence of the Municipal Health Council.
The few who know seek information from their own council or the counselors.
There is no open channel for the dissemination of themes, proposals and meetings.
Information is disclosed to the population by letter.
Decisions are posted on the City Hall bulletin board.
They seek ways to promote community involvement through projects that raise awareness and mobilize participation.

Figure 7. List of main media used with the population.  
Source: Authors (2020).

Respondents believe that there is low popular participation in the councils due to a lack of interest on the part of the population in public actions and a lack of knowledge about the subject. However, it is difficult to generalize that this is the case for most people. For example, there may be knowledge and interest but not much time available for participation, which may be more fully investigated in future research.

To improve the management of cities and for them to become truly democratic spaces, several authors argue that the population must participate more in the planning and supervision of public actions, advocating the use of mechanisms that facilitate this process of social inclusion in municipal management (Cançado et al., 2011; Freitas et al., 2016). The concept of smart cities contributes to this by encouraging the use of technologies that enable: (a) increased social participation in the process of managing municipalities more efficiently, (b) more transparent management, (c) increased available information, and (d) the possibility for citizens to propose and follow-up on suggestions and actions (Afzalan et al., 2017; Caragliu et al., 2011; Cury & Marques, 2016; DeJong et al., 2015).

A technology-based tool that meets these recommendations could be linked to the tool discussed earlier to aid the internal communication process. The existence, for example, of an application that contains channels of communication with all councils, which provides information (such as place and date of meetings, meeting agendas and subjects to be discussed) and allows voting, giving opinions, suggesting subjects, and making complaints and suggestions could help combat the problems related to low popular participation, as it would make the councils better known and accessible. Besides the possibility of arousing the interest of the population, the use of this application, for example, would reduce the effort required to inform people about meetings and what was discussed, which can promote mobilization and participation.

An example cited by one of the respondents highlights the possibility of an initiative to succeed in this direction: in a situation of conflict between the council and the municipal management,

one of the counselors disclosed an issue which was discussed on some social networks, and which generated immediate mobilization of the population. This leads to the assumption that the reason for low social participation is related more to a lack of access and knowledge than a lack of interest.

#### 4.6. Suggested ICT Tool Requirements

As a result of the information gathered in this research, a software and/or application product backlog discussed earlier was developed as one of the options for improving communication processes (Figure 8). Product backlog is a list of expected software features that are grouped by identified user type. This list is part of a software development methodology called Scrum (Kayes, Sarker & Chakareski, 2016).

<b>Product Backlog (Scrum Method)</b>
<p><b>Mayor</b></p> <ul style="list-style-type: none"> <li>Register counselors</li> <li>Request documents from City Hall</li> <li>Disseminate agenda and meeting minutes</li> <li>Schedule meetings</li> <li>Open polls to collect feedback from the community</li> <li>Open session for counselors to vote</li> <li>Include information on how councils work</li> </ul>
<p><b>Counselors</b></p> <ul style="list-style-type: none"> <li>View received documents</li> <li>Vote at specific counselor sessions</li> <li>View schedule, agenda and meeting minutes</li> <li>Manage internal chat (between counselors)</li> <li>View and answer population questions, reviews and suggestions</li> </ul>
<p><b>City Hall</b></p> <ul style="list-style-type: none"> <li>View schedule, agenda and meeting minutes</li> <li>View document orders and submit them</li> <li>View polls in progress</li> </ul>
<p><b>Community</b></p> <ul style="list-style-type: none"> <li>Access council structure information</li> <li>View schedule, agenda and meeting minutes</li> <li>Vote in polls</li> <li>Submit questions, reviews and suggestions</li> </ul>

Figure 8. Product backlog (Scrum) of software to be developed.  
Source: Authors (2020).

This feature list was presented and validated together with representatives of five municipal councils, who also suggested changes that are already included in Figure 8.

## 5. CONCLUSIONS

The objective of this study was to analyze, in the light of the concept of smart cities, the communication processes performed by municipal councils. It was identified that from the point of view of their formalization, the councils have great potential to act in the process of including the population in the management process of the municipalities; this is recommended to enable the development of a city.

However, municipal councils face many difficulties, ranging from a lack of resources and structure to the absence of well-defined processes. In this context, the concept of smart cities is a direction for proposing solutions that improve the performance of councils, mainly by using technology in their communication processes to standardize and increase effectiveness.

By collecting data from council representatives, it was found that the lack of access to the councils on the part of the population is one of the major obstacles to effective action to promote more participative management.

Based on the information collected and analyzed, it is possible to suggest that municipal councils should seek technology-based tools such as smartphone applications and websites that allow for quick and accessible availability of information of interest to the population (such as scheduling meetings, issues discussed and reports on the councils' actions), as well as offering the possibility of holding public consultations on debates that are of interest to all.

It is also suggested that adopting these communication tools in communications between counselors and between municipal councils and the municipal public administration would make communication more effective, formal and traceable.

This study brings theoretical contributions to the scientific literature about social participation by offering empirical data concerning the difficulties faced by the municipal councils of a particular city, as well as about smart cities, and by discussing how technologies can contribute to an increase in popular participation in municipal management.

The study also brings practical contributions to municipal managers, municipal counselors and other citizens interested in improving the performance of councils, as it presents a possibility for action that may be the solution to many problems faced today.

The results generated in this research also lead to the need for at least two initiatives: (a) a population survey to identify the reasons for low participation in municipal councils and (b) the development of a technology-based communication tool that can help solve the communication problems faced by councils.

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<b>Contribution</b>	<b>[Author 1]</b>	<b>[Author 2]</b>	<b>[Author 3]</b>	<b>[Author 4]</b>
<b>1.</b> Definition of research problem	√	√		
<b>2.</b> Development of hypotheses or research questions (empirical studies)	NA	NA	NA	NA
<b>3.</b> Development of theoretical propositions (theoretical work)	√	√	√	√
<b>4.</b> Theoretical foundation / Literature review	√	√	√	
<b>5.</b> Definition of methodological procedures	√	√	√	√
<b>6.</b> Data collection	√	√	√	√
<b>7.</b> Statistical analysis	NA	NA	NA	NA
<b>8.</b> Analysis and interpretation of data			√	√
<b>9.</b> Critical revision of the manuscript	√	√		
<b>10.</b> Manuscript writing	√	√	√	√
<b>11.</b> Other (please specify)				