Web accessibility for people with disabilities in Spanish city councils[1]

El acceso web para personas con capacidades limitadas en los ayuntamientos españoles

O acesso à Internet para pessoas com capacidades limitadas nos municípios espanhóis

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ABSTRACT

This article analyzes the degree of accessibility of the websites of the Spanish local administration for people with disabilities in the context of the Transparency Law of 2013. We present 16 indicators that measure the access to information by users with sociodemographic limitations or physical disabilities, which were applied to the websites of the 62 Spanish municipalities with more than 100,000 inhabitants. The results show that the Spanish local administration does not fully allow the digital empowerment of these citizens, hindering their right of access to information and accountability.

RESUMEN

Este artículo analiza el grado de accesibilidad de las web de la administración local española para las personas con capacidades reducidas, en el contexto de la Ley de Transparencia de 2013. Se presentan 16 indicadores que permiten medir el acceso a la información por parte de usuarios con limitaciones sociodemográficas o discapacidades físicas, los que se aplicaron a las web de los 62 ayuntamientos españoles con más de 100.000 habitantes. Los resultados muestran que la administración local española no permite el empoderamiento digital de estos ciudadanos, dificultando su derecho de acceso a la información y la rendición de cuentas.

RESUMO

Este artigo analisa o grau de acessibilidade de pessoas com capacidades reduzidas aos sites da administração local espanhola no contexto da Lei de Transparência de 2013. Existem 16 indicadores que medem o acesso à informação por usuários com limitações sociodemográficas ou deficiências físicas. Os indicadores são aplicados aos sites dos 62 municípios espanhóis com mais de 100 mil habitantes. Os resultados mostram que a administração local espanhola não permite o empoderamento digital desses cidadãos, impedindo seu direito de acesso à informação e à prestação de contas.

INTRODUCTION

Local corporations are the most direct form of relationship between citizenship and public administration. They are the gateway to most of the petitions of the citizens of a municipality to their political representatives who, in turn, have the duty to attend, manage and process them, either within the same municipality or consulting with other institutions (Bonsón, Torres, Royos, & Flores, 2012). In this sense, as pointed out by Campillo Alhama (2012, p. 1036), citizens must be informed and have access to all the information on administrative actions that may affect their situation. It is based on the idea that transparency is a basic democratic principle and that its role in the public sphere obliges administrations to publish and make accessible general information that may be of interest to citizens, since they deliver –through their taxes– the resources that the administration needs and, therefore, they have the right to know how these resources are being used by their political representatives (Gandía, Marrahí, & Huguet, 2016, p. 29).

This study is framed in a context in which in Spain –as in many countries of the European Union– the disaffection towards the political class has grown substantially, added to a lack of tradition in government transparency that coincides with a growing democratic demand by the citizenship (Villoria, 2014).

In this scenario, Law 19/2013, of December 9, on Transparency, Access to Public Information and Good Governance was published in Spain. This document enthrones in its preamble the transparency, the access to public information and the norms of good governance as "the fundamental axes of all political action"; in addition, it states that only when the action of public officials is subject to scrutiny, when citizens can know how the decisions that affect them are made, how public funds are handled or under what criteria institutions act, can we talk about the beginning of a process in which public authorities begin to represent a society that is critical, demanding and that demands its share of participation.

Despite this, the administration's compliance with the law has not been uniform and there continues to be a problem of lack of facilities for users to access this information intelligibly (Beltrán Orenes & Martínez-Pastor, 2016).

This law has already been transposed in almost all the Spanish autonomous communities, such as Catalonia, which after one year passed its own autonomic rule: The Law 19/2014, of December 29, on Transparency,

access to information and good governance. The parliamentary commission that finished elaborating it listened, among many others, to the people in charge of the Journalism and Communication Laboratory for the Plural Citizenship of the Autonomous University of Barcelona (Moreno Sardà, Molina Rodríguez Navas, Corcoy Rius, Aguilar Pérez, & Borràs Farran, 2013), which is the research team of which we are part. During this stage, we have defined the criteria, methodologies and analysis tools of the websites of the municipalities to encourage the participation of the plural citizenship in the democratic control and to promote the good communication of the institutions, starting from the premise that public administrations are essential sources of information.

The Infoparticipa Map[2], empirical result of these investigations (Moreno et al., 2013), is an online platform being developed since 2012 with the purpose of helping to correct the lack of a Spanish legislation on transparency. The main objective of this project – which was extended in a first phase to the autonomous communities of Catalonia, Canary Islands, Madrid, Andalusia, Aragon and Galicia, and currently to all the communities of Spain with the incorporation of 52 adapted indicators to the Transparency Law– was to evaluate the information to get public administrations to improve their communicative practices and offer transparent, complete and comprehensible information, so that citizens could exercise their legitimate right to control and to the democratic evaluation of institutions. However, it was necessary to consider that this information should not only be published in an accessible and transparent manner, but that all the plural citizenship of the societies in which we live must have access to it. For this reason, the article that we present is related to a new phase in the development of these previous investigations and it proposes to create a series of new indicators that allow analyzing specifically if the Spanish city towns have a good praxis regarding access of citizens with reduced capacities to accountability and their empowerment as a disadvantaged social group in terms of accessibility to web information.

THEORETICAL FRAMEWORK
THE CREATION OF A WEB DESIGN FOR ALL

In today's society, in which technological development is the protagonist, universal access to the web is a growing need for all citizens. Thus, it is

paradoxical that the Internet generates barriers to access content for certain groups of users, especially for people affected by a disability. As Fernández Aquino points out, "breaking down digital barriers on the web is the work of many groups and organizations sensitized to its importance, among which public administrations and international organizations play a very important role" (2009, p. 6).

At the end of the nineties, the concept of universal design introduced the debate of if it is possible to make a web design accessible to all people. In this context, Stephanidis, Akoumianakis, Sfyrakis and Paramythis (1998) clarify that this concept does not necessarily imply that a single design should be suitable for all users, but that its design should try to satisfy the access needs of the largest number of users possible. However, Newell and Gregor (2000) and Nielsen (2003) question whether a common design for all users is the best decision to eliminate accessibility barriers, since the dynamic adaptation of the interface to the user, according to its own needs and characteristics, would be more effective. In this line, Perlman (2000) shows the feasibility of these proposals, setting in motion the implementation of a multiplatform user interface, multi-language and dynamically adaptable to the requirements of the users.

Based on these premises, it is important to consider that current regulations, both nationally and internationally, make accessibility compulsory. Therefore, it is an aspect that all public administrations must consider in the design of their corporate websites.

THE COMMITMENT TO ACCESSIBILITY: EVOLUTION AND APPLICATION FROM THE LEGAL REGULATIONS

Accessibility as a field of study has become a priority subject of interest both in the public and private spheres. Thus, Marín, Lasso de la Vega and Mier (2016) have demonstrated the effectiveness of websites with good accessibility and usability for SMEs; Sambhanthan and Good (2013) for online commerce in developing countries, and Flórez, Ruiz, Castaño, Tabares and Duque (2014), for websites that support educational processes.

On the other hand, several authors have developed research to determine the factors that can improve the accessibility of websites for people with disabilities (Hong, Trimi, Kym, & Hyun, 2015; Garrido, Rossi, Medina, Grigera, & Frimenich, 2014), and for users in general (Hassan Montero & Martín Fernández, 2004; Del Valle García, 2010).

In order to establish universal standards, the World Wide Web Consortium (W3C), an independent international organization, was founded in 1994, in which companies, public organizations and universities collaborate with the objective of discussing, agreeing, creating and promoting the standards of the Web. One of the fundamental initiatives of this organization has been the creation of the Web Accessibility Initiate (WAI) to promote a high degree of accessibility to the web for people with disabilities. In addition, since its creation in 1999, W3C has published a series of guidelines to disseminate the principles of web accessibility to companies[3], governments, institutions, developers and users, which have been implemented in the legislation of different countries (Bravo García, 2006).

In this context, the variety of access problems presented regarding the various disabilities led the Spanish Association for Standardization and Certification (AENOR, by its Spanish acronym) to unite in two documents all the possible problems identified in 2012 for visual, auditory, physical and psychic disabilities, in relation to the user interface, both of hardware and software.

The United States was the first country to define and apply laws in this regard, among which, in its web section, Section 508 stands out (United States Government). This section requires that when federal agencies develop, acquire, maintain or use electronic information technology, they must ensure that employees with disabilities have the same access and use of such technologies as non-disabled employees.

The European Union has contributed by supporting various projects with the aim of achieving the principle of equal opportunities in the fight against digital discrimination. In this sense, the European Commission launched in December 1999, the e-Europe initiative: An information society for all, to ensure that all citizens, homes, schools, businesses and administrations are connected to the network, and guarantee that the information society does not translate into social exclusion. The European Commission also approved the work of the W3C-WAI, which has served as a starting point to make a series of recommendations and obligations to the member states. Thus, the revision of the legislation on the information society and accessibility standards was promoted, approving, among other aspects, the commitment that all public administrations (local, county, provincial, autonomous, national and European) had accessible websites before the end of 2001.

In this context, it is regulated that European public administrations should supervise their institutional web

pages from the elaboration of a code of good practices and with the promotion of education and training measures in web accessibility. Finally, organizations that receive public funds are urged to create their web pages by following the accessibility criteria. This since that in the Green Paper on Public Sector Information in the Information Society, published in 1998 by the European Union (EU), a Eurobarometer survey confirmed that more than 50% of the citizens of European Union countries were interested in consulting and managing all the services offered by local corporations from their homes and through the computer.

In Spain, these demands had some delay. Thus, Law 34/2002, of July 11, on Services of the Information Society and Electronic Commerce (LSSICE), establishes in its provisions the accessibility for people with disabilities and elderly people to the information provided by electronic means.

The law states that public administrations shall adopt the necessary measures so that the information available on their respective Internet pages may be accessible to persons with disabilities and the elderly according to the criteria of accessibility to content generally recognized before December 31, 2005. This law proposes that all websites of public administrations (city councils, associations, provinces, autonomous communities, ministries, etc.) and of those organizations that are partly financed by them (NGOs, transport consortia, universities, citizen, political, social organizations, etc.) have the obligation to comply with the proposed requirements. Likewise, it promoted the adoption of accessibility standards by service providers and manufacturers of equipment and software to facilitate the access of people with disabilities or the elderly to digital content. Even so, it is true that this law is far from being fulfilled, and although some websites have made an effort to ensure that their sites meet these requirements in advance, the general results have not been satisfactory. On the other hand, although companies are not yet legally obliged to do so, the fact that the websites of public administrations adopt accessibility as a criterion of quality can encourage the private sector to demand accessible websites.

As explained by Muñoz Cañavate and Chaín Navarro (2005), since digitalization is the protagonist in the field of information and communication, concepts such as cyber government, e-democracy or e-administration have radically changed the old image of a tedious administration that entailed for the citizens a series of painful and lengthy procedures to obtain data or

information to which they had the right to access (2005, pp. 43-44). In this regard, and based on public policies, the legal environment and the e-accessibility regulations, "in the last decade there has been a greater awareness of society towards non-exclusion and more political will by the states and international organizations to solve it" (Fernández Aquino, 2009, p. 7).

As stated above, publications related to this topic are numerous. Among the most outstanding works in the Spanish field, we can cite those by Muñoz Cañavate and Chaín Navarro, who studied the origin and evolution of Spanish city councils in the network (Muñoz Cañavate & Chaín Navarro, 2004; Chaín Navarro, 2005; Muñoz, 2005; Chaín Navarro, Muñoz Cañavate, & Más Bleda, 2008), as well as those conducted by the Infocacesibility Observatory of Discapnet between 2005-2008. In this case, the web portals of the seventeen Autonomous Communities of Spain were analyzed, considering the evaluation of twelve accessibility criteria and the assessment of the users. The first results showed a bleak panorama for the Spanish digital society, because only the Murcia region obtained a joint assessment that exceeded, and by very little, 50% of the indicators. Later, in 2008, the results showed that –although there was a slight improvement of almost fourteen percentage points in the average result–, the three best sites of 2005 became the worst of the last measurement.

On the other hand, in 2006, the CTIC Foundation[4] conducted another study, which showed that only seven autonomous communities adequately met the law requirements to promote accessibility to the websites of their regional governments, four of them with a very good rating (Andalusia, Catalonia, Galicia and Murcia) and the rest, with a good one (Basque Country, Valencian Community and Canary Islands). In addition, Lozano, López and Ruiz (2006) proposed to create a new web of the City Council of Madrid, based on a comprehensive vision of content management for web environments and with special emphasis on usability and accessibility improvements. In 2010-2012, the Accessibility observatory of municipal websites, led by the ONCE Foundation and the Fundosa Group, conducted annual evaluations on the websites of the Spanish city councils. From these works, it is concluded that the municipal website environment has consolidated as a key aspect of the services offered by the municipalities due to its importance as a platform for accessing information of public interest for citizens and because it allows to use the electronic services offered by public administrations. However, after

the analyzes, poor accessibility results were detected regarding multimedia elements, PDF files, images and the possibility of increasing the size of the text.

It is also necessary to highlight other studies, such as the one conducted by Salvador Oliván and Fernández Ruiz (2012), which presents the map of processes that take place at the Zaragoza Town Council, a requirement to obtain the Aenor-Marca N certification on ICT accessibility that guarantees compliance with accessibility guidelines. On the other hand, Atencias López (2015) analyzes the relationship between public administration and citizens through new technologies and presents a series of improvements to ensure its efficiency, productivity and the accessibility to electronic procedures.

But difficulties in terms of web accessibility for citizens, including those with physical deficiencies, are detected not only in Spain. Lazar, Dudley-Sponauble and Dawn Greenidge (2004) state that "given that tools and guidelines are available to help in building accessible web sites, and given that public policy generally supports web accessibility, it is surprising that so many web sites are inaccessible" (2004, p. 284). In the same way, Chiang, Cole, Gupta, Kaiser and Starren (2005) emphasize that, despite technological advances, there are still many difficulties for people with visual disabilities to access online information.

In a more current work, Bakhsh and Mehmood (2012) show that "in Pakistan it is very difficult or impossible for a visually disabled person to access the electronic information available on the government website because the websites are not developed according to the W3C accessibility standards" (2012, p. 347). They therefore denounce that "the inaccessibility of information for disabled causes discrimination between disabled and non disabled", "the accessible government websites must make the disabled to become well informed about the recent information" (2012, p. 347).

Fernández Vásquez, Acevedo, Mariño María, Godoy and Alfonzo (2012) focused on measuring accessibility in two municipal websites of the provinces belonging to northeastern Argentina. Their results showed that, although they comply with some of the guidelines specified by WAI regarding the concepts of accessibility applied and the minimum criteria are correctly implemented, these seem to be more a coincidence than a knowledge of the technical and political managers on this subject (2012, p. 268).

Even so, it is important to note that most of the resources and sources consulted address the issue of accessibility focused exclusively on users with visual, sound and motor disabilities, without considering that, as indicated by Nielsen, "when it comes to the web, the concept of disability must be very broad" (2000, p. 298). In this study, we are aware that other types of disabilities should be taken into account, such as those related to the cognitive, but "unfortunately these have not involved as much research at the interface level as physical disabilities, so the guidelines to support these users are not very well established" (Nielsen, 2000, p. 310).

Thus, and for a correct of webs assessment, previous studies that expose or delimit the guidelines to create pages accessible to people with any type of disability and that diminish the technical and content deficiencies that may produce an info-exclusion or a digital divide situation must be considered. According to the above, and considering the regulations, we have considered the guidelines proposed by WAI as the first point of reference. These put the accent on different aspects. First, they define that images, animations, data maps, graphics and tables should always appear accompanied by a descriptive text. Regarding multimedia content, it is advised to provide subtitles and audio transcriptions, as well as a description of the videos. Finally, allusion is made to hypertext links, which should use text that makes sense out of context (for example, avoiding the "click here") and the organization of the pages should use headers and a consistent structure.

In the same vein, Rodríguez Cifuentes (2000) defends the use of hypertext links and the description of non-text elements. He also warns that the organization of content and the use of a waterfall model is necessary (2000, pp. 4-6). Arregui Noguer and Romero Rey (2011) explain that, in order for people with visual disabilities to make use of the screen reader, the web page must be built based on WAI guidelines, so that web spaces for a greater potential number of users are created. Among their requests, they emphasize the need to create alternative texts based on audios, links and labels with information that is significant in itself and not linked to the context, sharing with previous studies the recommendation of not using tables for the representation of information, as well as the need to add a descriptive text to the visual element (2011, p.36).

On the other hand, it is necessary to take into account the work condcuted by organizations such as ONCE[5], CNSE[6], COCEMFE[7], FEISD[8] and AUNA Foundation (2004), which also define the main problems presented by Internet pages for the people

with different disabilities. According to these studies, the main barriers for the blind or visually impaired are web designs inaccessible through the voice synthesis system or the tactile system, scarcity of standards when searching for information, excess of non-desired information that involves an excessive consumption of time and that is discouraging, lack of structuring of information and problems derived from access to the increasingly graphic presentations of the logical elements (Fundación AUNA, 2004, p. 42). On the other hand, deaf people denounce the non-existence of a translation of the content through sign language (Fundación AUNA, 2004, p. 56).

RESEARCH QUESTIONS

As we explained in the introduction, this research starts from the need to define new indicators that expand those developed up to that moment by the Infoparticipa Map. This platform was conceived in 2012 by the Journalism and Communication Laboratory for the Plural Citizenship of the Autonomous University of Barcelona (LPCCP) to publish the results of the assessment of the information offered by the city councils in their web pages, with the aim of promoting their improvement. In 2016 and 2017 a sample of Spanish municipalities was analyzed applying 52 indicators adapted to the new Spanish legislation on transparency and which are related to the transparency of the corporation and information for participation.

However, these investigations showed the need to broaden these indicators to consider specific aspects that affect people with a situation of inequality regarding their physical abilities or their social and economic situation.

Taking into account the antecedents exposed in the theoretical framework, we pose some fundamental questions:

Q1. Despite the existing regulations, do the web pages of the Spanish city councils comply with the accessibility standards required by law to allow citizens to have easy access to accountability?

Q2. Do the websites of Spanish city councils allow access to information for citizens who are in a situation of inequality due to their physical, social or economic limitations?

METHODOLOGY

The methodology used in this research is based on the previous studies developed between 2007 and 2011 by the Journalism and Communication Laboratory for Plural Citizenship of the Autonomous University of Barcelona (Moreno et al., 2013), which led to the Infoparticipa Map.

The Infoparticipa methodology is proposed as a civic audit of the transparency and accessibility of the websites of public administrations and as a contribution to improve public information and communication by offering solutions. It is based on the idea that social science research developed in a public university should provide innovative solutions to new social problems. We note the importance of defining quality criteria in the information and communication of public administrations so that they can behave as transparent sources of information based on citizen participation (Molina, Simelio, & Rius, 2017).

The methodology of this article is based on the analysis of the institutional web pages of the city councils based on 16 indicators that derive from the questions presented in the previous section. The indicators are formulated in such a way that the answers can only be positive in the case that the information exists and negative in the case that it is not published or that it is incomplete or inadequate. Both the indicators and the way in which they are assessed allow transparency and verification.

The indicators that have been established to evaluate the web pages are elementary information and the way to validate them does not raise doubts, since we have chosen to write them in such a way that the answer can only be yes or no ("this tool exists"). To determine them, we used the previous studies exposed in the theoretical framework (WAI, 1999; Rodríguez Cifuentes, 2000; Fundación AUNA, 2004; Nielsen, 2000; CNSE; FEISD and Arregui Noguera & Romero Rey, 2011).

The evaluation of the indicators was conducted between the months of July and October, 2016.

SAMPLE

For the selection of the sample, the last population figures resulting from the revision of the municipal register of January 1, 2015, offered by the NSO[9] were taken as valid. All Spanish municipalities with more than 100,000 inhabitants were selected. Thus, a sample of 62 websites was obtained from the city councils of the following cities: Almería, Algeciras, Cádiz, Jerez de la Frontera, Granada, Huelva, Jaén, Málaga, Marbella, Dos

Hermanas, Seville, Córdoba, Zaragoza, Gijón, Oviedo, Las Palmas de Gran Canarias, Telde, San Cristóbal de la Laguna, Santa Cruz de Tenerife, Santander, Badalona, Barcelona, L'Hospitalet de Llobregat, Lleida, Mataró, Reus, Sabadell, Tarragona, Terrassa, Santa Coloma de Gramenet, Albacete, Burgos, León, Salamanca, Valladolid, Alicante, Elche, Castellón de la Plana, Valencia, Badajoz, A Coruña, Ourense, Vigo, Palma de Mallorca, Logroño, Madrid, Alcalá de Henares, Alcobendas , Alcorcón, Fuenlabrada, Getafe, Leganés, Móstoles, Parla, Torrejón de Ardoz, Murcia, Cartagena, Pamplona/Iruña, Vitoria Gasteiz, Barakaldo, Bilbao and Donostia/San Sebastián.

DEFINITION OF INDICATORS

Prior to the definition of indicators, user profiles were specified based on their access limitations considering the following criteria: place of origin, age, economic resources, ICT training and physical disabilities (visual, auditory and motor). Thus, the following types of users were defined:

- Foreign citizens. We include in this category all citizens from other countries, of non-Hispanic language and with difficulties in its use.

- Non-experienced citizens. We consider all those who lack training in information and communications technologies to be non-experienced.

- Elderly citizens. All those who are over 65 years old will be considered elder citizens. According to Marí Sáez (2009) and Barrantes and Cozzubo Chaparro (2015), this profile represents the lowest rate of Internet use.

- Citizens with few economic resources. All those people who have minimum income, which prevents them from using a connection to the network with higher data speeds. This situation affects the access and loading time of the web pages consulted.

- Citizens with visual, auditory and motor difficulties. In this case, we refer to all those citizens who have problems, partial or total, of vision, hearing or motor skills.

Next, we list and explain those indicators and add the priority profiles of citizens on which they have repercussions.

1. Language selection. This option is essential so that all citizens, regardless of their place of origin, can access the information. The indicator is validated if the web page offers the possibility of choosing different languages. Priority profiles: foreign citizens.

2. Website map. It is necessary to be able to visualize the composition and organization of the page at a single glance. The indicator is validated if the website offers a link entitled Website Map or Web Map that allows to see the total composition of the page. Priority profiles: non-experienced citizens.

3. Direct search tool. The indicator is validated if the direct search is signaled by the verb "Go to" or by the magnifying glass icon. It is advised to use the magnifying glass to make it more recognizable. Priority profiles: foreign citizens or citizens with visual difficulty.

4. Breadcrumb navigation. This element is essential to indicate the route taken to the user. The indicator is validated if the web page offers the user the navigation through breadcrumbs. Priority profiles: non-experienced citizens.

5. Return to the home page. In order to validate the indicator in each of the pages, the option Home, Portal, Web Portal, City Council Web, must appear, so that the user can return to the home page. It is advised that this option be accompanied by an icon to be more recognizable. It will be valid when returning to the main page is indicated exclusively by one of these four options or all accompanied by the icon. It will not be validated if it is obtained by clicking on the logo or the identifying symbol of the place or if home option in the breadcrumb navigation must be used, since it will be difficult to reach by the inexperienced citizens. Priority profiles: foreign citizens, non-experienced citizens, citizens with visual difficulties or elderly citizens.

6. Location of the elements. Certain elements must always be located in the same area of the screen so that citizens have a fast and efficient navigation.

The indicator is validated if each of the pages that compose the website has the same structure and location of elements. Priority profiles: citizens with motor difficulty, citizens with visual difficulties or elderly citizens.

7. Diversity of formats of the documents available for download. The objective is that all citizens can interact with them in case of need. The indicator is validated if the possibility of downloading documents in different formats is offered: Word, Excel or PDF. Priority profiles: citizens with visual difficulty or citizens with motor difficulty.

8. Forms. Since they are complex to manage for some citizens, the website must allow their download so that they can:

    ›   Complete them and deliver them physically in any public administration.

    ›   Send them through any other type of complementary telematic attention.

    ›   Send them to an email address as an attachment.

    The indicator is validated if the web offers the possibility of downloading the forms or filling them out on the same page. Priority profiles: citizens with visual difficulty or citizens with motor difficulty.

9. Channel redundancy. The compositional elements of the page will be responsible for accompanying or enhancing the information through various channels. The indicator is validated if the web page presents different ways of accessing the same information, thus facilitating its location. Priority profiles: non-experienced citizens, elderly citizens or citizens with visual disabilities.

10. The composition of the menus. The indicator is validated if the points indicated below are met:

    10.1. The website presents a menu both vertical and horizontal, both of circular route. Priority profiles: citizens with visual difficulty.

    10.2. Considering the number of tabs that compose them depending on the type of menus: horizontal (5-9 tabs) and vertical (when the number of tabs is considerable). Priority profiles: elderly citizens.

    10.3. The pull-down menus will have a fixed position, if they exist, and they must remain present when they are accessed. Priority profiles: citizens with motor disabilities, elderly citizens, non-experienced citizens or citizens with visual difficulties.

    10.4. The menus must present descriptive labels favoring the predictability of the contents that the user will find once they access it. Priority profiles: non-experienced citizens.

11. Position of the information. The indicator is validated if the buttons or links on the website comply with the Fitts Law.

    11.1. Comply with the Fitts Law, according to MacKenzie (1992): users should not have to go long distances with the mouse to get from one component to another. It is important that on reaching one they can manipulate them easily. Priority profiles: citizens with mobility disabilities or elderly citizens.

    11.2. It is essential to control both the size of the elements that suppose habitual actions for the users as well as their position: they must be placed near the starting position. Priority profiles: non-experienced citizens or citizens with motor disabilities.

12. Texts. The indicator is validated if all the points described below are met.

    12.1. They should appear exposed in an agile and enjoyable way. Priority profiles: citizens with visual difficulty.

    12.2. They should make use of elements such as color, bold and italics to highlight part of the information. Priority profiles: citizens with visual difficulty.

    12.3. The active links must be properly differentiated from the rest of the text. Priority profiles:

non-experienced citizens or citizens with visual difficulties.

12.4. The texts must offer the possibility of modifying their size or being reproduced by audio. Priority profiles: citizens with visual difficulty or citizens with auditory difficulties.

13. Multimedia content. To validate the indicator, the multimedia content must appear accompanied by subtitles, transcriptions or its explanation by sign language, and it is mandatory that the same video offers the three indicated options. The indicator is not validated if the three cases are not given. Priority profiles: foreign citizens or citizens with hearing difficulties.

14. Images, tables and graphics. These elements must be accompanied by a descriptive text, whether written or audiovisual. The indicator is validated if the visual elements are accompanied by written text or an audio that allows describing the information contained in the image, table or graphic. Priority profiles: citizens with visual difficulties or citizens with few economic resources.

15. Timeout in pop-up messages. These must always wait for the user's acceptance before disappearing. The indicator is validated if there is no waiting time. Priority profiles: citizens with visual difficulty or citizens with motor difficulty.

16. Use of Adobe Flash and incorporation of plugins. The webs must be built properly, so that they do not require the user to access the full view of the content of the page. This indicator is not validated if the web requires it. Priority profiles: non-experienced citizens or citizens with visual difficulties.

Having exposed the necessary indicators, we proceed to analyze each of the web pages of the municipalities that compose the sample. The localization of the indicators begins on the homepage and a full navigation is continued both along and across the page.

The data collected were worked with the spreadsheets of the Microsoft Excel program, which allowed a series of operations to be conducted. The analysis, of a discriminatory nature, is based on the binary system of zeros and ones to indicate whether or not each of the indicators exists on the analyzed web page.

RESULTS

The results of the analysis show that none of the municipalities that compose the sample meet 100% of the proposed accessibility indicators, with only four municipalities exceeding 80%-90% of these. A total of 58.06% of the websites of the municipalities are in the range of 70%-80% of indicators fulfilled, 29.03% are between 60%-70%, and 3.2% between 50%-60%. Only the web pages of two city councils do not reach 20% of the indicators. Below are the percentages of indicators met according to the different cities.

Therefore, in a first description of the data we can observe that the majority of the Spanish city councils of more than 100,000 inhabitants consider a high percentage of the indicators proposed when designing and publishing content on the institutional websites of the corporation. Thus, among the most positive elements, it should be noted that all websites have a direct search tool, 74.19% do not have waiting time for pop-up messages, 80.13% contain a website map and 98.4% % comply with Fitts Law. Similarly, 98.4% of the websites have the same structure and location of elements in each of the pages that compose the site. However, it is necessary to analyze more carefully the most common aspects that in many cases are not met and that would be easy to solve by the technical and political managers of the municipal websites.

In the first place, and regarding multimedia content, the audiovisual content does not appear accompanied by subtitles, transcriptions or sign language reproduction in none of the analyzed websites. This means that foreign citizens or those who have a visual or hearing disability do not have access to this type of content and, therefore, they are not allowed to have transparent information that facilitates their role of controlling the institutions public and their accountability within the framework of participatory democracy. To this it is added that in 90.3% of the websites there is no possibility of reproducing the textual content offered by the page through audio. In this regard, it is important to note that the websites of cities such as Alicante, Valencia, Vitoria Gasteiz, Santander and Cartagena do reproduce all the content of the page by audio. To do this, they apply a software known as Inclusite, a cloud service that increases the accessibility of the website for people with difficulties, allowing navigation without special devices or modifications to the web of origin. L'Hospitalet de Llobregat, although it does not use this tool, presents the possibility of reproducing the texts through voice reproduction. These cases of

Percentage of indicators met	N° of cities that meet it	Cities
100 %	-	-
90-80%	4	Terrassa, Donostia/San Sebastián, L' Hospitalet de Llobregat and Parla
80-70%	36	Gijón, Pamplona, Palma de Mallorca, A Coruña, Alcalá de Henares, Barcelona, Granada, Huelva, Jaén, Leganés, Madrid, Reus, Alcobendas, Alcorcón, Algeciras, Cádiz, Córdoba, Dos Hermanas, Jerez de la Frontera, Las Palmas de Gran Canaria, Lleida, Marbella, Sabadell, Santa Coloma de Gramenet, Santa Cruz de Tenerife, Vigo, Alicante, Badajoz, Cartagena, Bilbao, Murcia, Valladolid, Vitoria Gasteiz, Oviedo and Santander
70-60%	18	Fuenlabrada, Getafe, Málaga, Móstoles, Ourense, Telde, Torrejón de Ardoz, Barakaldo, Burgos, Elche, León, Logroño, Salamanca, Badalona, San Cristóbal de la Laguna, Zaragoza, Albacete, Seville and Tarragona
60-50%	2	Valencia and Castellón de la Plana
50-40%	-	-
40-30%	-	-
30-20%	-	-
20-10%	2	Almería and Mataró
10-0%	-	-

Table 1. City councils that meet the established indicators

Source: Own elaboration.

good practices can be useful examples to apply to other websites of public institutions.

Beyond these absences, other deficiencies related to access to the text are detected. On the one hand, it has to be noted that 88.7% of web pages –except those of Lleida, Alcalá de Henares, Leganés, Parla, Torrejón de Ardoz, Murcia and Salamanca– do not allow the increase in the size of the text, creating important difficulties for people with visual limitations. On the other hand, only the websites of the municipalities of Gijón, Badajoz, Palma de Mallorca, León, Pamplona and all those belonging to the autonomous communities of Catalonia, Madrid, Valencia and the Basque Country, meet the indicator language selection, being the most common options that appear as alternatives Catalan, Valencian, Basque, English, French and Spanish; Badalona adds German, Reus adds Russian and

Japanese and Tarragona has a total of 53 languages. In this way, access to information is facilitated to citizens who come from other non-Spanish speaking countries.

Regarding the images, it is necessary to indicate that their presence can slow down the loading of the page and, therefore, access to information. In this sense, it is essential that these are accompanied by text for two reasons: if the option to upload images is actively disabled, users that, due to economic reasons, do not have a high speed of Internet connection will be favored, and it will benefit citizens with visual difficulties using screen readers by providing the description of the content. Thus, and although after the analysis made it is found that 100% of the pages contain images to give greater dynamism and complement the written information, only 66.1% of the cases are accompanied by an alternative text that describes their content.

Indicators not met (the most common)	Percentage of cities	Profile of the affected citizen
Absence of subtitles. transcriptions or reproduction by sign language	100 %	Foreign citizens Citizen with visual difficulty Hearing impaired citizens
Absence of circular navigation menu	100 %	Citizens with visual difficulty
There is no possibility to reproduce by audio the textual content offered by the page	90.3 %	Citizens with visual difficulty
Does not allow to enlarge the text of the page	88.7 %	Citizens with visual difficulty
No easy return to the homepage	66.1 %	Elderly citizens Citizens with motor difficulty
They do not allow a quick location of the information through vertical and horizontal menus	64.5 %	Elderly citizens Non-experienced citizens
Channel redundancy	56.45 %	Non-experienced citizens Elderly citizens
Inability to choose language	46.7 %	Foreign citizens
Disposition and access to files/documents	45.16 %	Non-experienced citizens Elderly citizens
Breadcrumb navigation	41.93 %	Non-experienced citizens Elderly citizens
Images are not accompanied by an alternative text	33.9 %	Citizens with few economic resources
They do not have permanent drop-down menus	22.6 %	Elderly citizens Non-experienced citizens Citizens with motor difficulty Citizen with visual difficulty

Table 2. Citizens affected by inaccessibility to web information

Source: Own elaboration.

This indicator is essential for access to information for all citizens, especially benefiting those with visual disabilities and those with slow Internet connections.

In addition, it should be noted that 66.1% of websites have deficiencies in the option Return to the home page, as this is not properly indicated. This fact prevents the inexperienced users the possibility of returning to the initial position when they are lost in their navigation. In this sense, 41.93% of the websites do not have the Navigating by breadcrumbs indicator. This situation makes it difficult for inexperienced or elderly citizens to know what route they have taken and where on the website they are located.

On the other hand, and focusing on the indicators related to the menus, although 77.4% of the pages have fixed drop-down menus, which allow citizens with motor disabilities and elderly people to click comfortably on the link to the information, 64.5% of the pages do not have a vertical and horizontal menu that allows this information to be complemented and exposed to the naked eye, thus making it easier for inexperienced users to locate it. Regarding the possibility of quickly accessing information through different channels, the results show that 56.45% of the websites do not comply with the Channel redundancy indicator, which complicates navigation to the inexperienced citizens and the elderly.

Continuing with the navigation menus, none of the websites contain circular menus, thus damaging blind citizens. Finally, and in relation to the obligation to install Adobe Flash or plugins for accessing web content, it should be noted that only the website of the municipality of Almería (1.6% of the total of the websites analyzed) requires the user the incorporation of Adobe Flash to access a full view of the page. The website of the city of Barcelona requires the incorporation of plugins for access to multimedia content, aspects that hinder citizens' access to the website.

Considering all of the above, and after demonstrating that the inaccessibility of the web pages of the Spanish city councils revolves around access to texts (written or audiovisual) and the disposition of information, it is evident that the most disadvantaged citizens are, firstly, those with visual, auditory and motor difficulty, followed by the elderly, the foreigners, the non-experienced and those with few economic resources.

CONCLUSIONS

Based on the data obtained, it has been shown that there is still a significant percentage of websites that violate some of the guidelines set by WAI (1999) and AENOR (2012), which makes it difficult for citizens with visual, auditory or motor difficulties to access information, something that Arregui Noguer and Romero Rey already denounced in 2011. In addition, it is noteworthy that the indicators related to the groups included in Law 34/2002, of July 11, on Services of the Information Society and of Electronic Commerce (LSSICE), which regulates accessibility provisions for people with physical disabilities and elderly people, are the ones that, in a greater case, are not met.

Our study shows that the deficiencies located in previous studies (Rodríguez Cifuentes, 2000; Fundación AUNA, 2000; Nielsen, 2000; CNSE, 2002; FEISD, 2002; Muñoz Cañavate & Chaín Navarro, 2004; Chaín Navarro, 2005; Fundación ONCE and Grupo Fundosa, 2012) and related to the inaccessibility of information for people with some type of disability continue to exist in the web pages of municipal public institutions.

In the same way, we can corroborate what was stated by Perurena Cancio and Moráguez Berges (2013): that the configuration of the systems pays more attention to elements related to their performance or reliability, but that, nevertheless, aspects as relevant as to build an interactive design that adapts to the specific characteristics of each user and that quickly shows the information requested are secondary. In this regard, 64.5% of the websites analyzed do not have an adequate design that allows a quick location of information through vertical and horizontal menus.

Considering all this, we can affirm that after more than a decade of works focused on web accessibility, public institutions need to improve their institutional web pages regarding access to multimedia elements and written text for citizens with physical or social difficulties.

Despite this apparent involution, if we contrast the results obtained with those of previous research, it is verified that there are Spanish municipalities that show progress in their commitment to improve the accessibility conditions of their pages. Thus, although the Observatorio de la Infoaccesibilidad de Discapnet (2008) indicates that the websites that obtained the best position in 2005 lost quality three years later, our research shows that there are communities that, compared to that study, have improved in accessibility. In 2006, both Andalusia, Catalonia and Galicia received the best rating according to the study conducted by the CTIC Foundation, so it is interesting to indicate that the data have revealed that these same autonomous communities are those that comply with a higher percentage of indicators in this research.

However, and as it has been demonstrated in the results section, there are websites that continue to present important gaps that prevent citizens from easily and transparently evaluating the actions of those responsible for local governments and accountability. Thus, it would be necessary for municipal corporations to consider that "although, compared to print, online information has many advantages regarding accessibility, it is necessary that these spaces are adapted to the entire citizenship, regardless of the place of provenance, age, social class, ICT training and physical limitations" (Nielsen, 2000, p. 298).

DISCUSSION

After a thorough analysis of the theoretical framework described above, we have been able to achieve the objective set for this work. Thus, we present a novel methodology based on the definition of 16 indicators that allow to analyze whether the web pages of Spanish city councils conduct a good practice regarding the access of citizens with reduced capacities to public information. This list of indicators –with the specification of the criteria applied in the evaluation of each one– is conceived as an

instrument for researchers, but also for policy makers and technicians of the analyzed websites and for any citizen, so that they can compare the data with which they are evaluated. This allows those responsible for the institutional websites to improve their information and accessibility, following the criteria used to validate each indicator. Therefore, the methodology used can represent a social advance that allows the improvement of the websites in relation to their accessibility for people who are in a situation of inequality because of their physical, social or economic conditions.

In addition, although the indicators marked have focused on analyzing the possibilities of citizens with reduced capacities to access the public information displayed on the websites of the municipalities, the methodology presented can also be applied to the analysis of other institutional websites, since they share a very similar structural pattern (Pérez Montoro, 2014, p.193).

Regarding the main research questions, we can say that the websites of Spanish municipalities have gaps in terms of accessibility, which means that there are groups with physical or social difficulties who have problems accessing information; the most affected are people with visual, auditory or motor difficulty.

This situation entails the lack of empowerment of this groups in the digital environment.

In conclusion, this study shows that, in spite of the previous studies conducted by institutions and organizations, as well as by academics, which exposed and denounced the deficiencies that the websites presented for vulnerable users, the Spanish local administration has not granted this social group of citizens the digital empowerment to access the web information. Thus, the objective to reach the principle of equality of opportunities in the fight against discrimination looks distant.

In the context of the new Transparency Law, municipalities have the responsibility to include as many accessibility functions as possible, covering the basic needs of all citizens. Thus, in order to improve this reality, it is necessary to demand that the city councils modify the design of their websites, and it is desirable to impose more specific regulations, as well as monitoring their compliance and establishing sanctions. In short, it is about complying with the principle of equal opportunities for this citizenry that demands their right of access to information, transparency and accountability in the digital sphere.

FOOTNOTES

1. This paper is part of an R+D+i research entitled Metodologías y modelos de información para el seguimiento de la acción de los responsables de los gobiernos locales y la rendición de cuentas [Methodologies and information models for monitoring the action of those responsible for local governments and accountability] (CSO2015-64568-R (MINECO / FEDER), financed by the Ministry of Economy and Competitiveness and the European Regional Development Fund (ERDF).

2. http://www.mapainfoparticipa.com/index/home/

3. http://www.w3.org/WAI/References/QuickTips

4. The CTIC Foundation (Technological Center for Information and Communication) is a private, non-profit, so-cial and cooperation institution for technological development. http://www.fundacionctic.org

5. Spain's National Organization of Blind People. http://www.once.es

6. State Confederation of Deaf People. http://www.fundacioncnse.org

7. State Coordination Confederation of Physically Handicapped People of Spain. http://www.cocemfe.es

8. Spanish Federation of Institutions for Down Syndrome. http://www.sindromedown.net

9. http://www.ine.es/jaxiT3/Datos.htm?t=2913

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