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LOCAL E-GOVERNMENT 2.0: SOCIAL MEDIA AND CORPORATE TRANSPARENCY IN MUNICIPALITIES

Enrique Bonsón
Facultad de Ciencias Empresariales
Universidad de Huelva

Lourdes Torres
Facultad de Economía y Empresa
Universidad de Zaragoza

Sonia Royo
Facultad de Economía y Empresa
Universidad de Zaragoza

Francisco Flores
Facultad de Ciencias Empresariales
Universidad de Huelva

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Resumen

El objetivo de este trabajo es proporcionar una visión general sobre el uso de las herramientas de la Web 2.0 y los denominados *social media* (medios de comunicación social interactiva, como blogs, wikis, media sharing y redes sociales) en los ayuntamientos europeos para determinar si estas tecnologías se están utilizando para ofrecer oportunidades de e-participación y hacer posible el *diálogo corporativo*. Además, el trabajo trata de identificar qué factores favorecen el nivel de desarrollo de estas herramientas a nivel local. Nuestros resultados muestran que la mayor parte de los ayuntamientos están utilizando las herramientas de la Web 2.0 y *social media* para mejorar los niveles de transparencia, pero que, en general, el concepto de *diálogo corporativo* y el uso de la Web 2.0 para promover la e-participación todavía se encuentran en sus primeros estadios de desarrollo a nivel local.

Abstract

The aim of this work is to provide an overall view about the use of Web 2.0 and social media tools in EU local governments in order to determine whether local governments are using these technologies to increase e-participation and to open a real corporate dialogue. In addition, the paper tries to identify which factors promote the level of development of these tools at local level. Our results show that most local governments are using Web 2.0 and social media tools to enhance transparency but, in general, the concept of corporate dialogue and the use of Web 2.0 to promote e-participation are still in their infancy at the local level.

1. Introduction

Transparency and new forms of accountability have been highlighted as key elements of good governance (Kim et al., 2005). The search for new styles of governance which promote higher levels of transparency and the engagement of citizens is viewed as a way of improving citizens' trust in governments. Various authors have highlighted the potential contribution of the Internet to enhance the interactivity, transparency and openness of public sector entities and to promote new forms of accountability (Demchak et al., 2000; Cyberspace Public Research Group –CyPRG, 2001; La Porte et al., 2002; Drüke, 2007), which are all considered as positive values to increase citizen trust in governments (Demchak et al., 2000; Kim et al. 2,005).

E-government initiatives can be found in almost all the modernization programs of Western democracies. In the XXI century, globalization is creating an offer of interactive initiatives and demands which are putting governments worldwide under pressure to change and innovate the way in which their bureaucracies relate to citizens. E-government has been defined as "the use of ICTs, and particularly the Internet, as a tool to achieve better government" (OECD, 2003), that is to say, it is considered a mechanism to transform public administrations through the use of ICTs. One of the reasons why e-government is being adopted, is to strengthen transparency and accountability and to change the passive role that citizens as 'customers/clients' had (Pratchett, 1999; Dimitriu, 2008).

The term Web 2.0 was coined by Tim O'Reilly (2005) to refer to a second-generation Web based on the use of novel technologies, such as RSS (Really Simple Syndication, of Web contents), podcasting (syndication of audio content), mashups (combination of pre-existing applications), folksonomies (popular labeling or categorizing), widgets (Web tools embedded in other sites to perform a particular function) and sharing facilities (options for redistributing the contents of Websites to other users). Additionally, thanks to this technological base, the so-called social media have been developed. These are applications that offer services to communities of on-line users: blogs, social bookmarking, wikis, media sharing and social networks that promote collaboration, joint learning and the speedy exchange of information between users. According to Jiang et al. (2009), any entity can vastly improve its website by implementing Web 2.0 services and technologies. Herget and Mader (2009) have formulated various metrics for the determination of the impact and level of usage of Web 2.0 mechanisms. Hearn et al. (2009) explain that companies can reach out and build relationships with new stakeholders who were previously inaccessible or invisible by using traditional communications media and this also applies to public sector entities. In 2009, 28% of the European Union (EU) population had used the Internet for posting messages to chat sites, blogs, social networking sites, newsgroups or on-line discussion in the previous 3 months, and this percentage increases to 67% if we consider individuals aged 16 to 24[1]. However, there are no systematic studies of the specific needs of the local government community for this kind of technology.

The main benefits that the Web 2.0 offers to public sector entities are the enhancement of transparency and citizen participation. The Web 2.0 has favored the emergence of citizen-created content that enriches socio-political debates and that

[1] Source: Eurostat Information Society Statistics database. Dataset: "Internet activities - Individuals (isoc_ci_ac_i)". Available at http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=isoc_ci_ac_i&lang=en (Accessed 7 October 2010).

increases the diversity of opinions, the free flow of information and freedom of expression. These tools can be used for engaging citizens, exchanging opinions, provoking debate and sharing information about social and political problems (OECD, 2007). Furthermore, public administrations can take advantage of the heyday of this new participative culture that is developing in many citizens in order to draw their attention towards municipal management, engage them in local public decision-making and improve government-to-citizen relationships. All in all, Government 2.0 presents challenges to some long-held government practices and has the potential to change the relationship between government and its citizens (AGIMO, 2009). As indicated in the AGIMO report of the Government 2.0 Taskforce (2009 p. 2): "*Government 2.0 is not specifically about social networking or technology … It represents a fundamental shift in the implementation of government -toward an open, collaborative, cooperative arrangement where there is (wherever possible) open consultation, open data, shared knowledge, mutual acknowledgment of expertise, mutual respect for shared values and an understanding of how to agree to disagree. Technology and social tools are an important part of this change but are essentially [just] an enabler in this process*".

However, since the development of this kind of technology is very recent, research about the impact of social computing on the public sector is still highly tentative and exploratory (European Commission, 2009). As research on this topic is still in its infancy, studies like this, which aim at determining the level of use of these technologies by municipalities are relevant and necessary in order to propose areas for improvement and future action plans.

The objective of this paper is to provide an overall view about the use of Web 2.0 and social media tools in EU local governments in order to determine whether local governments are using these technologies to increase e-participation and to open a real *corporate dialogue*. The paper also aims to identify which factors promote the level of development of these tools at local level. For this purpose, we analyze the Web sites of seventy-five EU cities and the presence of these cities in social media platforms. The cities analyzed are the biggest cities of fifteen EU countries (EU-15) which represent more than 85% of the EU population. Specifically, this study attempts to answer the following research questions: 1) What is the level of acceptance of Web 2.0 and social media tools by European local governments? 2) Are European local governments using these tools to promote higher levels of citizen participation and corporate dialogue or just to enhance transparency? 3) Is the public administration style affecting the approach adopted in the use of Web 2.0 tools by EU local governments?, and 4) What factors promote the development of these tools at local level?

The remainder of the paper is structured as follows. Section 2 introduces Web 2.0 and social media tools and discusses the opportunities they offer for local governments. Section 3 describes the methodology of our study. Results are presented in Section 4 and, finally, the discussion and conclusions bring the paper to an end.

2. Web 2.0 and social media tools. What opportunities do they offer for local governments?

The evolving paradigm of Web 2.0, thanks to the extension of certain standards (Hwang et al., 2009), along with the rise of social networks and virtual communities, provides an opportunity for people to learn together and share their experiences (Elia et al., 2009). It is necessary to make a clear distinction between multimedia and Web 2.0. Many government websites offer Web television and videos, even in real time –the so called *webcasts*. But, in many cases, it is not possible to interact, offer an opinion, or

download these materials to be re-used in other devices. Furthermore, a clear differentiation must be made between Web 2.0 supporting technologies and the social media, which result from the application of Web 2.0 technologies in the current online social environment.

Chu and Xu (2009) have undertaken a bibliometric survey, performed on a set of 1,718 documents relating to Web 2.0, to explore the dimensions and characteristics of this emerging field. According to their findings, the main features of this new paradigm are that the Web 2.0 technology is *of the user*, *by the user* and, more importantly, *for the user*. Terms like dynamism, interaction, collaboration, participation and trust are essential words in this context. Accordingly, the Web 2.0 is being heralded as giving a 21st century spin on Abraham Lincoln's adage: "Government of the people, by the people for the people"[2].

Among Web 2.0 technologies, four paradigmatic examples can be mentioned:

- First, *content syndication*[3] *(RSS - Really Simple Syndication -, Atom* and *vodcasting-podcasting)* represents a new way of broadcasting by means of special pieces of software called *feeds* –XML based files. A feed is a data format used to provide users with frequently updated content that can be text, an audio file (then it is called *podcasting*) or a video (when it is called indistinctively *videocasting*, *vidcasting* or *vodcasting*), specifically created and delivered for a concrete purpose, such as a council meeting or the communication of council minutes and related documents to interested citizens. The most frequent type of web text syndication is when the web feed only allows users to receive a summary of the website's recently added content (for example, the latest news or forum posts), but RSS documents can contain either a summary of the content or the full content. Sometimes, the term *podcasting* describes the distribution of either audio or video files via RSS in a wider sense. This kind of material, after being published in the municipality web site, is automatically delivered to the users that are *syndicated* to it, that is, users who decided to incorporate the corresponding feed to their web browsers, news readers or mobile devices just clicking once on them. These data can then be re-used in different devices like a cell phone, an i-pod, etc.

- Second, *widgets*, which consist of the inclusion in a web page of material (text, graph, photos, videos, etc.) by means of a small application –created by a third party– that can be installed and executed within a web page by an end user. Widgets are tools to deliver information from a web source to other pages or devices so they can be used as a means for syndication. Typical examples are the small windows with a different aspect to the web page that hosts them and that offer weather or stock updates, for example.

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[2] Department of Innovation, Industry and Regional Development, State Government of Victoria, Australia (2009): "Web 2.0: The New Tools for Democratic Conversations – A snapshot of Initiatives in Government". Available at: http://www.egov.vic.gov.au/ (Accessed: 24 April 2010).

[3] Internet Content Syndication Council (2008): "Content Creation and Distribution in an Expanding Internet Universe: A White Paper". Available at: http://internetsyndication.org (Accessed: 12 November 2010).

- Third, *sharing and bookmarking facilities*, which allow a user to share Web content with their friends by means of social networks and to give a score to that content based on its usefulness and/or relevance.

- And fourth, *mashups*, which are applications that take data and combine it either with other data or other web services to create something new. For example, a mashup may take data about the location of government services and then plot their locations and other associated data on a map. Google Maps based applications are popular practice among mashups.

Additionally, it is relevant to cite several technologies whose popularity and development are evolving along with the development of Web 2.0 technologies:

- *Embeddings* consist of the inclusion in a web page of material (*embedding* of text, photos, videos) created by a third party. The result of this action is the creation of a compound document with regular text combined with non-text elements such as spreadsheets, pictures, digital videos, digital audio and other multimedia features.

- *Webcasts* are media files, distributed over the Internet using *streaming* media technology, that is, a technique to distribute a single content source to many simultaneous listeners/viewers. A webcast may either be distributed live or on demand (for prerecorded broadcasts). Essentially, webcasting is "broadcasting" over the Internet. Public entities can make some council meetings, announcements or mayor's messages public by means of this technology. Although it is not a prerequisite of this tool, webcasts can allow users to interact by sending comments.

The above-mentioned technologies are present in the regular functioning of almost every social media. In some cases, these technologies allow the capture of web content into social media platforms, but other tools offer new services and interactive possibilities to the users. In this field, it may be pertinent to recall the following examples:

- *Blogs* are publishing tools, managed by a particular identified author, in which the entries appear in reverse chronological order, and that make it possible for users to record comments. It is also usual to find links to other blogs. Blogs are becoming a common platform for *citizen journalism*. By using blogs, local governments can collect valuable opinions from their different stakeholders, including citizens, visitors, employees, or beneficiaries of their social and environmental activities. Blogs could also be a valuable tool for detecting social problems in advance and for obtaining ideas for new services and initiatives.

- *Wikis* are a special kind of website, configured to support the entries of different users. An entry, in this context, is like an article in an encyclopedia, but created by a voluntary user and, then, modified, corrected and amended in a controlled fashion by other users. Wikipedia is the best-known initiative; it is a generalist project aimed at creating accurate and up-to-date common knowledge. No previous demonstration of expertise is needed to participate; however, a "bad" entry (incorrect, unsupported or irrelevant) is supposed to be reviewed and corrected in real time and on a continuous basis by the online community. A local government may find wikis useful to start a dialogue about its corporate social responsibility activities or other relevant projects. Under certain conditions, wikis have also been considered helpful for improving relationships with employees (Trkman and Trkman, 2009).

- Media sharing platforms (based on media sharing facilities) should also be emphasized. These not only allow users to share videos (YouTube), photographs (Flickr), documents (DocStoc) and presentations (SlideShare), but also let others offer their evaluations and opinions. Flexible systems of intellectual property licenses, such as Creative Commons, have emerged to support the shared use of information. The main difference between these platforms and the basic technology of sharing and bookmarking is that the municipality can simply use the basic technology from its classical website but, they have to send the information to be distributed to the platforms. These platforms can be used to distribute certain documents (announcements, drafts of regulations, etc.), presentations and pictures to citizens and can also be a platform for citizens to share their own intellectual assets with the community.

- Social networks are new platforms for exchanging personal and professional information. By allowing users to incorporate external web applications, these platforms constitute a new discussion forum. Facebook and My Space can be mentioned as general networks, while LinkedIn is a professional platform. Most of these social networks allow users to interconnect from one of these platforms to another. For example, an entity can create a YouTube channel and a Facebook page and then create links or include materials from its own corporate website. Thus, it is possible to classify social networks as follows:

    - General purpose, like Facebook and MySpace.

    - Professional, like LinkedIn and XING.

    - Specific functionality, like Digg to share web content, Delicious to share bookmarks, etc.

- Twitter, as a social network and a micro-blogging tool, is a mixture of functionalities. Twitter can be used to send instant messages to citizens to announce special events, taking advantage of the viral delivery of information that this tool provides and allowing local politicians to check how this event is perceived by the users.

The tools and practices of the Web 2.0 can help improve policy making and service delivery by enriching government interactions with external stakeholders and enhancing internal knowledge management (European Commission, 2009; OECD, 2009). In this way, the impact of the Web 2.0 on the public sector can be seen in four areas:

1. Improvement of public sector transparency: for example, by using content syndication and social media platforms to bring the public sector agenda and activities closer to citizens and provide news and information in the platforms preferred by citizens (who no longer need to go to the public entity website in order to get this information).

2. Improvement of policy making: new forms of participation, enabled by the use of ICTs, which improve social consciousness and citizen engagement.

3. Improvement of public services: more innovative mechanisms for service delivery.

4. Improvement of knowledge management: transformation of relationships within the organizations and between different public entities.

What is certain is that the new technological base is now available to all the local entities, allowing them to take action on two fronts: the mass distribution of the content of the official website as an amplification of the pre-existing unidirectional system, and/or the implementation of corporate dialogue, as follows:

- In the first case, the local entity can make use of the Web 2.0 technologies to facilitate the mass redistribution of contents, making them more visible but staying within a unidirectional model. An example of this approach is the implementation of functionalities that allow users to redistribute the contents of an official website in their own blogs or social networks (like ShareThis) or to syndicate them (using RSS, ATOM), with the objective of having updated information available at all times. This approach is not true dialogue but it would involve a greater expansion of the official website content.

- In the second case, local governments actively use social media in order to open corporate dialogue. They could, for example, generate a Facebook page or group, a Twitter account, a YouTube channel, or a SlideShare or DocStoc space. Another option would be to create blogs where not only local government officials and/or politicians but also individual citizens would have the opportunity of publishing their own points of view on the material distributed. In the implementation of a strategy for corporate dialogue, as stated by Postman (2009), the use of social media can lead to increased transparency and immediacy and can make it possible for all the users to participate directly in the process of communication through the contribution of contents, comments, tagging, etc. Halavais, (2009) explains how the users of a participative web platform need to receive specific feedback from the entity in order for both parties to obtain benefits.

It is important to get an overall view of the current status of corporate dialogue between local governments and citizens, assuming that it exists in some form. Public authorities are increasingly turning to new ways of interacting with citizens to increase their own efficiency and to be more pro-active in their citizen relations (OECD, 2007). This is the subject of this research.

3. Methodology

The sample for this study consisted of seventy-five EU local governments, including the five biggest cities of the first 15 member countries of the EU. Bigger local governments were selected for this study as they have more need of greater disclosure and lower relative costs for the implementation of these new tools.

The analysis of the use that EU local governments make of Web 2.0 and social media tools was carried out in two steps, during February and March 2010. The first step consisted of analyzing of the **official website of each local government**, in which we looked for the following 8 items and whose presence was scored with a binary variable (0: no presence; 1: presence): 1. Podcasts from the management; 2. RSS or Atom; 3. Vodcast from the management; 4. Real time webcast of municipal events[4]; 5. Widgets; 6. Blogs; 7. Links to official YouTube videos; 8. Social network for the users of the local government website.

[4] The evolution and popularity of this technology is related to the Web 2.0, and it is also known as participative videos.

The second part of the research consisted of an analysis of social media platforms. Apart from the items included in the official website, the presence and activity of the local governments in the most widely-known social media platforms was also measured through different indicators such as the number of followers, number of conversations, number of groups, and so on. The **social media** we analyzed were Twitter, Facebook, LinkedIn, YouTube and Google blogs. We examined the presence of each municipality by the official name provided in their website, that it to say, all the municipalities were examined by the official name they use in their country. In **Twitter**, we checked the following: 1. Existence of an official Twitter account; 2. Number of Twitter followers; 3. Number of Twitter tweets; 4. Number of Twitter lists; 5. Level of activity of the official Twitter account (daily, weekly, monthly, quarterly, semestral, annual or no activity); and 6. Number of Twitter conversations. In **Facebook**, we checked the following: 1. Number of Facebook groups; 2. Existence of an official Facebook group; 3. Number of members of the official Facebook group; 4. Number of Facebook pages; 5. Existence of an official Facebook page; 6. Number of fans of the official Facebook page; and 7. Level of activity at the official Facebook page (using the same criteria explained above for Twitter: daily, weekly, monthly, quarterly, semestral, annual or no activity). In **LinkedIn**, we checked the following: 1. Number of LinkedIn groups; 2. Existence of an official LinkedIn group; and 3. Number of members of the official LinkedIn group. In **YouTube**, we examined the following: 1. Existence of an official YouTube channel; 2. Number of subscribers to the official YouTube channel; and 3. Number of YouTube conversations[5]. Lastly, in **Google blogs**, we checked the number of Google indexed blogs when looking for the official name of the municipality at the search engine http://blogsearch.google.com. This methodology is consistent with the techniques applied to financial entities by Bonsón and Flores (2011).

To analyze the data obtained through the website content analysis, we first carried out an exploratory analysis to provide a general perspective of the use that EU local governments make of the Web 2.0 and social media. Furthermore, each local government has been rated according to a non-exhaustive Sophistication Index (SI) which consists of 13 binary items: the eight items analyzed on each local government website plus the existence of an official Twitter account, an official Facebook group, an official Facebook page, an official LinkedIn group and an official YouTube channel. Thus, the SI is based on the analysis of both the official website and the active presence of each local government in the major social platforms. The SI for each local government is computed as a percentage: number of items scored as 1 over 13 items included in the SI.

The research on transparent and open government usually points to two critical success factors (Bertot et al., 2010): a culture of transparency embedded within the governance system and a transparency "readiness" factor -that is, factors such as technology penetration, the level of technological capabilities of government agencies, and the social and technology readiness of the populace. In order to understand what factors promote the development of Web 2.0 tools and social media platforms at local level, regression analysis has been used. The objective was to test the influence of the following factors on the SI elaborated: the public administration style and different

[5] This is the number of results we got when we looked for the official name of the municipality at the search engine of YouTube because, for every video which is posted, a conversation can be opened.

variables related to the development of the information society. The population of each city was also considered as a control variable.

In the EU-15 countries, four broad styles of public management may be distinguished (Kickert, 1997; Torres, 2004): Anglo-Saxon, Nordic, Germanic, and Southern European countries. During the 1980s, Anglo-Saxon countries introduced a new public managerial approach that emphasizes efficiency, effectiveness and value for money. These countries are more likely to introduce market mechanisms, notions of competitiveness, and attempts to make public services more responsive to users or customers. Nordic countries also belong to a public administration style that is concerned with meeting citizens' needs and they have a tradition of negotiation and consultation. The Germanic and Southern European countries are influenced by structures inherited from a bureaucratic, hierarchical, Weberian public administration grounded in administrative law. The citizen is traditionally considered as a "subject," although this view is changing[6]. The literature on public sector management usually considers that Anglo-Saxon and Nordic countries have a long-standing reputation of public sector reforms, transparency and citizen engagement. On the contrary, Germanic and Southern European countries belong to a more legalistic tradition and have been considered as laggards in introducing some public sector reforms. For this reason, we have considered the possible influence of the public administration style in the development of Web 2.0 and social media tools by EU local governments.

The variables related to the development of the information society considered were as follows: overall level of development of the local government website, Internet penetration in the country, e-government use by individuals in the country, e-commerce use by citizens in the country, Web 2.0 use by citizens and level of development of e-government at central level in each country. The definition and values of this group of independent variables are reported in Table 1.

INSERT TABLE 1 HERE

As can be seen in Table 2, the independent variables related to the development of the information society are highly correlated. As a general rule, problems of multicollinearity arise when the correlation is greater than 0.8 (Gujarati, 2003), which is the case in some of our variables. Therefore, in order to avoid multicollinearity problems, we first applied a factor analysis (Maximum likelihood extraction) to the 6 independent variables related to the development of the information society.

INSERT TABLE 2 HERE

The results of this preliminary factor analysis indicate that 2 factors explain 70% of the total variance in the 6 variables. The value of the KMO test is 0.628, which confirms that the factor analysis is acceptable. Table 5 reports the factor loadings of each variable in the two factors obtained. The interpretation of the two factors obtained is straightforward: Factor 1 measures the level of Internet access and use by citizens while Factor 2 is a measure of the level of development of e-government, primarily in the city, but also in the country.

[6] For an extended explanation of the public administration styles, see Dunleavy and Hood (1994), Torres and Pina (2002), Pollitt and Bouckaert (2000) and Torres (2004).

INSERT TABLE 5 HERE

Therefore, the variables included in the regression analysis are the public administration style dummy variables (three dummies, as we have four public administration styles), the logarithm of the city population and the two factors related to the level of development of the information society.

4. Analysis of results

Table 4 provides an overall view of the use that EU local governments are making of Web 2.0 and social media. As has been mentioned, these 13 items have been used to obtain a sophistication index (SI) for each local government. As can be seen in this table, Web 2.0 and social media are not used extensively in EU local governments. The most widely-used tool is RSS or Atom, which is used by 77% of the local governments. The next two tools in order of importance are blogs on the local government website and links to official YouTube videos, which are offered by 56% and 47% of the local governments, respectively. Therefore, the most frequently used tools enable citizens to be up-to-date with new contents and news (RSS/Atom), have access to videos in YouTube and read and leave comments in some of the blogs offered in the local government website. On the contrary, podcasts from the management (20%), real time webcasts of municipal events (8%) and widgets (7%) are not frequently offered to citizens. Furthermore, when videos are offered on the municipality website, they never allow feedback from viewers. Only Gent (Belgium) and Birmingham (UK) have created their own social network for the municipality website users, but with some limitations, because the possibilities of generating a complex user profile with a picture or of publishing posts that could be read by other users are not available.

Among the social platforms analyzed in this research, Twitter seems to be the most popular for local governments (32% have an official Twitter account). On the contrary, LinkedIn is the least popular one, which seems logical given the nature of this platform as a social network for professional contacts. As regards Facebook, only 17% of the local governments have an official page in this platform. Lastly, 29% of the local governments have an official YouTube channel in which citizens can have access to all the videos from the local government in a single YouTube page and even receive alerts whenever a new video is uploaded.

INSERT TABLE 4 HERE

Table 5 provides an overall view of the presence of EU local governments in the most widely-known social media platforms. The items highlighted in grey in this table indicate an active presence of the municipality (launch of the platform, number of followers and activity), while the other items indicate a passive presence (conversations about the municipality initiated by citizens in the social media, but not necessarily in the official platforms). Although the number of local governments using the social media platforms is not high, we can appreciate that the average number of citizens that are subscribed to them is important, especially in Twitter, with an average of 803 followers, and Facebook, with an average of 1,412 fans. Another important fact

is that a lot is being said about local governments in social media platforms, whether they have a presence there or not, with an average of 576 Twitter conversations, 130 Facebook groups, 1,610 YouTube conversations and 111,717 Google indexed blogs. Therefore, the local governments that are not present in these social platforms are not hearing what citizens are saying about them, missing an important source of information about grass roots opinions and feelings about local policy, public services and daily life in their municipalities.

INSERT TABLE 5 HERE

As regards the individual indicators for each of the local governments analyzed, as we said before, 8 items measuring the presence of Web 2.0 and social media tools were analyzed in the official local government websites[7]. The maximum number of items found was 5, in the websites of Turin and Birmingham. Both cities present podcasts, RSS feeds, blogs and links to official YouTube videos; Turin also has widgets, whereas Birmingham has its own social network for the users of its website. Almost 60% of the local governments present from 2 to 4 items, 27% only present one of these items (RSS, mostly), and 12% do not have any.

With respect to the presence and level of activity of each local government in the social media platforms analyzed, approximately half of the local governments do not have any form of active presence in any of the social networks analyzed. However, in most of the cities there is a promising level of conversation and activity initiated by citizens in the social media platforms. There are also some cases of bad alignment between citizens' demand and local governments' offer vis-a-vis the use of social media. In these cases, there is a lot of activity initiated by citizens in some of the social networks analyzed, but their local governments have not established an official presence in these platforms yet. In general terms, not many country-related patterns can be observed. Therefore, it seems that the development of an active presence in social media platforms is not country-related but dependent on the political will and specific circumstances of each local government. However, some exceptions can be found, such as the cases of Greece and Luxembourg, where the presence of local governments in social media is limited to the capital cities; Spain, where the only social media platform in which some local governments have established an active presence is YouTube; and the Netherlands, where the 5 local governments analyzed are using Twitter very actively, Facebook is not being used at all, 4 of the cities are using LinkedIn and all of them have an official YouTube channel. All this puts Dutch cities (and their citizens) among the most active in the social media arena.

Table 6 presents the statistics of the Web 2.0 and social media Sophistication Index (SI) by country. As indicated in the methodology section, each local government has been rated according to a non-exhaustive Sophistication Index (SI) which consists of 13 binary items: the eight items analyzed on each local government official website plus the existence of an official Twitter account, an official Facebook group, an official Facebook page, an official LinkedIn group and an official YouTube channel.

[7] The individual indicators of each local government can be obtained from the authors upon request.

INSERT TABLE 6 HERE

As can be seen in Table 6, the mean SI is rather low (24.9%) and a high degree of heterogeneity can be found among the 75 EU local governments, the individual SI ranging from 0-61%. The Netherlands is the country with the highest SI on average. Furthermore, the standard deviation figure for Dutch cities is one of the lowest, which shows that this is the country with the highest internal homogeneity in the use of Web 2.0 and social media. Denmark, the UK, Belgium, Italy, Germany, Ireland and Sweden also present above-average scores, although with higher levels of heterogeneity. The maximum individual score is found in Italy (Turin), where we observe the greatest heterogeneity in the SI. If we move to below-average countries (Austria, Finland, France, Spain, Portugal, Greece and Luxembourg), we can see that the levels of heterogeneity are generally high, with the exception of Greece which presents the highest level of homogeneity (but with very low SI scores). In 4 of these countries, the minimum SI is 0%. If we look at the individual SI scores, we can see that 6 cities do not have any of the features of Web 2.0 and social media analyzed. On the contrary, the maximum scores in some of the cities of France, Spain, Austria and Portugal are similar to those of the countries that are above-average. This confirms that heterogeneity in the development of these tools at country level is the rule, with the exceptions of the Netherlands (positive homogeneity) and Greece (negative homogeneity).

Ordinary Least Square (OLS) regression analysis has been used to better understand what factors promote the development of Web 2.0 tools and social media tools at local level. As indicated in the methodology section, the variables included in the regression analysis are the logarithm of the city population, three dummy variables that represent three of the four public administration styles (Anglo-Saxon, Nordic and Germanic, Southern-European local governments being the reference group), and the two factors related to the level of development of the information society: Factor 1, which measures the level of Internet access and use by citizens, and Factor 2, which measures the level of development of e-government, primarily in the city, but also in the country.

Table 7 presents the results of the regression analysis. As can be seen, the model is statistically significant. However, only one of the independent variables (Factor 2) is statistically significant. As we could expect from the descriptive analysis, neither the population of the city nor the public administration style are determining factors of the level of development of Web 2.0 and social media by EU local governments. Surprisingly, Factor 1, which is a measure of the level of Internet access and use by citizens, is not a significant predictor of the level of development of Web 2.0 and social media by EU local governments. So, the development of social media tools and Web 2.0 applications by EU local governments does not seem to depend on citizen demand (measured by the level of citizen access to the Internet and the level of use of e-government or e-commerce). The only factor that turns out to be significant is previous experience with e-government tools in the city. So, the adoption and use of Web 2.0 and social media applications at local level is following a predictable development corresponding to that previously seen in e-government levels.

INSERT TABLE 7 HERE

5. Discussion and Conclusions

According to the previously discussed results, the local governments analyzed present a high level of heterogeneity in the use of Web 2.0 and social media tools. Many councils have realized that, by making their news available through RSS feeds, they can vastly increase their reach with very little extra cost. Most local governments are using Web 2.0 and social media tools to enhance transparency but, in general, the concept of *corporate dialogue* and the use of Web 2.0 to promote e-participation are still in their infancy at the local level.

Engagement summarizes in one word the key theme of Government 2.0. By forming or joining existing online communities that discuss issues of relevance to local policy, service delivery and regulation, local governments and their officers will become more informed, responsive, innovative and citizen-centric. However, our results show that much remains to be done in the use of Web 2.0 by European local governments. Some steps have been taken but EU local governments are lagging behind their citizens in the use of the Web 2.0. Approximately half of the local governments do not have any form of active presence in any of the social networks analyzed, which indicates that, at most, they are mere passive onlookers. However, many citizens are discussing local policy online and local governments should not miss the opinions expressed there. Rather than passive onlookers “out of the network”, local governments should reside “in the network”, as an integral part of it, contributing to discussions as peers rather than outsiders. For local governments, not engaging now involves a greater risk than engaging: citizens will use these networks to talk about them, whether local governments add their voice to the conversation or not.

The development of social media tools and Web 2.0 applications by EU local governments does not depend on citizen demand and neither does the public administration style influence the level of development of these tools. The adoption and use of Web 2.0 and social media applications at local level is following a predictable development corresponding to that previously seen in e-government levels. So, it does not seem feasible that Web 2.0 tools are going to lead, for the moment, to a significant revolution in government-to-citizen relationships. Nowadays, they merely mean a step forward for local governments that make more use of ICTs to provide information and services to external audiences.

Though it involves new technology, Government 2.0 is really about a new approach to governance. Changes in leadership, policy and governance are needed in order to make government information more accessible and usable, to make government more consultative, participatory and transparent, to build a culture of online innovation within the public sector and to promote collaboration at all levels. All this will require substantial changes to the *status quo* and it may take some time for local government 2.0 in the EU to really make a difference, or even remain an illusion.

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Table 1. Independent variables related to the development of the information society.

	Anglo-Saxon		**Nordic**				**Continental European**							
							Germanic		**Southern European**					
	IR	UK	DE	FI	NE	SW	AU	GE	BE	FR	GR	IT	LU	PO	SP
1. E-government in the city	Min: 26.39%; Max: 77.39%; Mean: 52.72%; Std. Dev.: 0.1081														
2. Internet penetration	63	76	84	83	87	88	71	75	69	68	44	42	81	42	57
3. E-government use by citizens	28	35	67	53	55	57	39	37	31	39	12	17	54	21	30
4. E-commerce use by citizens	29	58	50	37	49	45	32	45	25	32	8	8	46	10	16
5. Central e-government	83	100	84	89	79	95	100	74	70	80	45	70	68	100	80
6. Web 2.0 use by citizens	17	33	51	27	24	35	22	35	28	23	18	18	39	21	31

NOTES:
1. Level of development of e-government in the local government: data obtained from Pina et al. (2009). These scores refer to four basic website dimensions: transparency, interactivity, usability and maturity. Due to differences in the cities analyzed, we have five missing values for this variable.
2. Internet penetration: Percentage of Internet users in the country. International Telecommunication Union (2008): “World Telecommunication/ICT Indicators”. Available at: http://www.itu.int/ITU-D/ict/statisTIC/ (accessed 4 May 2010).

3. E-government use by citizens: Percentage of individuals who have used Internet in the last 3 months for interaction with public authorities (2009). Available at: http://ec.europa.eu/eurostat (accessed 7 May 2010).

4. E-commerce use by citizens: Percentage of individuals who ordered goods or services over the Internet, for private use, in the last three months (2009). Available at: http://ec.europa.eu/eurostat (accessed 7 May 2010).

5. Central e-government online availability: Percentage of the 20 basic services defined by the European Commission which are fully available online, i.e. for which it is possible to carry out full electronic case handling. Available at: http://ec.europa.eu/eurostat (accessed 7 May 2010).

6. Web 2.0 use by citizens: Percentage of individuals that have used the Internet, in the last 3 months, for posting messages to chat sites, blogs, social networking sites, newsgroups or on-line discussion (2009). Available at: http://ec.europa.eu/eurostat (accessed 7 October 2010).

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Table 2. Pearson correlations among the continuous independent variables.

	1.	2.	3.	4.	5.	6.	7.
1. E-government in the city							
2. Internet penetration	0.337(**)	1					
3. E-government use by citizens	0.342(**)	0.918(**)	1				
4. E-commerce use by citizens	0.399(**)	0.917(**)	0.804(**)	1			
5. Central e-government	0.536(**)	0.320(**)	0.330(**)	0.366(**)	1		
6. Web 2.0 use by citizens	0.181	0.636 (**)	0.729 (**)	0.660 (**)	0.139	1	
7. Population (ln)	0.451(**)	-0.177	-0.258(*)	-0.099	0.026	-0.104	1

* Significant at 0.05 (bilateral).

** Significant 0.01 (bilateral).

Table 3. Factor loadings (unrotated solution).

	Factor 1	Factor 2
Internet penetration	**0.999**	-0.002
E-government use by citizens	**0.918**	0.030
E-commerce use by citizens	**0.917**	0.115
Web 2.0 use by citizens	**0.637**	-0.023
E-government in the city	0.338	**0.752**
Central e-government	0.321	**0.575**

Table 4. Use of Web 2.0 and social media by EU local governments.

				Local governments	
				N	**%**
Sophistication Index	Web 2.0	Official website	Podcasts from the management	15	20%
			RSS or Atom	58	77.3%
			Vodcasts from the management	0	0%
			Real time webcasts of the municipality events	6	8.0%
			Widgets	5	6.7%
	Social media		Blogs	42	56%
			Links to official YouTube videos from the website	35	46.7%
			Social network of the municipality website users	2	2.7%
		External channels	Official Twitter account	24	32.0%
			Official Facebook group	12	16.0%
			Official Facebook page	13	17.3%
			Official LinkedIn group	9	12.0%
			Official YouTube channel	22	29.3%

Table 5. EU local governments in the social media.

	Social media metrics	Mean
twitter	Councils with an official Twitter account	24 (32.0%)
	Average No. of Twitter followers	803
	Average No. of Twitter tweets	607
	Average No. of Twitter lists	45
	Activity* of the official Twitter account	7
	Average No. of Twitter conversations	576
facebook	Average No. of Facebook groups	130
	Councils with an official Facebook group	12 (16.0%)
	Average No. of members of the official Facebook group	342
	Average No. of Facebook pages	2
	Councils with an official Facebook page	13 (17.3%)
	Average No. of fans of the official Facebook page	1412
	Activity* at the official Facebook page	7
LinkedIn	Average No. of LinkedIn groups	1
	Councils with an official LinkedIn group	9 (12.0%)
	Average No. of members of the official LinkedIn group	159
YouTube Broadcast Yourself	Councils with an official YouTube channel	22 (29.3%)
	Average No. of subscribers to the official YouTube channel	30
	Average No. of YouTube conversations	1610
Google blogs	Google indexed blogs	111717

* Levels of activity (most frequent value):	
0- no activity	5- monthly
1- annual	6- weekly
2- semestral	7- daily
4- quarterly	

Passive presence

Active presence

Note: The average number of followers, conversations, groups, etc., and the most frequent levels of activity, in the grey cells (active presence), has been computed over the number of municipalities with an official presence in each of these platforms: 24 official users in Twitter, 12 official groups in Facebook, 13 official Facebook pages, 9 official LinkedIn groups, and 22 official YouTube channels.

Table 6. Web 2.0 and social media Sophistication Index by country.

	Mean	Min.	Max.	Stand. Dev.
Netherlands	46.2%	38.5%	53.8%	0.0769
Denmark	35.4%	15.4%	53.8%	0.1771
UK	33.8%	15.4%	46.2%	0.1397
Belgium	29.2%	7.7%	53.8%	0.1754
Italy	29.2%	7.7%	61.5%	0.2333
Germany	27.7%	15.4%	46.2%	0.1397
Ireland	27.7%	7.7%	53.8%	0.1685
Sweden	26.2%	15.4%	38.5%	0.0877
Austria	24.6%	7.7%	38.5%	0.1141
Finland	21.5%	7.7%	30.8%	0.1003
France	20.0%	0.0%	53.8%	0.2078
Spain	18.5%	7.7%	38.5%	0.1500
Portugal	13.8%	0.0%	38.5%	0.1668
Greece	10.8%	0.0%	15.4%	0.0688
Luxembourg	9.2%	0.0%	30.8%	0.1264
Total	24.9%	0.0%	61.5%	0.1648

Table 7. Standardized regression coefficients and statistical significance.

Dependent variable: SI Index	
Constant	-0.014
Log population	0.149
Anglo (Dummy)	0.069
Nordic (Dummy)	0.163
Germanic (Dummy)	-0.025
Factor 1	0.170
Factor 2	(0.363)**
R^2	0.302
Model significance (*F* statistic)	4.54**
N	70

Note: ** p < 0.01; * p < 0.05