IRSPM 2012: CONTRADICTION IN PUBLIC MANAGEMENT MANAGING IN VOLATILE TIMENS

SUBTHEME 35: Public Management in volatile times: e-government as enabler of public sector reform

SOCIAL SOFTWARE FOR PUBLIC ENGAGEMENT

Deborah Agostino* and Michela Arnaboldi

Deborah Agostino,
Department of Management Engineering
Politecnico di Milano
Piazza Leonardo da Vinci 32
Milano, Italy
deborah.agostino@polimi.it

Michela Arnaboldi,
Department of Management Engineering
Politecnico di Milano
Piazza Leonardo da Vinci 32
Milano, Italy
michela.arnaboldi@polimi.it

1.INTRODUCTION

Public administrations are nowadays widely adopting instruments such as Facebook, Twitter, or YouTube to interact with citizens. These instruments are based on Web 2.0 technologies, and they go under the umbrella term *Social Software* (SS), which applies to any tool that allows two or more person to collaborate while each person is in a different location (Dames, 2004).

Social software gives the possibility to change the relationship between public administrations and citizens from a mono or bidirectional exchange of information into a many to many, viral, communication process, by which a person can rich in few seconds millions of people publishing on line content (Tepper, 2003; Porter, 2008). More specifically, distinctive elements of social software include the following: the possibility for users to create content on line, rather than passively receiving information (O'Reilly, 2005); the possibility to establish a real time communication not only with the owner of the SS, but with all its users (Shriky, 2003); the possibility to engage in a many to many communication process based on a pervasive network arena (Schollmeier, 2001).

These SS characteristics represent interesting elements for all organizations and they are potentially central for public administrations, which have been increasingly seeking in the last years to increase and improve public engagement. More generally, public engagement is defined as the inclusion of citizens in public affairs (Rowe and Frewer, 2005), by establishing a symmetric relationship between citizens and public administration. Traditional tools for public engagement include citizens' panel, focus group, opinion poll, town meeting, surveys or consultation documents (e.g. Lynn and Busenberg, 1995; Barnes, 1999; Rowe and Frewer, 2000; Rowe et al., 2004; IAP2, 2007). Recent studies (e.g. e.g. Scott, 2006; Bertot et al., 2012; Sandoval-Almazan and Gil-Garcia, 2012) provide evidence of the widely diffusion of Web 2.0 technologies among public administration, especially in local administrations. This widespread adoption is linked to social software characteristics of collaboration and activism, which are recognized as suitable to enhance public engagement (Carter and Bélanger, 2005; Dixon, 2010).

Yet it is also acknowledged that SS for public administrations are not exploited at their full potential (e.g. OECD, 2009), mainly for two reasons. First of all, SS are primarily used as a one way communication tool by local authorities rather than as a networked system. For example, Waters and Williams (2011) investigated the use of Twitter by governmental agencies and concluded that, albeit Twitter's potential to support interactions, governments use the tool to inform rather than to establish a networked symmetrical conversation. This finding is in line with the study by OECD (2009) which recognized that social software does not deliver automatically success in public engagement activities. This research leads to the recognition that "blogs, wikis and social media

(also known as Web 2.0) do not automatically deliver public engagement" (OECD, 2009: 5) and it calls for further analysis about strategies for social software implementation. Second, public administrations are adopting social software without posing the attention on the evaluation of these technologies. While there are several studies about the diffusion of SS or about the type of use by public administrations, the issue about social software effectiveness is mainly neglected. Public administrations are devoting human and financial resources in managing their social software activities; yet it is not assessed the impact of these investments. This study has the objective to evaluate the effectiveness of SS in supporting public engagement. Specifically, this research is aimed at answering the following questions: what is the level of diffusion of social software among Italian city councils? Are the social software tools used by city councils effective in supporting public engagement? Social softwareeffectiveness is evaluated adopting the model proposed by Hoffman and Fodor (2010) based on the level of engagement and awareness.

A website analysis of 119 Italian City Councils was conducted in order to evaluate the current level of diffusion of social software. This analysis gave the possibility, not only to provide a snapshot about the Italian context, but also to evaluate the level of engagement and awareness of these technologies. Results show that Italian city councils are not yet fully involved in social software because only the 13% of them is officially using at least one of these tools. Moreover, a social software effectiveness matrix is proposed in order to evaluate the level of engagement and awareness in the use of social tools by public administrations. This model is useful to describe the current social software strategy, but also to provide direction for improvements. These findings can be of interest for both academic and practitioners. At the academic level, a preliminary model to evaluate social software effectiveness for public engagement is proposed. At the practitioner level, results can be of interest, not only for Italian city councils to be aware about their actual use of social software tools, but it also suggest practitioners a practical approach to measure their ability in achieving wider audience and increase their level of engagement with citizens.

The paper is structured as follows. First, social software is described followed by a specific analysis about how social software tools are currently used by public administration to support public engagement. The second part of the paper describes the extant literature about public engagement while the third part is focused on the effectiveness dimension. The methodology of the research will be presented followed by the result sections. Results are split in two parts: level of diffusion of social software among Italian city councils and evaluation of their effectiveness. Finally, contributions and avenue for further research conclude the paper.

2. SOCIAL SOFTWARE

"The term social software refers to web-based applications which support human interaction as well as the networking of the users" (Steinhüser et al., 2011: 1). Accordingly, it is related to both applications that support communication among groups of users (Shriky, 2003), but also to their associated social aspects (Di Donato, 2009). Social software is not a new phenomenon because social computing, groupware and similar concepts have emerged in the scientific literature since 1980s. Nonetheless, it has been the widely diffusion of internet that has dramatically increased the social software popularity (Parameswaran and Whinston 2007).

Social software is based on Web 2.0, the second generation of the World Wide Web that emphasizes active participation, connectivity, collaboration and sharing of ideas (O'Reilly, 2005).

A precise list of social software tools does not exist because it is a broad term to describe all technologies that support social interactions. This is the reason why under the social software term several tools are included ranging from social network, micro-blogging, second life, instant messaging arriving until blogs, media sharing or social bookmarking.

Social software differs considerably from Web 1.0 technologies for three main reasons. First of all, social technologies allows to create online content, rather than passively receive information. They are based on Web 2.0, also referred to as the "Read-Write Web" (Price, 2006; Richardson, 2006), as it enables members of the general public to actively contribute and shape the content. The typical example is Wikipedia, which is based on the notion that any user can participate in creating content becoming "prosumers" (both consumers and producers).

Second, social software enacts both online and offline communication. For example, Flickr or YouTube facilitates the sharing of videos or photos with friends. Social networks, such as Facebook, MySpace or instant messaging allow both to share content with friends, but also to interact real time with existent contacts, establishing relationships inside the network of users.

Finally, and directly associated with previous aspects, social software facilitates the creation of a network of relationships. The possibility to create content and communicate in real times support the creation of community of users, that share knowledge and ideas. Peer to peer networks (Schollmeier, 2001) is the term that is used to describe the virtual collaboration between dispersed users. Cooperation between peers is an important aspect as it underlines the blurring of differences between users. Within the social space there is no central authority and in the virtual community of users, all of them has the same role and collaboratively contribute to the creation of content (Antoniadis and Grand, 2009; Buchegger and Datta, 2009)

Given these potentialities, social software has become widely adopted instruments in a variety of fields such as libraries (Rutherford, 2008), private companies (Bughin and Manyika 2007) or

universities (Bryant, 2006). Also public administrations have started adopting social technologies to increase the involvement of citizen in public decisions and life (e.g. Meijer et al., 2012), a trend which was already in place and referred to with the label "public engagement" (Rowe and Frewer, 2005). The following section discusses this further.

3. PUBLIC ENGAGEMENT

Public engagement is broadly defined as the involvement of citizens in public affairs (Rowe and Frewer, 2005). Since the middle of '90s the public administration model has shifted from a centralized bureaucracy to a citizen-centric model (Butt and Persuad, 2005; Kolsaker and Lee-Kelly, 2006), in which citizens are involved in all government activities, from policy formation and implementation to coproduction of services (Bovaird, 2007).

The rationale behind the involvement of citizens is represented by the need of public administrations to promote transparent and collaborative government processes (Carter and Bélanger, 2005; Bertot et al., 2010a).

Literature about public engagement proposes different levels of citizens involvement as well as different tools to favor citizens involvement. For what concern levels of involvement, different ladders of participations have been proposed (e.g. Arnstein 1969; Wiedemann and Femers, 1993; Smith et al., 1997; Rowe and Frewer, 2005) depending on the participation of citizens in public affairs. Anrstein (1969) for example, proposed eight ladders of engagement, from manipulation to citizen control. On the contrary, Rowe and Frewer (2005) distinguished between public communication, public consultation and public participation. Albeit the different labels, they can be all connected to the five layers spectrum of public participation, which include information, consultation, involvement, collaboration and empower (IAP2, 2007). While information and consultation are associated to the diffusion of facts and data to the public, the remaining levels implies the inclusion of the citizen in the decision making process, finally arriving at placing the final decision making in the hand of the public with empower.

For what concern tools for supporting public engagement, they include question and answer sessions, focus groups, surveys, open panels, opinion pools, workshops, deliberative polling, citizen juries or citizens advisory committees (e.g. Lynn and Busenberg, 1995; Barnes, 1999; Rowe and Frewer, 2000; Rowe et al., 2004; IAP2, 2007). The recent diffusion of social software has complemented these array of tools available to public administrations (e.g. Scott, 2006; Bertot et al., 2012), which have been widely endorsed, although often without a precise plan or strategy (OECD, 2009; Sandoval-Almazan and Gil-Garcia, 2012).

Distinctive features of social software (creation of content by users, real time communication and network structure) are especially beneficial to support public engagement for three main reasons. First of all, social software have the ability to foster the creation of a network of relationships, not only between local administrations and individual citizens, but also between citizens themselves (Dames, 2004). Second, they can increase the transparency and accountability of governments through the sharing of information, supporting the development of trust between citizens and administrations (Carter and Bélanger, 2005). Finally, they can act as data collection tools for public administrations to gather dispersed information about citizens for free. In this way, "local governments can improve not only decision intelligence to locate and tackle social problems but also democratic responsiveness by designing public services customized to citizens' needs and demands" (Lim, 2010: 29).

Given these potential benefits, public administrations all around the world are embarking in these technologies to favor citizen engagement, albeit often without a specific strategy (e.g. OECD, 2009; Kaplan and Haenlein, 2010). Recent studies (Bertot et al., 2010b; Waters and Williams, 2011; Sandoval-Almazan and Gil-Garcia, 2012) show that public administrations in US, Mexico, but also Europe are using web tools to enact their dialogue with citizen.

The absence of a social software strategy is rendered more problematic by the lack of contributions about the effectiveness of SS in supporting public engagement. Despite the widely diffusion of public engagement initiatives based on social software (e.g. Waters and Williams, 2011), this has not been followed by an evaluation of these activities. Are social software effective tools for public engagement? Literature to date has mainly dealt with an assessment of public engagement initiatives (e.g. Rowe and Frewer, 2000) or on surveys to analyze the current level of diffusion (e.g. Sandoval-Almazan and Gil-Garcia, 2012) . Yet, it is still missing an evaluation of social software effectiveness for public engagement activities. The objective of this research is to evaluate the ability of public administrations in using these technologies for public engagement; the reference framework for this evaluation is discussed in the next section

4. MEASURING SOCIAL SOFTWARE EFFECTIVENESS FOR PUBLIC ENGAGEMENT

The widely diffusion of social software and its relative investments in both the industry and the public sector has raised the importance of measuring the value of these social instruments (Suet Yan and Kaziunas, 2012). The importance of social software evaluation has been addressed for business companies (e.g. Biocca et al., 2003; Steinhüser et al., 2011), while it is mainly under-investigated in the public administration field.

Several evaluation models have been proposed, especially from the marketing field. For example, Hoffman and Fodor (2010) proposed various social metrics for social media, classifying them on the basis of the performance objective. Specifically, they argued the importance of evaluating three different parameters: brand awareness, measuring the number of visits, brand engagement, considering the number of comments or response, and word of mouth, which is related to the evaluation of the virality; this is suggested to be measured considering through surveys that measures the likelihood of recommendation. Raeth et al . (2009) proposed a set of measures for wikis and weblogs derived from a systematic literature review. According to these authors several aspects need to be considered: quality of the system, quality of the information provided, level of satisfaction and impact on the individual and on the organization. In a similar vein, Steinhüser et al. (2011) applied the previous model for analyzing the effectiveness of social software by three different companies. They concluded with a general framework based on the distinction between quality of the social software and impact of the technology on both individuals and the organization. Even though a variety of measurements are proposed, they are specific for business companies, in which the output is represented by a product or service. The effectiveness of social software for public engagement has not been measured yet, albeit its importance in deloping strategy (OECD, 2009). Evaluations of these technologies for public engagement are mainly qualitative and derived from analysis about the level of social software diffusion. For example, Water and Williams (2011) conclude that Twitter is not used at its full potential by public administrations which rely on the instrument as a communication tool rather than as an involvement tool. The same conclusions are drawn by Sandoval-Almazan and Gil-Garcia (2012), who investigated public administrations' websites more in general acknowledging the low interaction level of their website, albeit the potentialities of these instruments. These results are in line with the OECD (2009) recommendations, that underline that social software do not drive automatically to public engagement.

This research wants to enter the issue of social software effectiveness proposing a quantitative measurement approach for its evaluation. The proposed model is derived from the marketing literature, which is widely debating evaluation problem. Specifically, we draw on the concept of brand awareness and brand engagement (Hoffman and Fodor, 2010) for evaluating social software effectiveness in city councils.

In marketing, brand awareness represents the exposure of the brand. It is defined as "the rudimentary level of brand knowledge involving, at least, recognition of the brand name" (Hoyer and Brown, 1990). Nowadays, it is recognized as a key social media objective (Hoffman and Fodor,

2010) and therefore it is considered here suitable for evaluating the knowledge of the public administration presence on social software tools by citizens.

Brand engagement is instead defined as the commitment by users towards the company's brand. It represents a relevant aspects within the social software landscape because it allows to assess the ability of a company to stay in touch and generate interactions with its users (Briggs, 2010). For a public administration the engagement with citizens is extremely important and it can be represented by the level of interaction between citizens and public administrations.

The decision to use the level of awareness and engagement in order to evaluate the effectiveness of the social presence of a city council is justified by objective of public engagement to establish relationships with citizens (Meijer et al., 2012). Following this view, the city council presence on the social tool is here conceptualized as the strategy of public administrations to increase be known by citizens and establish relationships with them . In this sense, public engagement activity can be assimilated to a branding strategy. This branding strategy is represented by the objective of public administrations to establish a strong connection with citizens, which is here evaluated through the level of awareness and engagement.

5. RESEARCH APPROACH

To evaluate social software effectiveness in city councils, a website analysis was conducted. Specifically, phases of the research can be distinguished between a preliminary phase of data collection and a second phase of data analysis.

In the preliminary phase, data have been collected about the presence of city councils on social software. Both official and unofficial presences have been recorder with the purpose to identify the gap between public administrations officially present on social software and fake accounts. The 119 capital city councils in Italy have been included in the analysis. The complete list of city councils, population, region and territorial area (north centre and south) is provided in the appendix.

The definition of official social media follows Slover-Linett and Stoner (2011), who defined an official social media presence when there is a direct linkage at Facebook, Twitter or Youtube from the homepage of the city council. This means that the analysis about the presence of a city council on a specific social software was carried out in two steps: in the first step we entered the city council homepage searching for links to social software tools. In the second step, we accessed the social software website typing the name of the city council. This approach allows us to distinguish between official pages, those linked to the city council home pages, and unofficial pages. This preliminary phase provided an overall view about the level of adoption of social software tools by

Italian city councils. At this stage we found social technologies most diffused in Italian city councils. Given the scarce diffusion of the other tools, data analysis (effectiveness evaluation) was conducted only on the most diffused social technologies, namely Facebook, Twitter and YouTube.

In the second phase of the analysis, we focused on official pages only, in order to increase the reliability about the information collected. These pages have been analyzed evaluating the level of awareness and engagement, which means that different information were collected from the web page depending on the type of social software. Following suggestions provided by Hoffman and Fodor (2010) brand awareness and engagement have been operationalised for each of the tools (see table 1).

Measure	Facebook	Twitter	YouTube
Awareness	n. "like"/n. citizens	n. of tweets/n. citizens	n. of visualisations/n. citizens
Engagement	n. of "talking about"/n. citizens	n. of followers/n. citizens	n. of subscribers/n. citizens

Table 1: metrics for evaluating the level of awareness and engagement

For Facebook we retrieved the number of "like" of a city council fan page and the number of "people talking about". Total "likes" represent the number of unique people who liked the city council page, while "People talking about this" indicates how many people are actually talking about the city council to their friends. This number includes everyone who liked the page, liked, commented on or shared a page post, answered a question asked, responded to an event, mentioned the page, tagged the city council in a photo or checked in the place (Facebook, 2011)

For Twitter we searched for the number of followers and the numbers of tweets. Tweets represent messages that are typed into the web box using 140 characters or less, while followers are those people that subscribe in order to receive the city council updates. Finally, for YouTube we collected the number of visualizations and the number of subscribers of the city council channel.

The adoption of these metrics to define the level of awareness and engagement gives the possibility to assess social software effectiveness for public engagement initiatives aimed at informing and consulting citizens. They are instead not enough to evaluate social software effectiveness in supporting involvement, collaboration and empower. This can be a limit of the research, but the scarce research in the public administration field justified our choice to focus on the first two levels of public engagement initiatives.

Data from websites were collected in the period from 20th to 28th of February. This is a relevant information given that social software statistics change continuously overtime and also data collected are dependent on the time period object of the analysis. Moreover, we divided this number for the population of each city council in order to have comparable data. Following this procedure we then calculated the percentage of awareness and engagement for city councils using Facebook, Twitter and YouTube. Social software effectiveness was evaluated separately for each social software tool, with data disaggregated per city council, but also an overall assessment concerning the instruments have been carried out. The next session provides results of the analysis.

6. RESULTS

Results are divided in two main areas. Level of diffusion of social software in the Italian context and social software effectiveness.

6.1 The level of social software diffusion

The web site analysis shows that Facebook, YouTube and Twitter are respectively the most widely diffused instruments among Italian city councils (picture 1).
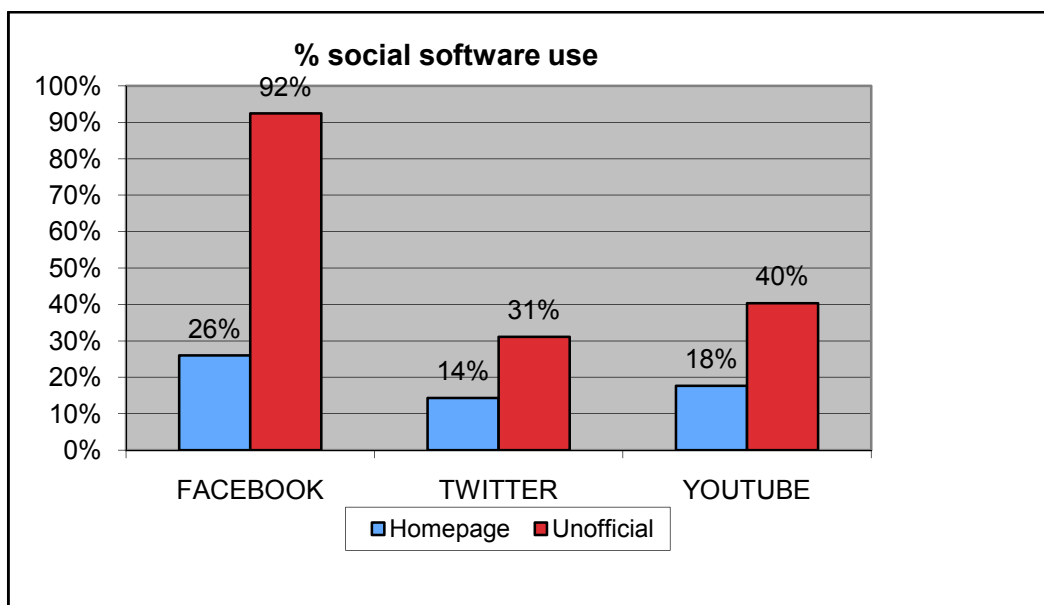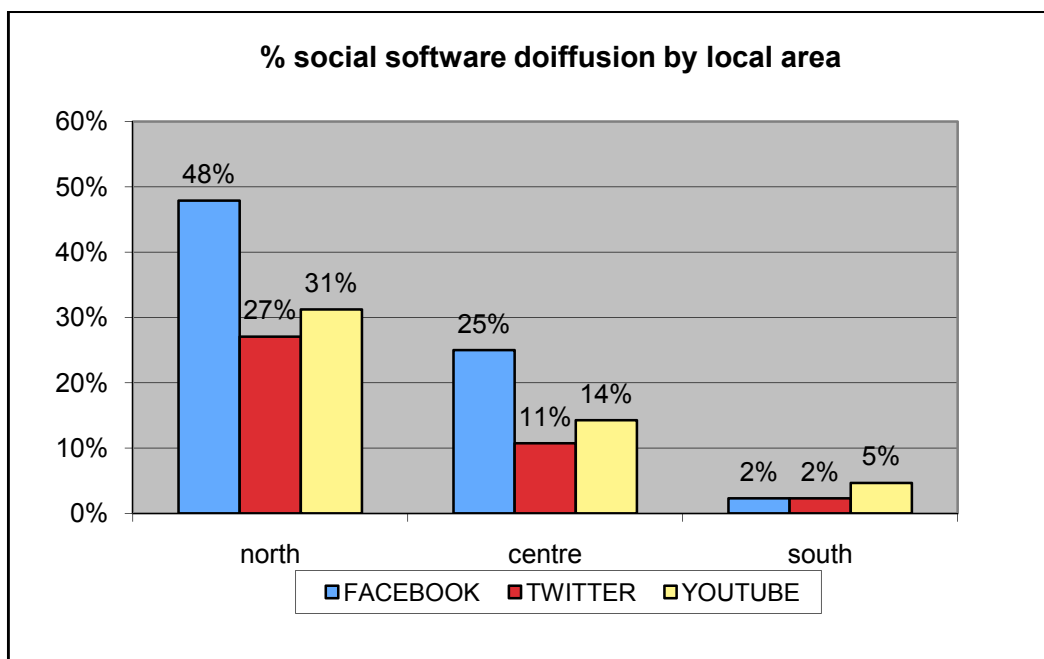

Picture 1: level of social software diffusion among Italian City councils

Moreover, we found different results depending on the website object of the analysis, either the city council homepage or the social software website. This is especially true for Facebook, where we had 26% of city councils sponsoring their Facebook account on the official homepage. At the same

time, if we search for each city council using the Facebook search engine, we had that the 92% of the sample is using the instrument. All the Facebook pages with the name of the city council but not sponsored in their homepage do not guarantee about the identity of the page. This means that two different situations can occur. In the first case, the city council is not using Facebook, but someone else is adopting its identity. It can be an organized association of citizens or groups of friend living in the city. This could be a awkward for citizens that rely on information not officially validated, or at least, without knowing exactly who is providing the content. The second situation is related to a city council who does actually have a Facebook account, but it is not sponsoring this activity on its website. Also this case has controversial effects because the citizen is not aware about the existence of the Facebook account unless it search specifically for the city council on the Facebook website. Moreover, at this stage the citizen still does not know if the result found is fake or not.

The histogram suggests that the difference between official pages sponsored on the city council website and unofficial pages occurs also for Twitter and YouTube, but with a lower level of intensity.

The second type of analysis conducted is related to the geographical area of social software diffusion (see picture 2).

Picture 2: level of social software diffusion by geographic area

Results show that city councils in the north of Italy are using social software more that those in the south and in the centre. This finding can be related to cultural difference between the north and the south of Italy, but also to the different levels of digital divide between different areas of the country.

The third area of analysis is instead associated to the number of social software used by each city council (see picture 3).

**Number of social software per city council**
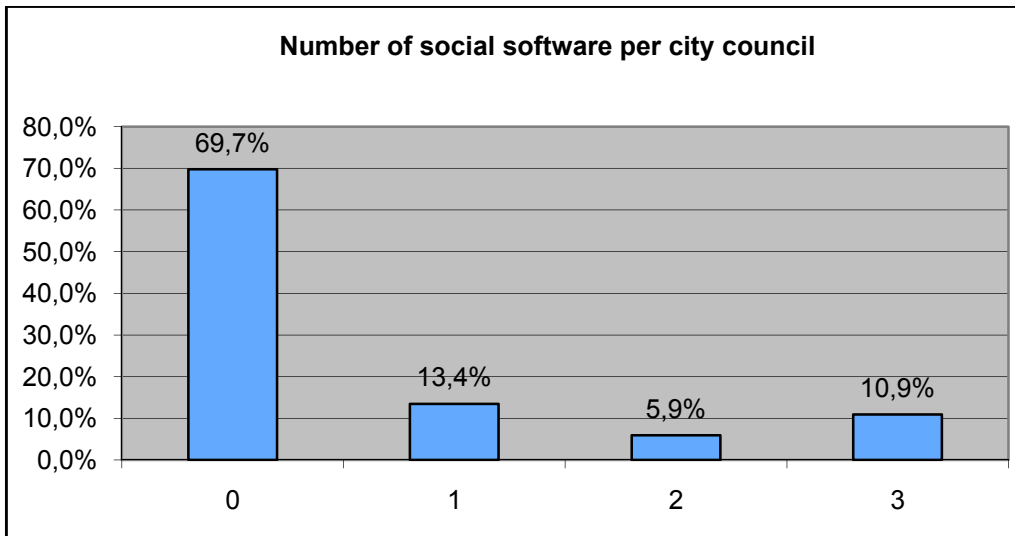
Picture 3: number of social software per city council

The situation is interesting because even if Italians are the most active population in the world on social media (Nielsen, 2011), almost the 70% of city council is not using an official social software tool. The analysis instead shows that the opposite situation is characterized by 10, 9% of city councils who are simultaneously using all the three instruments. In between there are 13,4% of city councils that are using at least one instruments and the 5,9% that is using two social software.

## 6.2 Evaluation of social software: awareness and engagement

The second are of findings is related to the evaluation of awareness and engagement for city councils adopting social software. The aggregate overview provides information about the different level of awareness and engagement by social software users (picture 4).
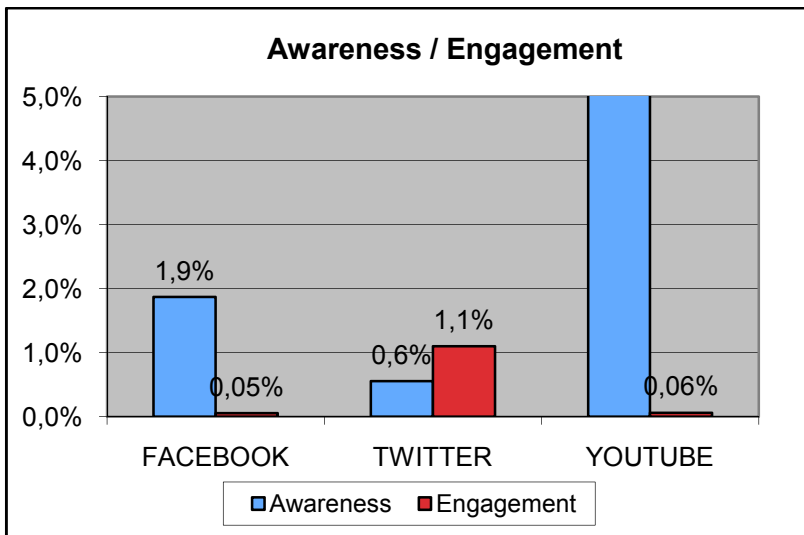
Picture 4: level of awareness and engagement

YouTube has the highest level of awareness because of the number of visualizations often exceed the population of the city councils. Specifically, there are two city councils, whose level of awareness is higher than 400%, which means that videos have been visualized by four times the number of inhabitants. This situation occurs in case of particular events that happened in the city. The situation is instead different for Facebook and Twitter, for which the level of awareness is respectively 1,9% and 0,6%. This allow to conclude that the level of awareness can be achieved more successfully through YouTube, followed by Facebook and Twitter. Results are instead different with respect to the level of engagement, for which Twitter provided the highest score. This is interesting because it means that, even though a few citizens are aware about the existence of the city council on Twitter, those who know about this, are also engaged. Facebook and YouTube instead have similar level of engagement (0, 05% and 0, 06% respectively). If the analysis is focused on each social tool separately, other insights can be found. For what concern Facebook, the level of awareness is higher than the level of engagement. This means that the number of "like" of a fan page is higher than the number of people "talking about". This finding is reversed for Twitter, for which the level of engagement-the number of followers. Is greater than the level of awareness-the number of tweets.

Data about the level of awareness and engagement can be also investigated focusing on each specific city council in order to rank these administrations depending on their ability in using social instruments to engage with citizens. The detailed analysis for Facebook (see picture 5) showed that the level of awareness varies between 11% and 0,08%, while the level if engagement ranges between 0,01% and 0,24%.
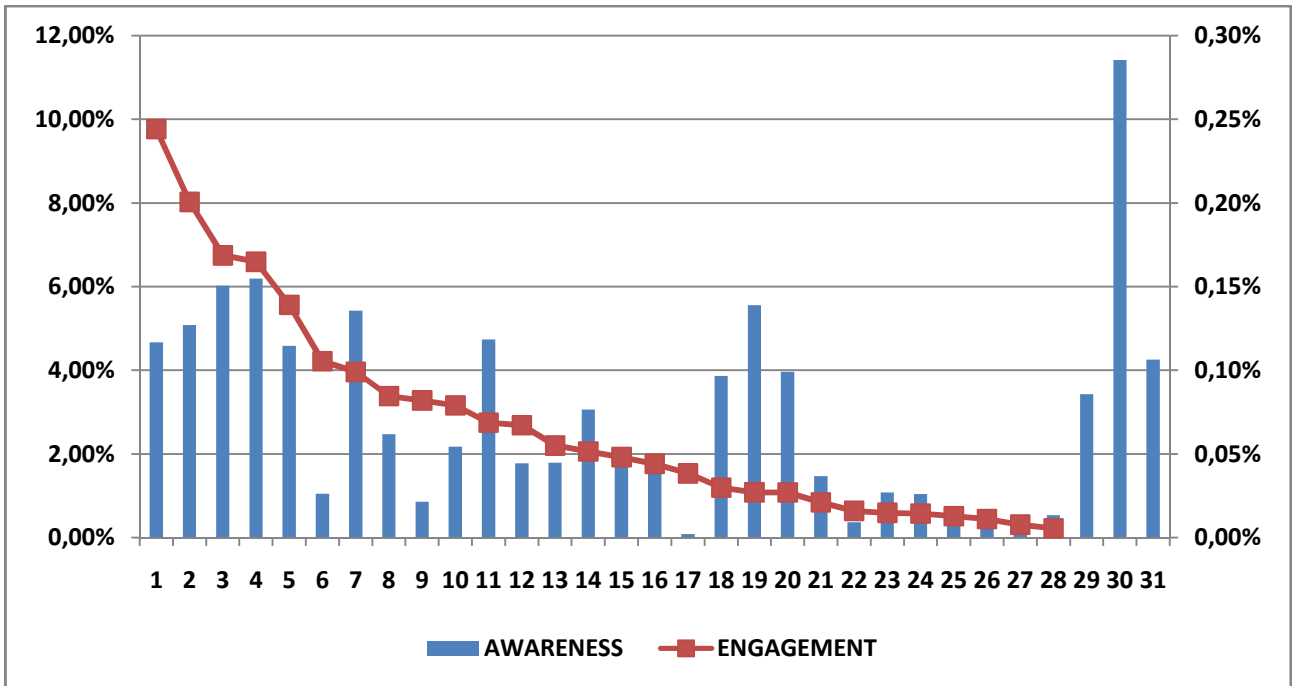
Picture 5: level of awareness and engagement for Facebook

For three city councils the level of awareness was not calculated because they used the profile page rather than the Fan page, and therefore the statistic about the number of "people talking about" was not provided. This chart shows that awareness and engagement are not related with each other: city councils that are widely known by citizens, such as Council 19 are not also those with the better ability in interacting with citizens. For example, the city council 1 scored the highest value for the engagement (4,67%), but it was not the Facebook page was not the most known among the others. This benchmarking is useful in supporting the strategic choice about the engagement of each public administration: do we want to increase our visibility, and therefore the awareness, or do we want to increase our ability to interact and discuss with citizens, and therefore effectiveness? The comparison between city councils can provides insights in driving the strategic choice of each administration. The same analysis was conducted for Twitter and YouTube (see appendix), for which we found the same similarities: awareness and engagement are not correlated with each other.

7. CONCLUSION

This research was aimed at evaluating the effectiveness of social software tools to support public engagement activities aimed at informing and involving citizens. The analysis of Facebook, Twitter

and YouTube official websites of Italian city councils was useful in achieving this purpose. Two main contributions can be derived from the analysis.

The first contribution is related to the level of diffusion of social software among Italian city councils. These findings mainly affect the Italian context and underlined the immature level of diffusion of these technologies: only the 13% of city councils are officially using social instruments, mainly Facebook, YouTube and Twitter. Moreover, the 10% of the sample is instead particularly social, through the adoption of all the three social tools.

The second contribution is derived from the assessment of the level of engagement and awareness and it is related to the development of a model for analyzing the current strategy adopted by public administrations. The joint analysis of engagement and awareness gives the possibility to define a more general model that can be applied to any public organization that is using social instruments Picture 6 is the example of the model applied to Facebook analysis. On the horizontal axe the level of awareness is represented, while the vertical dimension include the level of engagement. Positioning the axes in the average values of the observations, four quadrant can be identified corresponding to different social software strategies for public engagement: ghost, sightseeing, tea-room and stars.
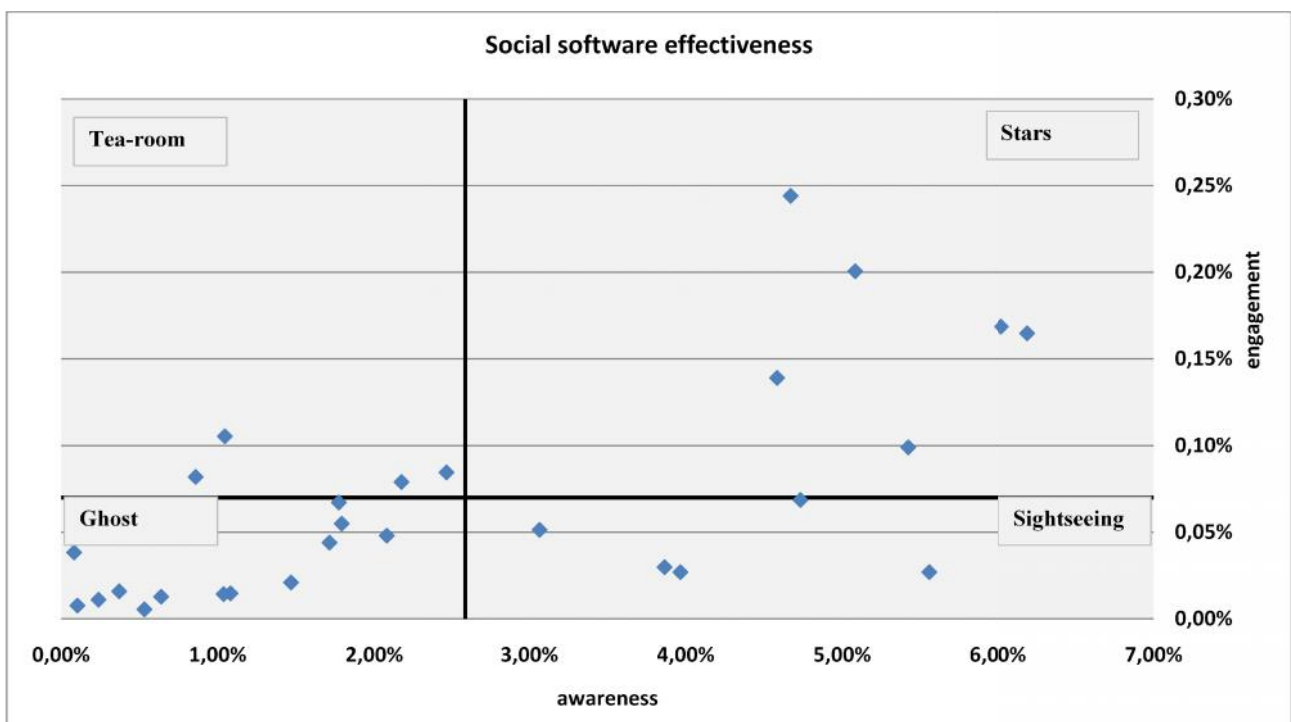
Picture 6: social software effectiveness model

Ghost represent city councils with a low level of awareness and engagement. This means that a few people know the social page of city council and a few people talk about it. This position underlines

a current poor strategy for social software in supporting public engagement activities. City councils in this situation are the majority in Italy. They should ask themselves: is it relevant to stay social? If the answer is yes, then a substantial revision of the social software strategy is required to increase the number of like and the number of interactions with citizens. If the answer is no, then it is better to exit the social software activity.

Sightseeing represents the case of city councils with a high level of awareness and a low level of engagement. In other words, a lot of people know about the social page of city council and like it, but a few people are actually interested in interacting with the city council. This is a signal the current social software strategy is not well defined because the public administration is able to inform, but not to involve. A potential suggestion to improve the social software strategy can be through the communication approach: the change in the content of the communication or the language trough which contents are communicated can be useful in enacting dialogue.

Tea-room includes city councils with a high level of awareness but a low level of engagement. This means that the city council is able to establish interaction with a small portion of citizens because a few people know about the city council, but those few people are actually engaged. For what concern the Italian context, only four city councils enter this situation even though they are very closed to the borderline of both awareness and engagement. City council in this area should understand if this position is the result of a deliberative choice to intensively talk with a few people. If the answer is yes, then the public administration can maintain this strategy, otherwise it is necessary to increase the exposure of the social software.

Stars instead include city councils with both high level of awareness and engagement, which means that a lot of people know about the city council and they are also engaged. This is the best situation because it provides evidence that the current social software strategy is successful in both communicate and involve citizen. The strategy for the future is to maintain and improve the current position.

These results are useful for practitioners because they provide a practical instruments to assess the level of awareness and engagement and the model proposed can be used to evaluate effectiveness of any social tool. At the academic level instead, we add the extant literature about public engagement with the importance of assessing effectiveness of social software tools. This is of extremely importance given the continuous diffusion of these instruments among public administrations. Limitations of the study are related to the operationalization of the

Limitation of the analysis are related to the approach in which engagement and awareness have been operationalised. They are based on statistics provided by the social software and therefore dependent on the time window of the analysis. Further research should develop more stable

measurement for these two variables that are less dependent on the moment in which the analysis is performed.

References

Antoniadis, P. and Grand, B.L. (2009), "Self-organised virtual communities; bridging the gap between web-based communities and P2P systems", *International Journal of Web Based Communities*, Vol. 5 No. 2, pp. 179–194;

Arnstein, S. R. (1969), "A ladder of citizen participation", *Journal American Institute of Planners*, Vol. 35, pp. 215-24;

Barnes, M. (1999), *Building a deliberative democracy: An evaluation of two citizens'juries*. London: Institute for Public Policy Research;

Bertot, J. C., Jaeger, P. T., and Grimes, J. M. (2010a), "Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies", *Government Information Quarterly*, Vol. 27, pp. 264–271;

Bertot, J. C., Jaeger, P. T., Munson, S., and Glaisyer, T. (2010b), "Engaging the public in open government: The policy and government application of social media technology for government transparency" *IEEE Computer*, Vol. 43 No.11, pp. 53–59;

Bertot, J.C., Jaeger, P.T. and Hansen, D. (2012), "The impact of polices on government social media usage: Issues, challenges, and recommendations", *Government Information Quarterly*, Vol. 29, pp. 30-40;

Biocca, F., Harms, C. and Burgoon, J.K. (2003), "Toward a More Robust Theory and Measure of Social Presence: Review and Suggested Criteria", *Presence*, Vol. 12 No.5, pp.456-480;

Bovaird, T. (2007), "Beyond engagement and participation: User and community coproduction of services", *Public Administration Review*, Vol. 67, No. 5, pp. 846–860;

Briggs, T. (2010), "Social Media's Second Act: Toward Sustainable Brand Engagement", *Design Management Review*, Vol. 21 No.1, pp.46-53;

Bryant, T. (2006), "Social software in academia"; Educause Quarterly, Vol. 2, pp.61-64;

Buchegger, S. and Datta, A. (2009), "A Case for P2P Infrastructure for Social Networks - Opportunities and Challenges", in: WONS'09: 6th International Conference on Wireless On-demand Network Systems and Services, Snowbird, Utah, USA;

Bughin, J. and Manyika, J. (2007), "How businesses are using Web 2.0: A McKinsey Global Survey", *McKinsey Quarterly*, pp.32-39.

Butt, I. and Persuad, A. (2005), "Towards a citizen centric model of e-government adoption", *3rd International Conference on E-Governance ICEG2005*, Lahore, Pakistan, December 9-11;

Carter, L. and Bélanger, F. (2005), "The utilization of e-government services: citizen trust, innovation and acceptance factors", *Information Systems Journal*, Vol. 15 No.1, pp. 5-25;

Dames, M.K. (2004), Features – Social Software in the Library, available at www.llrx.com/ features/socialsoftware.htm (accessed 22 February 2012).

Di Donato, F. (2009), " Che cos'è il social software? Architettura delle reti e politiche del nuovo discorso scientifico" In: Forum International de Philosophie Sociale et Politique, 6-10 luglio 2009, Toulouse, Francia;

Dixon, B.E. (2010), "Towards e-government 2.0: an assessment of where government 2.0 is and where it is headed", Public Administration and Management, Vol. 15 No.2, pp. 418-454;

Facebook (2011), "Facebook page insights. Product guide for Facebook page owners", available at http://ads.ak.facebook.com/ads/creative/insights/page-insights-guide.pdf (retrieved 8 March 2012);

Hoffman, D. L., and Fodor, M. (2010), "Can You Measure the ROI of Your Social Media Marketing?", *MIT Sloan Management Review*, Vol. 52 No.1, pp. 40-49 .

Hoyer, W.D. and Brown, S.P. (1990), "Effects of brand awareness on choice for a common, repeat-purchase product", *Journal of Consumer Research,* Vol. 17 No. 2, pp. 141-148;

IAP2, International Association for Public Participation (2007), "IAP2 Spectrum of Public Participation", available at http://www.iap2.org/displaycommon.cfm?an=5 (accessed 7th March 2012);

Kaplan, A.M. and Haenlein, M. (2010), "Users of the world, unite! The challenges and opportunities of Social Media", *Business Horizon*, Vol. 53 No.1, pp. 59-68;

Kosaker, A., and Lee-Kelley, L. (2006), "Citizen-centric e-government: A critique of the UK model", *Electronic Government: An International Journal*, Vol. 3, No. 2, pp. 127–138.

Lim, J.H. (2010), "Empowering citizens' voice in the era of e-government: implications from South Korean cases", *Theoretical and Empirical Research in Urban Management*, Vol. 7 No. 16, pp. 19-31;

Lynn, F. M., and Busenberg, G.J. (1995), "Citizen advisory committees and environmental policy: What we know, what's left to discover", *Risk Analysis*, Vol. 15 No. 2, pp.147-62;

Meijer, A., Grimmelikhuijsen, S. and Brandsma, G.J. (2012), "Communities of Public Service Support Citizens engage in social learning in peer-to-peer networks", *Government Information Quarterly*, Vol. 29, pp. 21-29;

Nielsen (2011), "State of the media: Social Media Report, 2011", available at http://blog.nielsen.com/nielsenwire/social/

O'Reilly, T. (2005), " What is Web 2.0—Design Patterns and Business Models for the Next Generation of Software. Available at http://www.oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-isweb-20.html

Parameswaran, M. and Whinston, A. B. (2007), "Social Computing: An overview", Communications of the AIS, 19, 762-780.

Porter, J. (2008). *Designing for the Social Web*. Thousand Oaks, CA: New Riders Press

Price, K. (2006), "Web 2.0 and education: What it means for us all", Paper presented at the 2006 Australian Computers in Education Conference, 2-4 October, Cairns, Australia.

Raeth, P., Urbach, N., Smolnik, S. and Zimmer, K.(2009), "Towards Assessing the Success of Social Software in Corporate Environments", Proceedings of the Fifteenth Americas Conference on Information Systems, San Francisco, California August 6th-9th 2009

Richardson, W. (2006), *Blogs, Wikis, Podcasts, and other powerful tools for classrooms*, Thousand Oaks, CA: Sage.

Rowe, G., and Frewer, L.J. (2000), "Public participation methods: A framework for evaluation. Science", *Technology, & Human Values*, Vol. 25 No.1, pp.3-29;

Rowe, G., Marsh, R.and Frewer, L.J. (2004), "Evaluation of a deliberative conference", *Science, Technology, & Human Values*, Vol. 29 No.1, pp.88-121;

Rowe, G. and Frewer, L.J. (2005), "A typology of public engagement mechanisms", Science Technologies and Human Values, Vol. 30 No. 2, pp.251-290;

Rutherford, L.L. (2008), "Building participative library services: the impact of social software use in public libraries", *Library Hi Tech*, Vol. 26 No. 3, pp. 411-423

Sandoval-Almazan, R. and Gil-Garcia, J.R. (2012), "Are government internet portals evolving towards more interaction, participation, and collaboration? Revisiting the rhetoric of e-government among municipalities", *Government Information Quarterly*, Vol. 29, pp. s72-s81;

Schollmeier, R. (2001), "A definition of peer-to-peer networking for the classification of peer-to-peer architectures and applications", *Peer-to-Peer Computing, 2001*. Proceedings. First International Conference on, pp.101-102, Aug 2001;

Scott, J.K. (2006), "E the people: do U.S. municipal government websites support public involvement?", *Public Administration Review*, Vol. 66 No.3, pp.341-353;

Shirky, C. (2003), "A group is its own worst enemy: Social structure in social software", Paper presented at the O'Reilly Emerging Technology conference, Santa Clara, CA, April 24, 2003.

Smith, L. G., Nell, C.Y. and Prystupa, M.V. (1997), "The converging dynamics of interest representation in resources management", *Environmental Management*, Vol. 21 No. 2, pp. 139-46;

Steinhüser, M., Smolnik, S. and Hoppe, U. (2011), "Towards a Measurement Model of Corporate Social Software Success – Evidences from an Exploratory Multiple Case Study", Proceedings of the 44th Hawaii International Conference on System Sciences - 2011

Suet Yan, J.L., and Kaziunas, E. (2012) "What is a Tweet Worth? Measuring the Value of Social Media for an Academic Institution", Paper presented at the iConference 2012, February 7–10, 2012, Toronto, Ontario, Canada;

Tepper, M. (2003), "The rise of social software", *NetWorker*, Vol. 7 No. 3, pp.18–23;

Wiedemann, P. M., and S. Femers (1993), "Public-participation in waste management decision making: analysis and management of conflicts", *Journal of Hazardous Materials*, Vol. 33 No.3, pp.355-68.

APPENDIX

Characteristics of city councils

Region	Area	City Council	Population
Emilia Romagna	north	Bologna	382.473
Emilia Romagna	north	Ferrara	135.476
Emilia Romagna	north	Forlì	118.312
Emilia Romagna	north	Cesena	97.204
Emilia Romagna	north	Modena	184.822
Emilia Romagna	north	Parma	187.310
Emilia Romagna	north	Piacenza	103.399
Emilia Romagna	north	Ravenna	159.390
Emilia Romagna	north	Reggio Emilia	170.420
Emilia Romagna	north	Rimini	143.793
Friuli Venezia Giulia	north	Gorizia	35.765
Friuli Venezia Giulia	north	Pordenone	51.789
Friuli Venezia Giulia	north	Trieste	205.557
Friuli Venezia Giulia	north	Udine	99.756
Liguria	north	Genova	609.004
Liguria	north	Imperia	42.761
Liguria	north	La Spezia	95.341
Liguria	north	Savona	62.456
Lombardia	north	Bergamo	119.712
Lombardia	north	Brescia	194.283
Lombardia	north	Como	85.694
Lombardia	north	Cremona	71.995
Lombardia	north	Lecco	48.230
Lombardia	north	Lodi	44.453
Lombardia	north	Mantova	48.838
Lombardia	north	Milano	1.331.807
Lombardia	north	Monza	122.773
Lombardia	north	Pavia	71.189
Lombardia	north	Sondrio	22.334
Lombardia	north	Varese	81.751
Piemonte	north	Alessandria	95.009
Piemonte	north	Asti	76.719
Piemonte	north	Biella	45.660
Piemonte	north	Cuneo	55.783
Piemonte	north	Novara	105.078
Piemonte	north	Torino	909.179
Piemonte	north	Verbania	31.288
Piemonte	north	Vercelli	47.146
Trentino Alto Adige	north	Bolzano	104.278
Trentino Alto Adige	north	Trento	116.622
Veneto	north	Belluno	36.595
Veneto	north	Padova	214.601
Veneto	north	Rovigo	53.111

Veneto	north	Treviso	83.163
Veneto	north	Venezia	270.957
Veneto	north	Verona	264.545
Veneto	north	Vicenza	115.795
Valle d'Aosta	north	Aosta	35.008
Lazio	centre	Frosinone	48.030
Lazio	centre	Latina	119.895
Lazio	centre	Rieti	47.996
Lazio	centre	Roma	2.768.415
Lazio	centre	Viterbo	63.899
Marche	centre	Ancona	103.101
Marche	centre	Ascoli Piceno	50.939
Marche	centre	Fermo	37.994
Marche	centre	Macerata	43.079
Marche	centre	Pesaro	94.898
Marche	centre	Urbino	15.636
Toscana	centre	Arezzo	100.455
Toscana	centre	Firenze	372.168
Toscana	centre	Grosseto	82.230
Toscana	centre	Livorno	161.191
Toscana	centre	Lucca	85.249
Toscana	centre	Massa	70.973
Toscana	centre	Carrara	64.441
Toscana	centre	Pisa	88.069
Toscana	centre	Pistoia	90.286
Toscana	centre	Prato	188.591
Toscana	centre	Siena	54.664
Umbria	centre	Perugia	169.108
Umbria	centre	Terni	113.270
Umbria	centre	Chieti	53.748
Umbria	centre	L'Aquila	72.454
Umbria	centre	Pescara	122.872
Umbria	centre	Teramo	54.970
Basilicata	south	Matera	60.916
Basilicata	south	Potenza	68.312
Calabria	south	Catanzaro	93.167
Calabria	south	Cosenza	70.016
Calabria	south	Crotone	61.863
Calabria	south	Reggio Calabria	186.436
Calabria	south	Vibo Valentia	33.887
Campania	south	Avellino	56.135
Campania	south	Benevento	61.738
Campania	south	Caserta	78.680
Campania	south	Napoli	959.279
Campania	south	Salerno	139.036
Molise	south	Campobasso	50.881
Molise	south	Isernia	22.149
Puglia	south	Bari	320.146
Puglia	south	Barletta	94.561
Puglia	south	Andria	100.217

Puglia	south	Trani	53.950
Puglia	south	Brindisi	89.843
Puglia	south	Foggia	152.557
Puglia	south	Lecce	95.677
Puglia	south	Taranto	191.370
Sardegna	south	Cagliari	156.259
Sardegna	south	Carbonia	29.784
Sardegna	south	Iglesias	27.438
Sardegna	south	Nuoro	36.277
Sardegna	south	Olbia	56.363
Sardegna	south	Tempio Pausania	14.255
Sardegna	south	Oristano	31.963
Sardegna	south	Sanluri	8.527
Sardegna	south	Villacidro	14.446
Sardegna	south	Sassari	130.644
Sardegna	south	Lanusei	5.660
Sardegna	south	Tortolì	10.888
Sicilia	south	Agrigento	59.174
Sicilia	south	Caltanissetta	60.283
Sicilia	south	Catania	292.743
Sicilia	south	Enna	27.895
Sicilia	south	Messina	242.122
Sicilia	south	Palermo	655.614
Sicilia	south	Ragusa	73.734
Sicilia	south	Siracusa	123.464
Sicilia	south	Trapani	70.662

Twitter: level of awareness and engagement per city council
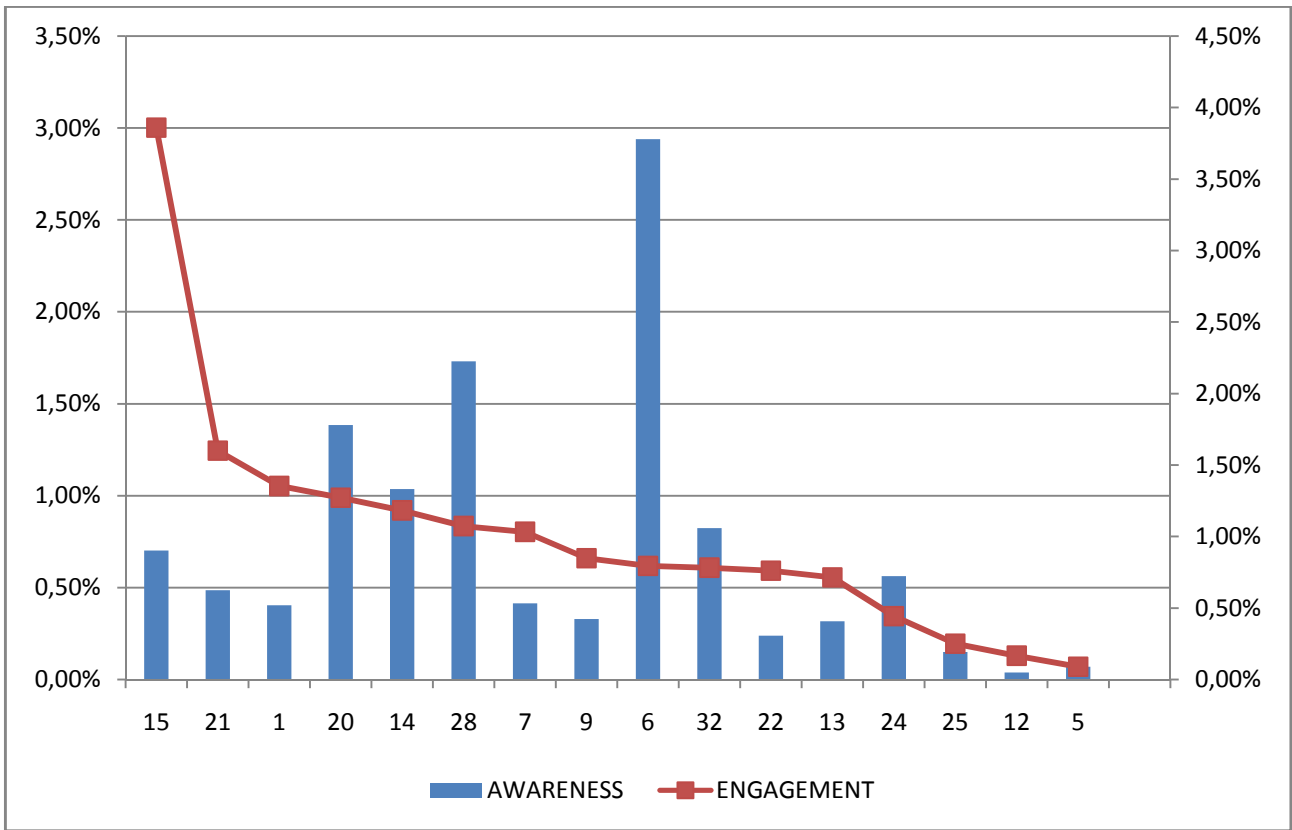
YouTube: level of awareness and engagement per city council