

FACEBOOK AS A DIALOGIC STRATEGIC TOOL FOR EUROPEAN LOCAL GOVERNMENTS*

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Abstract

The main aim of this study is to analyze the extent to which local governments in the EU apply dialogic strategies in their Facebook profiles in order to establish and enhance relations with society, and then to examine the impact of certain factors on the implementation of these dialogic strategies. A descriptive analysis is made of the implementation of the dialogic communication theory in relation to the use of Facebook, and this is followed by an explanatory analysis of factors leading local governments to apply dialogic principles. These analyses show that the situation is open to improvement, because local governments are mostly unaware of the benefits offered by the use of dialogic principles when establishing online relationships with stakeholders, and greater awareness would enable them to enhance such relationships.

Keywords: social media, ICT, communication, public administration, Internet.

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1. Introduction

In the field of public administration, social media have opened the way to more direct and fluent communication between government and society (Sadeghi, 2012). Social networks, which are the main representatives of the social media, have redefined the relationships between citizens and governments, facilitating communication and interaction among individuals and encouraging the population to play an active role in public affairs (Sandoval and Gil, 2012).

Although previous studies have addressed the role of social media in terms of government interactivity (Sadeghi, 2012), authors such as Ellison and Hardey (2013) believe it is especially important to analyze how local governments make use of social networks to establish new forms of dialogue and engagement with society.

Facebook is one of the social networks most widely used by local governments, because, among other reasons, it provides the opportunity for them to interact efficiently with citizens (US Census Bureau, 2011). In addition, it constitutes a valuable tool for engaging with society (Strecker, 2011). According to recent statistics (Facebook, 2014), there are now over 1.28 billion Facebook accounts (as of March 2014), making it the largest consumer network in the world.

However, despite the many potential uses of social networks and the benefits to be obtained from them, research suggests that organizations, including local governments, do not make full use of the dialogic strategies available (Rybalko and Seltzer, 2010; McAllister, 2012). Therefore, in line with Bonsón, Royo and Ratkai (2014), among others, further studies are needed to determine the factors producing this situation.

Kent and Taylor (1998) defined these strategies in their theory of dialogic communication, which has become one of the most important theoretical frameworks concerning the creation of online social relationships. Their approach is based on the precept that 'dialogue' represents a particular type of outcome resulting from what they term 'dialogic communication strategies' (Kent, Taylor and White, 2003).

Several theories have been advanced to explain the use of dialogic strategies in local governments' social networks, including legitimacy theory (Dowling and Pfeffer, 1975), agency theory (Jensen and Meckling, 1976), and stakeholder theory (Freeman, 1984). Among these theories, different ideas are proposed as to how the political, social and economic circumstances of local governments may affect the use of social networks as a means of acquiring legitimacy and of enhancing democracy. In view of this background, we seek to determine which factors may influence the use of social networks by local governments.

Hence, within a dialogic communication context, this study aims to achieve a better understanding of the dialogic potential of social networks in government bodies, and thus obtain new information and draw useful conclusions.

The research questions that guide this study are:

- What is the level of implementation of dialogic strategies in the Facebook profiles of European local governments?
- What factors affect the implementation of these strategies and how do they do so?

This paper presents diverse contributions for the existing literature and practice of the use of Facebook as a communication strategy. Specifically, it contributes to the scant literature that identifies the factors that condition European local governments to develop dialogic strategies in their Facebook profiles. With respect to the practical contributions, this study could be used to better understand how Facebook can offer an opportunity to facilitate the communication and interaction between government and society. Therefore, we hope the proposed approach will promote understanding of the successful use of social networks in public administration.

2. Social networks in public administration

In government organizations the use of social networks can be viewed as an extension of e-government (Mergel, 2013). The difference between social networks and other e-government applications, such as websites, is the high degree of interactivity they allow, together with the co-production of content by government and society (O'Reilly, 2007). Moreover, in Europe social networks are already widely known and used, with over 43% of internet users making use of this tool (Eurostat, 2014). According to a recent report, social networks constitute one of the most useful and simplest means of keeping up to date and raising public interest in political issues, and are a key mechanism in empowerment (European Commission, 2012).

Most government agencies use social networks as additional channels to represent artefacts of their core mission, to engage the public, to participate in issue conversations and to network with stakeholders (Mergel, 2013). Thus, although social networks are relatively new, they are already widely used by government agencies to reach people who do not use traditional forms of interaction with public authorities (Sandoval and Gil, 2012).

The positive effects of the use of social networks by government have been reported in numerous studies. Thus, Agostino (2013) highlighted the benefits to both government and society from changing a one or two-way exchange of information into a many-to-many communication process. In this respect, Song and Lee (2013) argued as well that social networks help make the government more accessible and keep citizens informed about what the government is doing, thus changing the way in which they interact. Bonsón, Royo and Ratkai (2014), among others, believe that the use of social networks makes relations between government and citizens more deliberative and dialogical, which increases transparency, trust and civic participation.

3. Maintaining social relations online: dialogic communication

3.1. The principles of dialogic communication

Kent and Taylor (1998) proposed their dialogic communication theory as an honest and ethical means to guide practitioners and scholars regarding the creation and maintenance of effective relationships between organizations and individuals. This theory is presented as five principles that encompass the following assumptions underlying the concept of dialogue: mutuality propinquity, empathy, risk, and commit-

ment (Kent and Taylor, 2002). Specifically, the five principles that define the dialogic communication theory are the dialogic loop, the usefulness of information, the generation of return visits, the ease of the interface and the conservation of visitors (Table 1).

Table 1: Principles of dialogic communication

Principle	Definition
Dialogic loop	Provide users the opportunity to ask questions and obtain answers, generating feedback by incorporating interactivity.
Usefulness of information	Provide users with information appropriate to their needs and in various formats.
Generation of return visits	Present useful and attractive features to encourage users to revisit the website on a regular basis.
Ease of the interface	Make the design and structure of the website intuitive so that users can easily navigate it.
Conservation of visitors	Make websites well organized and motivate users to remain on the page.

Source: Kent and Taylor (1998)

Although originally conceived as an approach to the creation and maintenance of websites, the principles of dialogic communication have also been applied to blogs (Seltzer and Mitrook, 2007) and, albeit to a lesser extent, social networks (Rybalko and Seltzer, 2010). However, our literature review suggests that online platforms as dialogic tools are used very poorly and those organizations do not take full advantage of the interactive potential of the internet to build and maintain relationships with society.

The types of organizations that have been studied using the theory of dialogic communication include nonprofit activist organizations (Lovejoy, Waters and Saxton, 2012), Fortune 500 companies (Rybalko and Seltzer, 2010), colleges and universities (McAllister, 2012), congressional websites (Taylor and Kent, 2004), and litigation public relations firms. However, little research has been undertaken to analyze the potential use of dialogic principles to improve online public relations between citizens and public administrations.

In addition to the above-cited studies, some authors have addressed governments' use of social networks from other perspectives, such as the types of social network that are most commonly used, the number of followers or the number of messages sent (Bonsón, Royo and Ratkai, 2014; Snead, 2013). However, little has been published regarding the benefits that social networks can bring to the public sector (Agostino, 2013).

3.2. Determinants of dialogic communication

Several studies are based on a framework constructed from various theories to explain the strategies and actions taken by local governments in social networks in order to acquire legitimacy and to enhance the democratic process, and also to identify the factors that may influence governments in this respect (Bonsón, Royo and Ratkai, 2014). These theories include agency theory (Wattal *et al.*, 2010), legitimacy theory (Bonsón and Ratkai, 2013), and stakeholder theory (Bonsón and Ratkai, 2013).

Using one or more of these theories, various studies have analyzed the effects of different determinants on the development of websites and social networks, and in this respect have identified, among others, experience in social networks (Huang, 2010; Magnier-Watanabe, Yoshida and Watanabe, 2010), network activity (Rybalto and Selzter, 2011; Nah and Saxton, 2012), and network extensiveness (Nah and Saxton, 2012; Sun and Wu, 2012).

Other authors have focused on determinants of a political nature, such as political competition (Rodríguez, Garcia and Gallego, 2011) and political ideology (Rodríguez, Garcia and Gallego, 2011). The effect of environmental characteristics has also been analyzed, taking into account factors such as the size of the organization (Serrano, Rueda and Portillo, 2009; Norris and Reddick, 2013) and economic capacity (Styles and Tennyson, 2007; Rodríguez, Garcia and Gallego, 2011).

With respect to Kent and Taylor's theory of dialogic communication (1998), which is the main theoretical framework for the present research, very few studies have been undertaken to analyze the determinants which may affect the degree of utilization of dialogic principles in websites and on social networks. Accordingly, taking into account the above-mentioned theories and in accordance with our review of the literature, we have selected for study the following determinants of dialogic communication.

Experience in social networks

Knowledge and competence in the use of ICT is essential to realize their full potential (Hackler and Saxton, 2007). Moreover, greater experience enhances both productivity and efficiency (Huang, 2010; Magnier-Watanabe, Yoshida and Watanabe, 2010). Accordingly, the following hypothesis is proposed:

H1. Experience in the use of Facebook has a positive influence on the use of dialogic principles in local governments' Facebook profiles.

Network activity

According to Massari (2010), organizations that present greater activity and interactivity in their social networks are more likely to develop content for their profiles. In the same vein, Nah and Saxton (2012) indicate that the most active organizations in the use of social networks are those which are most interested in incorporating content to improve information disclosure and dialogue with stakeholders. In Facebook, network activity depends on the messages sent by the organization (i.e., its posts), the responses made by users to these posts (comments), and the organization's replies to users' comments (Bortree and Seltzer, 2009). In view of these considerations, the following hypothesis is proposed:

H2. Activity in Facebook positively influences the use of dialogic principles in local governments' Facebook profiles.

Online community (network extensiveness)

Organizations with a high number of visits to their Facebook profiles are more concerned about the use of the social network (Nah and Saxton, 2012). Similarly, the

size of the online social network community encourages the development of content for it (Bortree and Seltzer, 2009; Sun and Wu, 2012). Moreover, an organization that is actively involved in its Facebook community is more likely to develop a larger volume of content in its profile (Cheng and Singh, 2009). In this regard, the measurement of network extensiveness is linked to the number of followers of the Facebook profile (O'Connor, 2012) and to the number of people involved in the social network (Hoffman and Fodor, 2010). Taking into account the above postulates, the following hypothesis is proposed:

H3. The size of the Facebook online community positively influences the use of dialogic principles in local governments' Facebook profiles.

Local population

Studies have concluded that population size is one of the main factors impacting on the implementation of e-government initiatives (Holden *et al.*, 2003; Norris and Reddick, 2013). Thus, the larger the population, the greater the pressure on a government to disclose information, and especially by means of the internet (Serrano, Rueda and Portillo, 2009). Therefore, considering that social networks are one of the main tools for the implementation of e-government (Bonsón, Royo and Ratkai, 2014; Snead, 2013), we would expect this communication of information to be conducted via social networks. Therefore, the following hypothesis is proposed:

H4. The size of the local population is positively associated with the use of dialogic principles in local governments' Facebook profiles.

Local economic capacity

It has been shown that there is a strong relationship between the economic level in a population and its access to internet and new technologies (Serrano, Rueda and Portillo, 2009). It has even been claimed that towns and cities with a lower per capita income are less likely to adopt a sophisticated design for their websites, due to the lower demand for online services (Ho, 2002; Styles and Tennyson, 2007). In contrast, local governments where per capita incomes are higher are more likely to develop and implement e-government (Rodríguez, Garcia and Gallego, 2011). Reflecting these findings, the following hypothesis is proposed:

H5. The economic capacity of a local population is positively associated with the use of dialogic principles in local governments' Facebook profiles.

Political competition

Municipalities in which the ruling party does not have an absolute majority in the local government have an additional incentive to improve communication strategies through the better use of municipal websites (Gandía and Archidona, 2008; Rodríguez, Garcia and Gallego, 2011). Thus, studies have shown that a high degree of political competition can create a favorable climate for technological reforms (Tolbert, Mossberger and McNeal, 2008). Consequently, the following hypothesis is proposed:

H6. Political competition is positively associated with the use of dialogic principles in local governments' Facebook profiles.

Political ideology

Politicians are a key factor in decision-making related to innovation and the implementation of e-government initiatives (Alcaide, Caba and López, 2013) and some studies have referred to the influence of the ideology of the governing party in the development of municipal e-government (Tolbert, Mossberger and McNeal, 2008; Rodríguez, Garcia and Gallego, 2011). It has been reported that governments with a conservative ideology tend to implement programs or activities of an economic nature, while left-wing ideologies are more likely to focus on social policies and public participation (Ni and Bretschneider, 2007). Accordingly, the following hypothesis is proposed:

H7. The fact that a municipality is governed by a left-wing political party is positively associated with the use of dialogic principles in local governments' Facebook profiles.

4. Method

4.1. The use of the characteristics of dialogic principles

Following the methodology proposed by Rybalko and Seltzer (2010), we analyzed the content of Facebook profiles seeking to determine the use of dialogic principles. For this purpose, we developed a content index of the capacity for dialogic communication (CIDC) on the basis of the five dialogic principles (Table 1), creating in turn content sub-indices for each principle.

Of the five principles, it was decided to eliminate 'Ease of the interface' as it is applied indiscriminately and by default in all Facebook profiles (Rybalko and Seltzer, 2010). Furthermore, in line with Kent, Taylor and White (2003) and Bortree and Seltzer (2009), the principle 'Usefulness of information' was renamed as 'Information of interest to stakeholders'.

Thus, the content index (CIDC) consists of the following sub-indices, according to the nature of each dialogic principle: conservation of visitors (CIDC_{CV}) generation of return visits (CIDC_{CV'}), dialogic loop (CIDC_{DL}) and information of interest to stakeholders (CIDC_{IS}).

The items that make up each sub-index were extracted and adapted to local governments, following previous studies based on the Kent and Taylor (1998) principles of dialogic communication, such as Waters *et al.* (2009), and Lovejoy, Waters and Saxton (2012). In all 27 items were observed: three for CIDC_{CV'}, eight for CIDC_{CV}, six for CIDC_{DL} and ten for CIDC_{IS} (Column 1, Table 3).

A dichotomous method was used to score the items, such that any given item (CD-CI_i) was given a score of 1 if information in this respect was available in the Facebook profile, and 0 otherwise. The CIDC was determined by the ratio between the sum of the scores of all items (CD-CI_i) and the total number of items observed (27), and converted to a percentage by multiplying by 100. Each sub-index was determined in the same way, taking into account the number of items in each case.

4.2. Explanatory variables of dialogic communication

Table 2 lists the determinants of dialogic communication adopted in this study, taking into account the literature review made in section 3.2. Having identified and defined these determinants, the correlation between them and the dependent variables (CIDC and the four sub-indices: $CIDC_{CV}$, $CIDC_{GV}$, $CIDC_{DL}$ and $CIDC_{IS}$) was analyzed. A Tobit regression analysis was then carried out, bearing in mind that the dependent variables are censored, taking values between 0 and 1 (statistical calculations were conducted using STATA 11.1).

The structural equation in the Tobit model is:

$$y_i^* = X_i B + \epsilon_i$$

where $\epsilon_i \sim N(0, \sigma^2)$. y_i^* is the dependent variable and X_i are the independent variables.

Table 2: Explanatory variables and measurement criteria

Explanatory variables	Measurement criteria	Source
Experience in social networks (Experience)	Number of years, expressed in days, that the profile has been present on Facebook (Huang, 2010).	Official Facebook profile
Network activity (Activity)	Number of Facebook posts in a month multiplied by the number of comments and by the organisation's replies to the comments (Nah and Saxton, 2012).	Official Facebook profile
Online community (Community)	Number of followers of the Facebook profile (O'Connor, 2012) multiplied by the number of persons active on the social network (Hoffman and Fodor, 2010).	Official Facebook profile (2013)
Population	Number of city inhabitants (Norris and Reddick, 2013).	Eurostat (2014)
Economic capacity	Natural logarithm of the GDP of the city (Alcaide, Caba and López, 2013).	Eurostat (2014)
Political competition	Number of councilors belonging to the ruling political party divided by the total number of councilors, as elected in the most recent elections (Alcaide, Caba and López, 2013).	Official national organizations
Political ideology	The political ideology of the ruling political party: 1 = Conservative and 0 = Left wing.	Official national organizations

4.3. Sample

We decided to analyze local rather than national governments because citizens have a more direct involvement in local affairs and are more likely to participate at the local level (Bonsón, Royo and Ratkai, 2014). For the study sample we selected the Facebook profiles of the four cities with the highest population in each of the 28 EU countries, in the understanding that the largest cities have traditionally been at the forefront in the adoption of e-government innovations (Ho, 2002).

Of the 112 local governments analyzed, only 57 have an official Facebook profile. These municipalities represent 10% of the total EU population and constitute the final study sample. Analysis of the content, the posts and the comments for each profile was conducted during February 2016. In accordance with Krippendorff (1980) three coders carried out the analyses in order to minimize possible errors in interpretation. The coefficient of agreement of Scott's pi was implemented to contrast the reliability of the data collected by the coders.

5. Results

5.1. *The use of the features of dialogic principles*

Dialogic principles, via Facebook, are used to establish relations with the local population by 50.75% of European local governments (Table 3). Of the dialogic principles considered the most widely used is that of the conservation of visitors ($CIDC_{CV}$), applied by 71.93% of the sample, followed by the generation of return visits ($CIDC_{GV}$), by 51.97%, and information of interest to stakeholders ($CIDC_{IS}$), by 49.12%. In contrast, the dialogic principle regarding dialogic loop ($CIDC_{DL}$) is the least often used in local governments' Facebook profiles, applied by 41.23%. Furthermore, the latter principle presents the greatest dispersion (0.24), which reflects the large difference in its use by certain European local governments, such as Hamburg, Nicosia and Brussels (Annex).

Table 3 also shows the extent to which the features of each dialogic principle are employed in the Facebook profiles. The most common feature is the use of audiovisual publications, by 100% of the sample, and the least often adopted is the provision of surveys to determine the public's opinions on issues of interest and the presence of links to discussion forums and FAQs on the municipal website, by 3.5% in each case. The most generally used features on Facebook are links to websites where additional information can be obtained (98.2%), the link to the municipality's own official website (96.5%) and summaries of local government activities (93%). The following features are less often present: services that can be requested by mail/e-mail, the opportunity to vote on issues of public interest, and the name or Facebook profile of the website administrator (7% in every case).

Analysis of the results for the European cities sampled (Annex) shows that 29 of the 57 cities surpass the mean CIDC value of 50.75%. The city that heads the CIDC ranking, and therefore makes greatest use of dialogic principles in its Facebook profile, is Barcelona with 70.4%, followed by Munich, Graz, Salzburg, Ljubljana, Espoo, Milan and Uppsala, with 66.7% each. At the bottom of this ranking are Madrid and Plovdiv, with 29.6% each, followed by Lisbon, with 33.3%.

With respect to the use of each dialogic principle by these cities, the principle of the conservation of visitors ($CIDC_{CV}$) is 100% applied by 20 cities in their Facebook profiles, and outstanding in this respect are Brussels, Birmingham and Prague, which are not among the highest ranking in the overall CIDC. The principle of the generation of return visitors ($CIDC_{GV}$) is not applied 100% by any city, the highest values being obtained by Barcelona, Munich, Espoo, Copenhagen and Hamburg, each with 75%. In contrast, Lisbon, London, Krakow, Antwerp and Glasgow make least use of this principle in their Facebook profiles, with 25% each.

Dialogic loop ($CIDC_{DL}$), the principle on which relationships with citizens are built and maintained, and which encourages their participation, presents the largest differences in use by the European cities analyzed. No city complied 100% with these criteria, the highest-scoring being Ostrava with 83.3%. In contrast, five cities do not implement this principle at all, and notable in this respect is Hamburg, which scores

Table 3: The features of dialogic principles

FACEBOOK CONTENT		Mean	SD
Content index of the capacity for dialogic communication (CIDC)		50.75%	0.10
Conservation of visitors (CIDC_{cv})		71.93%	0.23
1	Link to the city's official website	96.50%	0.19
2	Link to other social networks in which the local government is present (Twitter, Flickr, YouTube, blogs, Instagram)	40.40%	0.49
3	Recent update (last 24 hours)	78.90%	0.41
Generation of return visits (CIDC_{gv})		51.97%	0.14
4	Links to websites where additional information can be obtained	98.20%	0.13
5	Calendar of events or link to a website providing such a calendar	77.20%	0.42
6	Links to news related to the local government issued by external media	8.80%	0.29
7	Publication of news about the organization within the last 30 days	91.20%	0.29
8	Links to discussion forums and FAQs on the municipal website	3.50%	0.19
9	Downloadable information	71.90%	0.45
10	Option to request information by mail / e-mail	7.00%	0.26
11	The use of other social networks to introduce information (Twitter, Flickr, YouTube, blogs, Instagram)	57.90%	0.50
Dialogic loop (CIDC_{dl})		41.23%	0.24
12	Opportunity for users to comment on a Facebook post by the organization	87.70%	0.33
13	Reply by the organization to a user's comment on a post	43.90%	0.50
14	Opportunity for users to comment even if no post exists	61.40%	0.49
15	Reply by the organization to a user's comment when no post exists	43.90%	0.50
16	Opportunity to vote on municipal issues	7.00%	0.26
17	The provision of surveys for users to express opinions on municipal issues	3.50%	0.19
Information of interest to stakeholders (CIDC_{is})		49.12%	0.13
18	Press releases (issued by the local government itself)	8.80%	0.29
19	Speeches by members of the local government (text, audio or video)	8.80%	0.29
20	Audiovisual posts	100%	0.00
21	Statement of the local government's philosophy / mission / goals	17.50%	0.38
22	Details of how to participate in activities or services organized by the local government	40.40%	0.49
23	Logo or emblem of the local government	82.50%	0.38
24	Summaries of activities of the local government	93.00%	0.26
25	E-mail address of the local government	57.90%	0.50
26	Telephone number of the local government	75.40%	0.43
27	Name or Facebook profile of the website administrator	7.00%	0.26

above average on the overall CIDC. Finally, the principle concerning information of interest to stakeholders (CIDC_{is}) is the least commonly used, albeit more homogeneously than the others, with a standard deviation of 0.10. None of the cities uses this principle in its entirety, but neither is it absent completely from any city. The highest scores were obtained by Graz, Salzburg, Ljubljana, Uppsala, Hamburg and Glasgow, with 70%, and the lowest by Warsaw, with 20%.

5.2. The influence of the explanatory variables

We analyzed the relationships between the factors that influence the use of dialogic principles. Table 4 shows the Pearson correlation matrix obtained. Among the explanatory factors, the only significant positive correlation found was between population and economic capacity. No problems of multicollinearity were observed.

Table 4: Pearson correlation matrix

<i>Correlations between the explanatory factors</i>							
	Experience	Activity	Community	Population	Economic capacity	Political competition	Political ideology
Experience	1						
Activity	-0.1977	1					
Community	0.4045***	0.0522	1				
Population	-0.0313	-0.0016	0.3186**	1			
Economic capacity	0.0586	0.0239	0.3154**	0.7139***	1		
Political competition	0.1073	0.0525	0.2087	0.0010	0.0243	1	
Political ideology	-0.0279	-0.1503	-0.1663	-0.0470	-0.0871	0.1130	1

Regarding the significance of the explanatory variables of the content index and sub-indices of capacity for dialogic communication, the Tobit regression analysis produced the following results: the population variable is significant in four models (CIDC, CIDC_{CV}, CIDC_{DL} and CIDC_{IS}), network extensiveness in three (CIDC, CIDC_{CV} and CIDC_{DL}), experience in two (CIDC and CIDC_{IS}), economic capacity in two (CIDC and CIDC_{DL}), activity in one (CIDC), political ideology in one (CIDC_{IS}) and political competition in none (Table 5).

The population variable was found to be inversely related with the content index and sub-indices of capacity for dialogic communication. In other words, the local governments with smaller populations present a greater development of dialogic principles in their Facebook profiles. This result is not consistent with the original hypothesis. However, it seems reasonable to believe that local governments with fewer citizens will make a greater effort to attract and interact with them by means of social networks.

Our analysis also highlights the existence of a significant relationship between network extensiveness and the use of dialogic principles. In this respect, the relationship assumed a priori was positive, i.e., the greater the number of followers of a local government's Facebook profile, the more opportunities it would have to build up relationships with citizens. However, it should be noted that the relationship between these variables was positive in two models (CIDC and CIDC_{CV}) and negative in another (CIDC_{IS}). Therefore, beyond the empirical observation that this relationship exists, its sign remains unclear.

An inverse relationship was found between experience and the principles of dialogic communication. Thus, contrary to expectations, the results obtained suggest that the local governments that have taken longest to acquire a Facebook profile currently present the best-developed dialogic strategies.

With respect to economic capacity, the results obtained were as expected. Thus, the local governments with the highest GDP make most use of dialogic principles in their Facebook profiles. These results are in line with those obtained by Rodríguez, Garcia and Gallego (2011) in the field of e-government.

For Facebook activity, the outcome of our analysis was contrary to the initial hypothesis, according to which a positive relationship was expected. The results suggest

that local governments which are less active, i.e., which make fewer Facebook posts, make greater use of dialogic principles. However, this variable is only significant for the sub-index $CIDC_{IS}$, and so the data should be interpreted with caution. In any case, and without seeking to generalize, some local governments with a high level of Facebook activity might only use their profile to disclose large volumes of information, but not have a well-defined strategy for social networks.

Finally, the results obtained show there is an inverse relationship between political ideology and the implementation of dialogic principles, which is in accordance with our expectations. Thus, it is the left-wing local governments that make greater use of dialogic strategies in their Facebook profiles.

Table 5: Tobit regression results

	<i>CIDC</i>		<i>CIDC_{CV}</i>		<i>CIDC_{GV}</i>		<i>CIDC_{DL}</i>		<i>CIDC_{IS}</i>	
LR chi2 (6)	29.65***		8.48		17.89***		22.59***		22.56***	
	<i>Coef.</i>	<i>t</i>	<i>Coef.</i>	<i>t</i>	<i>Coef.</i>	<i>t</i>	<i>Coef.</i>	<i>t</i>	<i>Coef.</i>	<i>t</i>
Experience	-0.0000558	-2.07**	0.0001140	0.99	-0.0000480	-1.29	-0.0000498	-0.85	-0.0001047	-2.54***
Activity	-0.0006511	-1.54	0.0008714	0.47	-0.0005140	-0.88	-0.0000505	-0.06	-0.0014986	-2.32**
Community	0.0258654	3.56 ***	0.0358646	1.14	0.0399780	4.00***	0.0591425	3.75***	-0.0044973	-0.41
Population	-0.0801367	-5.52***	-0.0890783	-1.46	-0.0510797	-2.56***	-0.1311645	-4.15***	-0.0748569	-3.38***
Economic capacity	0.0384693	2.77 ***	0.1004209	1.70*	0.0092925	0.49	0.0597595	1.97**	0.0344718	1.63
Political competition	-0.0876781	-1.14	-0.4074473	-1.23	-0.0953927	-0.90	-0.1438881	-0.87	0.0099141	0.08
Political ideology	-0.0120798	-0.55	0.0283331	0.30	-0.0106334	-0.35	0.0480201	1.01	-0.0692784	-2.06**

*. Significant at 0.10. **. Significant at 0.05. ***. Significant at 0.01.

6. Conclusions

The dialogic communication theory, as well as providing a framework for studying the construction and maintenance of online social relationships, enables us to measure how local governments use social networks as a tool for public participation and communication, identifying weaknesses to be addressed in order to establish or maintain relationships with society.

The application of dialogic principles by local governments can bring about significant benefits, since social networks, in themselves, promote relations among people. Therefore, this study can be viewed as a significant contribution to our understanding of the dialogic communication theory and to governments' relationships with the population, via internet.

The results obtained show that, on average, local governments only implement half of their capacity for dialogic communication in their Facebook profiles. This situation might be improved, as would their relations with the populace, if they were more aware of the existence of this theory.

In this regard, it is noteworthy that the dialogic loop principle is the least often used by local governments. However, it is of fundamental importance in improving public participation and encouraging the emergence of relations based on dialogue and interaction. In consequence, local governments are not taking advantage of the potential benefits offered by social networks in their relationships with stakeholders,

especially in terms of the government-population interaction generated through the co-production of ideas, content and solutions by means of Facebook.

Of the explanatory variables analyzed, the results show that cities with smaller populations, such as Graz, Salzburg, and Ljubljana, undertake more active policies of government-population interaction via Facebook. It is surprising that the most populous cities, with the exception of Barcelona and Munich, are not at the top of the CIDC ranking. This finding suggests that measures should be implemented to foster governments' presence on Facebook and to highlight its importance for local government as an instrument for promoting participation.

The findings with respect to other variables analyzed show that the online community is a key factor in the interaction with governments. Thus, the more people follow a local government's Facebook profile, the greater the opportunity it has to build up relationships with the population. However, there is a low level of Facebook awareness in some cities, including some with large populations, such as Madrid and London. In these cases, policies should be promoted to heighten public awareness of the municipal Facebook profile, in order to obtain all the benefits offered by this tool for governments to interact with society.

In terms of economic capacity, the cities with the highest levels of GDP make most use of dialogic communication strategies through Facebook. Therefore, within EU activities such as the European Digital Agenda, which is part of the Europe 2020 strategy, greater emphasis should be placed on regions with fewer economic resources.

The results of this study inform us of the communication and dialogue strategies applied using Facebook, by local governments in Europe. However, much remains to be learned about how they use technology, and about how (or whether) society is engaged in the process. Therefore, as an area for future research, it would be interesting to analyze the evolution over time of cities' use of dialogic principles, applying alternative metrics to specifically measure the interaction between local governments and the populace via the dialogic loop principle, and to perform a comparative study with other social networks.

References:

1. Agostino, D., 'Using Social Media to Engage Citizens: A Study of Italian Municipalities', 2013, *Public Relations Review*, vol. 39, no. 3, pp. 232-234.
2. Alcaide, L., Caba, C. and López, A., 'Public Managers' Perceptions of E-Government Efficiency: A Case Study of Andalusian Municipalities', EGPA Annual Conference, Edimburgh, Scotland, 2013.
3. Bonsón, E. and Ratkai, M., 'A Set of Metrics to Assess Stakeholder Engagement and Social Legitimacy on a Corporate Facebook Page', 2013, *Online Information Review*, vol. 37, no. 5, pp. 787-803.
4. Bonsón, E., Royo, S. and Ratkai, M., 'Facebook Practices in Western European Municipalities: An Empirical Analysis of Activity and Citizens' Engagement', 2014, *Administration & Society*, [Online] available at <http://aas.sagepub.com/content/early/2014/09/04/0095399714544945.abstract>, accessed on April 1, 2016.

5. Bortree, D. and Seltzer, T., 'Dialogic Strategies and Outcomes: An Analysis of Environmental Advocacy Groups' Facebook Profiles', 2009, *Public Relations Review*, vol. 35, no. 3, pp. 317-319.
6. Cheng, A.E. and Singh, H., 'Inside Twitter: An In-Depth Look Inside the Twitter World', 2009, [Online] available at <http://www.sysomos.com/insidetwitter>, accessed on April 1, 2016.
7. Dowling, J. and Pfeffer, J., 'Organizational Legitimacy: Social Values and Organizational Behavior', 1975, *The Pacific Sociological Review*, vol. 18, no. 1, pp. 122-136.
8. Ellison, N.R. and Hardey, M., 'Social Media and Local Government: Citizenship, Consumption and Democracy', 2013, *Local Government Studies*, vol. 40, no. 1, pp. 21-40.
9. European Commission, 'Media Use in the European Union', Standard Eurobarometer 78, Autumn 2012, [Online] available at http://ec.europa.eu/public_opinion/archives/eb/eb78/eb78_media_en.pdf, accessed on April 1, 2016.
10. Eurostat, 'European Statistics', 2014, [Online] available at http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database, accessed on June 1, 2015.
11. Facebook, 'Key Facts', 2014, [Online] available at <http://newsroom.fb.com/company-info/>, accessed on June 1, 2014.
12. Freeman, R.E., *Strategic Management: A Stakeholder Approach*, Boston: Harpercollins College, 1984.
13. Gandía, J.L. and Archidona, M.C., 'Determinants of Web Site Information by Spanish City Councils', 2008, *Online Information Review*, vol. 32, no. 1, pp. 35-57.
14. Hackler, D. and Saxton, G.D., 'The Strategic Use of Information Technology by Non-profit Organizations: Increasing Capacity and Untapped Potential', 2007, *Public Administration Review*, vol. 67, no. 3, pp. 474-487.
15. Ho, A.T., 'Reinventing Local Governments and the E-Government Initiative', 2002, *Public Administration Review*, vol. 62, no. 4, pp. 434-444.
16. Hoffman, D. and Fodor, M., 'Can You Measure the ROI of Your Social Media Marketing?', 2010, *MIT Sloan Management Review*, vol. 52, no. 1, pp. 40-49.
17. Huang, C.J., 'Board, Ownership and Performance of Banks with a Dual Board System: Evidence from Taiwan', 2010, *Journal of Management and Organization*, vol. 16, no. 2, pp. 219-234.
18. Jensen, M.C. and Meckling, W.H., 'Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure', 1976, *Journal of Financial Economics*, vol. 3, no. 4, pp. 305-360.
19. Kent, M. and Taylor, M., 'Building Dialogic Relationships through World Wide Web', 1998, *Public Relations Review*, vol. 24, no. 3, pp. 321-334.
20. Kent, M. and Taylor, M., 'Toward A Dialogic Theory of Public Relations', 2002, *Public Relations Review*, vol. 28, no. 1, pp. 21-37.
21. Kent, M., Taylor, M. and White, W.J., 'The Relationship between Web Site Design and Organizational Responsiveness to Stakeholders', 2003, *Public Relations Review*, vol. 29, no. 1, pp. 63-77.
22. Krippendorff, K., *Content Analysis: An Introduction to its Methodology*, New York: Sage Publications, 1980.
23. Lovejoy, K., Waters, R.D. and Saxton, G.D., 'Engaging Stakeholders through Twitter: How Nonprofit Organizations are Getting More out of 140 Characters or Less', 2012, *Public Relations Review*, vol. 38, no. 2, pp. 313-318.

24. Magnier-Watanabe, R., Yoshida, M. and Watanabe, T., 'Social Network Productivity in the Use of SNS', 2010, *Journal of Knowledge Management*, vol. 14, no. 6, pp. 910-927.
25. Massari, L., 'Analysis of MySpace User Profiles', 2010, *Information Systems Frontiers*, vol. 12, no. 4, pp. 361-367.
26. McAllister, S.M., 'How the World's Top Universities Provide Dialogic Forums for Marginalized Voices', 2012, *Public Relations Review*, vol. 38, no. 2, pp. 319-327.
27. Mergel, I., 'A Framework for Interpreting Social Media Interactions in the Public Sector', 2013, *Government Information Quarterly*, vol. 30, no. 4, pp. 327-334.
28. Nah, S. and Saxton, G.D., 'Modeling the Adoption and Use of Social Media by Non-profit Organizations', 2012, *New Media & Society*, vol. 15, no. 2, pp. 294-313.
29. Ni, A.Y. and Bretschneider, S., 'The Decision to Contract Out: A Study of Contracting for E-Government Services in State Governments', 2007, *Public Administration Review*, vol. 67, no. 3, pp. 531-544.
30. Norris, D.F. and Reddick, C.G., 'Local e-Government in the United States: Transformation or Incremental Change?', 2013, *Public Administration Review*, vol. 73, no. 1, pp. 165-175.
31. O'Connor, A.J., 'The Power of Popularity: An Empirical Study of the Relationship between Social Media Fan Counts and Brand Company Stock Prices', 2012, *Social Science Computer Review*, vol. 31, no. 2, pp. 229-235.
32. O'Reilly, T., 'What is Web 2.0: Design Patterns and Business Models for the Next Generation of Software', 2007, *Communications & Strategies*, vol. 65, no. 1, pp. 17-37.
33. Rodríguez, L., Garcia, I.S. and Gallego, I., 'Determining Factors of E-Government Development: A Worldwide National Approach', 2011, *International Public Management Journal*, vol. 14, no. 2, pp. 218-248.
34. Rybalko, S. and Seltzer, T., 'Dialogic Communication in 140 Characters or Less: How Fortune 500 Companies Engage Stakeholders Using Twitter', 2010, *Public Relations Review*, vol. 36, no. 4, pp. 336-341.
35. Sadeghi, L., 'Web 2.0.', in Lee, M., Neeley, G. and Stewart, K. (eds.), *The Practice of Government Public Relations*, Boca Raton: CRC Press, 2012, pp. 25-140.
36. Sandoval, R. and Gil, J.R., 'Government-Citizen Interactions Using Web 2.0 Tools: The Case of Twitter in Mexico', in Reddick, C.G. and Aikins, S.K. (eds.), *Web 2.0 Technologies and Democratic Governance: Political, Policy and Management Implications*, USA: Springer, 2012, pp. 233-248.
37. Seltzer, T. and Mitrook, M., 'The Dialogic Potential of Weblogs in Relationships Building', 2007, *Public Relations Review*, vol. 33, no. 2, pp. 227-229.
38. Serrano, C., Rueda, M. and Portillo, P., 'Factors Influencing E-Disclosure in Local Public Administrations', 2009, *Environment and Planning C*, vol. 27, no. 2, pp. 355-378.
39. Snead, J.T., 'Social Media Use in the U.S. Executive Branch', 2013, *Government Information Quarterly*, vol. 30, no. 1, pp. 56-63.
40. Song, C. and Lee, J., 'Can Social Media Restore Citizen Trust in Government?', Public Management Research Conference, Madison, Wisconsin, 2013.
41. Strecker, A., 'Flocking to Facebook: How Local Governments can Build Citizen Engagement', 2011, Capstone Conference for the University of North Carolina, [Online] available at <http://www.mpa.unc.edu/sites/www.mpa.unc.edu/files/Amy%20Strecker.pdf>, accessed on April 1, 2016.

42. Styles, A.K. and Tennyson, M., 'The Accessibility of Financial Reporting of U.S. Municipalities on the Internet', 2007, *Journal of Public Budgeting, Accounting and Financial Management*, vol. 19, no. 1, pp. 56-92.
43. Sun, T. and Wu, G., 'Traits, Predictors, and Consequences of Facebook Self-Presentation', 2012, *Social Science Computer Review*, vol. 30, no. 4, pp. 419-433.
44. Taylor, M. and Kent, M., 'Congressional Web Sites and Their Potential for Public Dialogues', 2004, *Atlantic Journal of Communication*, vol. 12, no. 2, pp. 59-76.
45. Tolbert, C.J., Mossberger, K. and McNeal, R., 'Institutions, Policy and e-Government in the American States', 2008, *Public Administration Review*, vol. 68, no. 3, pp. 549-563.
46. U.S. Census Bureau, 'U.S. and World Population Clocks', 2011, [Online] available at <http://www.census.gov/main/www/popclock.html>, accessed on April 1, 2016.
47. Waters, R.D., Burnett, E., Lamm, A. and Lucas, J., 'Engaging Stakeholders through Social Networking: How Non-profit Organizations Are Using Facebook', 2009, *Public Relations Review*, vol. 35, no. 2, pp. 102-106.
48. Wattal, S., Schuff, D., Mandviwalla, M. and Williams, C.B., 'Web 2.0 and Politics: The 2008 U.S. Presidential Election and E-Politics Research Agenda', 2010, *MIS Quarterly*, vol. 34, no. 4, pp. 669-688.

Annex

Ranking of Facebook dialogic communication

Ranking (CIDC)	City	CIDC (%)	CIDC _{cv} (%)	CIDC _{gv} (%)	CIDC _{dl} (%)	CIDC _{fs} (%)
1	Barcelona (ES)	70.4	100	75	66.7	60
2	Munich (DE)	66.7	100	75	66.7	50
3	Graz (AT)	66.7	66.7	62.5	66.7	70
4	Salzburg (AT)	66.7	66.7	62.5	66.7	70
5	Ljubljana (SI)	66.7	66.7	62.5	66.7	70
6	Espoo (FI)	66.7	66.7	75	66.7	60
7	Milan (IT)	66.7	100	62.5	66.7	60
8	Upsala (SE)	66.7	100	50	66.7	70
9	Cologne (DE)	63.0	100	62.5	50	60
10	Ostrava (CZ)	63.0	66.7	62.5	83.3	50
11	Linz (AT)	59.3	66.7	62.5	50	60
12	Sliema (MT)	59.3	33.3	62.5	66.7	60
13	Utrecht (NL)	59.3	100	50	50	60
14	Setubal (PT)	59.3	100	50	50	60
15	Copenhagen (DK)	55.6	33.3	75	50	50
16	Seville (ES)	55.6	100	50	50	50
17	Tampere (FI)	55.6	100	50	66.7	40
18	Vantaa (FI)	55.6	100	62.5	33.3	50
19	Kaunas (LT)	55.6	66.7	62.5	50	50
20	C. Luxemburgo (LU)	55.6	66.7	62.5	66.7	40
21	The Hague (NL)	55.6	100	50	66.7	40
22	Gothenburg (SE)	55.6	66.7	50	50	60
23	Malmö (SE)	55.6	100	50	50	50
24	Hamburg (DE)	51.9	33.3	75	0	70
25	Dublin (IE)	51.9	100	50	33.3	50
26	Galway (IE)	51.9	66.7	62.5	16.7	60
27	Rome (IT)	51.9	66.7	62.5	33.3	50
28	Amsterdam (NL)	51.9	100	50	33.3	50
29	Wroclaw (PL)	51.9	100	50	33.3	50

Ranking (CIDC)	City	CIDC (%)	CIDC _{cv} (%)	CIDC _{gv} (%)	CIDC _{dl} (%)	CIDC _{fs} (%)
30	Nicosia (CY)	48.1	66.7	62.5	0	60
31	Bratislava (SK)	48.1	33.3	50	50	50
32	Košice (SK)	48.1	66.7	37.5	50	50
33	Heraklion (EL)	48.1	66.7	62.5	33.3	40
34	Vilnius (LT)	48.1	66.7	62.5	50	30
35	Rotterdam (NL)	48.1	66.7	50	66.7	30
36	Porto (PT)	48.1	100	50	16.7	50
37	Vienna (AT)	44.4	66.7	37.5	50	40
38	Zagreb (HR)	44.4	66.7	50	16.7	50
39	Split (HR)	44.4	33.3	50	16.7	60
40	Toulouse (FR)	44.4	100	37.5	33.3	40
41	Turín (IT)	44.4	66.7	62.5	16.7	40
42	Warsaw (PL)	44.4	33.3	62.5	66.7	20
43	Lodz (PL)	44.4	66.7	62.5	33.3	30
44	Glasgow (UK)	44.4	66.7	25	16.7	70
45	Prague (CZ)	44.4	100	50	33.3	30
46	Antwerp (BE)	40.7	66.7	25	66.7	30
47	Paris (FR)	40.7	66.7	37.5	33.3	40
48	Naples (IT)	40.7	33.3	37.5	16.7	60
49	Birmingham (UK)	40.7	100	37.5	33.3	30
50	Pilsen (CZ)	40.7	33.3	37.5	33.3	50
51	Brussels (BE)	37	100	50	0	30
52	Marseille (FR)	37	66.7	37.5	16.7	40
53	Krakow (PL)	37	66.7	25	33.3	40
54	London (UK)	37	66.7	25	0	60
55	Lisbon (PT)	33.3	33.3	25	33.3	40
56	Plovdiv (BG)	29.6	33.3	37.5	0	40
57	Madrid (ES)	29.6	33.3	37.5	16.7	30
	MEAN	50.7	71.9	52.0	41.2	49.1
	STANDARD DEVIATION	0.10	0.24	0.14	0.22	0.10