



**HAL**  
open science

# Political Factors for the Adoption of Different Governance Models in the Provision of Public Services Under Web 2.0 Technologies

Manuel Pedro Rodríguez Bolívar

► **To cite this version:**

Manuel Pedro Rodríguez Bolívar. Political Factors for the Adoption of Different Governance Models in the Provision of Public Services Under Web 2.0 Technologies. 15th Conference on e-Business, e-Services and e-Society (I3E), Sep 2016, Swansea, United Kingdom. pp.607-618, 10.1007/978-3-319-45234-0\_54. hal-01702220

**HAL Id: hal-01702220**

<https://inria.hal.science/hal-01702220v1>

Submitted on 6 Feb 2018

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

# Political Factors for the Adoption of Different Governance Models in the Provision of Public Services under Web 2.0 Technologies

Prof. Manuel Pedro Rodríguez Bolívar<sup>1</sup>

<sup>1</sup>University of Granada, P.O. Box: 18071, Campus Universitario de Cartuja s/n, Granada, Spain  
manuelp@ugr.es

**Abstract.** This paper contributes to the current debate on Web 2.0 technologies and their implications for local governance through the analysis of the perceptions of policy makers of local governments about the governance model to be adopted in the management of Web 2.0 applications for the delivery of public services. Also this paper analyses political factors as attributes that could explain the governance patterns to be adopted by municipalities. To achieve this aim, an e-survey has been performed by policy makers in Spanish municipalities. Findings indicate that policy makers are mainly prone to implement Web 2.0 technologies under the “Bureaucratic Model” framework, keeping the leading role in this implementation. Nonetheless, right-wing ideologists and majority governments are prone to implement collaborative models of governance, whereas left-wing ideologists and minority governments are in favor to implement non-collaborative models of governance.

**Keywords.** Web 2.0 technologies, governance models, public services, political factors.

## 1 Introduction

The use of Web 2.0 technologies in the public sector could be relevant to undertake the transformation of the roles played by citizens, who will no longer be mere ‘end-users’, but will become partners and co-creators of information and services [17], with the aim at obtaining more citizen-oriented services, which has led to a blurred distinction between production and consumption. Nonetheless, the use of social media introduces a number of policy problems, such as the interpretation of the information shared in networks or the loss of significant control over the content and applications [13].

So, the implementation of Web2.0 technologies in public administrations is forcing a reconsideration of the administrative structures of governments and the fostering of open, user-driven governance [3]. In fact, a lively debate in the political arena is the governance model to be used in managing Web 2.0 technologies, which has led to the service-focused uses to be the holy grail of social computing, possibly the most difficult to implement successfully but most impactful if successful [6].

This paper is focused on the field of public sector management and the influence that political variables could have in the perceptions of policy makers to choose the governance model if public administrations embrace Web 2.0 technologies in public sector delivery. To achieve this aim, a questionnaire has been designed and sent to policy makers of local governments in Spain. The findings indicate that policy makers want to play the leading role in the implementation of Web 2.0 technologies using the Bureaucratic model of governance.

This paper is structured as follows. Section 2 discusses the governance models under the Web 2.0 era and the influence of political attributes. Section 3 describes the empirical research and, finally, the discussion and conclusions bring the paper to an end.

## **2 Web 2.0 technologies. A new way for co-production of public services and public sector governance**

### **2.1 Web 2.0 Technologies in delivering public services and public governance**

The implementation of Web 2.0 technologies has emphasized the idea of co-production in public sector services [9]. Four citizen co-production initiatives in the age of social media can be identified, termed “Citizen Sourcing” (G2C), “Government as a Platform” (C2G) and “Do it Yourself Government” (C2C) and “Bureaucratic Model” (G2G), in accordance with the interaction between citizens and government and with how citizens are involved in the co-production of public services [19, 33].

Under the “Bureaucratic Model” of governance (G2G), the government designs the strategy for the use of Web 2.0 technologies, produces the content and manages the network. Governments only seek to provide an innovative channel for its online representation and for broadcasting of government information about public services via social media sites [49] in order to reach a wider spectrum of citizens, what has been called as “screen-level bureaucracy” [5].

In the model termed “Citizen Sourcing” (G2C), citizens help governments improve public sector delivery in a participative framework [27] and share their opinions with government through social media channels [19]. Citizen-sourcing is, therefore, conducive to civic learning and may change the government's perspective on the public to “makers and shapers” of policies and decisions [20].

Under the label “Government as platform” (C2G), the government urges citizens to actively collaborate in the design and creation of public services. Social media channels are used to increase interactivity with citizens or to work in collaboration with government stakeholders on innovative ideas to fulfil the mission of government [39].

Finally, under the “Do It Yourself Government” (C2C) environment, citizens govern themselves with little or no interference from the government. Citizens are interconnected through social media applications [8] and form an important addition to the government-centric form of public service provision, by fostering both the exchange of experiential information and social-emotional support [23].

All previous governance models should not be viewed as mutually exclusive. By contrast, governments can experiment some of these governance models over time as if

they were a continuum in a line of development of governance of Web 2.0 technologies for providing public sector services. It determines the role played by local governments as a continuum of top-down to bottom-up processes from “executor (commissioner)” to “initiator (facilitator)” [36] –Figure 1-

| Co-production initiatives/Role of Governments | Non-collaborative       | Collaborative         |                         |
|---|-------------------------|-----------------------|-------------------------|
|   | Executor (commissioner) | Partner (co-producer) | Initiator (facilitator) |
| "Bureaucratic Model" (G2G)                    | X                       |                       |                         |
| "Citizen Sourcing" (G2C)                      |                         | X                     |                         |
| "Government as a Platform" (C2G)              |                         | X                     |                         |
| "Do it Yourself Government" (C2C)             |                         |                       | X                       |

**Fig 1.** Classifying citizen co-production initiatives and role of government in the age of social media (Source: 19, 36).

## 2.2 Models for governance Web 2.0 Technologies in delivering public services and political attributes

Political structures could affect both the likelihood and nature by which e-government activity enhances citizen participation [1] and the decisions taking regarding public services [41]. According to [2] and [41], politicians have preferences for some policies over others according to their ideological attitudes. Indeed, political Ideology refers to a set of political beliefs or a set of ideas that characterize a particular culture. Right-wing parties have been linked to more pro-private business values (privatization) and to adopt e-government for collaboration with third parties to achieve efficiency and a cost reduction [40, 12], whereas left-wing organizations are conventionally associated with public values (public production). Under this framework, left-wing ideologists see the “do-it-yourself-state” as an instrument for empowerment whereas right-wing ideologists do not see a need for empowerment since this would challenge the existing order [24]. Therefore, our first political hypothesis is derived:

**H1:** Governments that operate in a more conservative political environment (right-wing governments) are more likely to adopt collaborative governance models of Web 2.0 technologies in the delivery of public services for ideological reasons.

On the other hand, [35] argue that political competition plays a key role in the decision of politicians to devolve institutional power to citizens. Political competition is the rivalry for the capacity to influence or determine official governmental decision-making and action on questions of public policy. Majority governments are those with increased political leadership of the government team and robustness in the face of managing public services [12], whereas minority governments are in the opposite situation. By contrast, prior research demonstrates that a high degree of political competition can create a favourable environment for technological reforms [40] and e-governance [38]. Thus the following hypothesis is derived:

**H2:** Minority governments are less likely to adopt non-collaborative models of governance of Web 2.0 technologies for political reasons because of political checks and balances.

Another political incentive of the development of e-government is the political stability [12, 18]. Although political stability is not a well-defined concept, it means the durability and integrity of a current government regime. In accordance with prior research, technological infrastructure and political stability are crucial factors for ICT-

led development because its payoff will become apparent only in the medium to long term [12]. In addition, [25] emphasized that the level of political stability has the potential to influence the level of engagement by local citizens in productive economic activity. Therefore, the following hypothesis is derived:

**H3:** Governments in a more stability environment of the ruling party are more likely to adopt e-participatory government and, therefore, collaborative models of governance of Web 2.0 technologies for providing public sector services.

Finally, another political incentive to adopt participatory governments is the political strength, which can be defined as the party fragmentation of the local council. According to [34], coalition governments may experience some kinds of weakening due to internal conflicts. These governments show some problems of coordination and are less effective in undertaking budgetary reforms, which can affect to the implementation of e-government technologies. Therefore, the following hypothesis is derived:

**H4:** Governments with a high political strength are more likely to adopt e-participatory government and, therefore, collaborative models of governance of Web 2.0 technologies for providing public sector services.

### **3 Policy makers' perceptions on Web 2.0 implementations in Spanish local governments**

#### **3.1 Sample selection**

Large cities have been at the forefront in the adoption of e-government innovations [26, 15] and use mechanisms that permit direct citizen involvement [31] due to the tradition of citizen participation at the local level [29]. Thus, this paper focuses on large Spanish local governments due to the managerial devolution process implemented in Spain in the 1990s [11] and their rapid introduction of new technologies to provide e-services [30]. Sample Spanish municipalities are those with a population of over 50,000 inhabitants, together with those which, although smaller in terms of numbers are provincial capitals, regional capitals or in which the headquarters of regional institutions are located. In total, 148 Spanish municipalities meet these conditions, and account for over 50% of the total population of Spain [37].

Data were obtained by sending a link to perform an e-survey, which was sent to the policy makers of sample local authorities via email. The contact details were obtained from the Spanish central government's website. 7 sample municipalities had not yet introduced social networks, and thus neither had experience of Web 2.0 nor dedicated human resources to this area. Therefore, the questionnaire was sent to 141 local governments and 46 complete replies were received from policy makers - response rate, 32.62%-. Nonetheless, there were 107 incomplete responses to the questionnaire and, in consequence, for some questionnaire items, the response rate exceeded the above-mentioned minimum –Table 3 in Annex-.

The official web pages of sample municipalities of the respondents were re-visited to obtain information regarding the use of Web 2.0 technologies. These technologies are being used by governments for the delivery of public services but in different ways. The blogs are used to provide updated information and to debate about a topic. Face-

book is used to promote social and personal relations, which makes this tool useful for projecting a communicative image of governments. YouTube is more addressed to broadcasting, which allows governments to give full access to videos. And, finally, Twitter has a more hybrid character. So, the objective of each one of these tools and the level of citizen engagement are mainly different according to the technology used.

Table 1 shows that the Web 2.0 applications most commonly used for providing public services by the local governments sampled are RSS channels (73.91%), Facebook (65.22%), Twitter (58.70%) and YouTube (43.48%). In addition, the 93.47% of the municipalities use up to 5 Web 2.0 applications at the same time in order to be communicated with citizens and they usually use 3 different Web 2.0 applications at the same time to be in touch with citizens (median, media, mode and the low value of the standard deviation in Table 1). Despite previous comments, data indicate that whereas some local authorities use eight different Web 2.0 applications (for example, Vitoria-Gasteiz), others only use one of them (for example, Alcobendas or Manresa).

**Table 1.** Characterization of the sample and Web 2.0 applications embraced by the local governments that answered all the e-survey questions.

| Descriptive Statistics |                               |                               |  |           |                    |        |      |         |
|------------------------|-------------------------------|-------------------------------|--|-----------|--------------------|--------|------|---------|
| Web 2.0 application    | Frequency                     |                               | Number of Web 2.0 applications used/municipality | Frequency | Main Statistics    |        |      |         |
|                        | Number of municipalities (N)* | % Total sample municipalities |  |           | Mean               | Median | Mode | Maximum |
| RSS                    | 34                            | 73.91                         | 1  | 7         | Mean               | 3      |      |         |
| Facebook               | 30                            | 65.22                         | 2  | 10        | Median             | 3      |      |         |
| Twitter                | 27                            | 58.70                         | 3  | 11        | Mode               | 3      |      |         |
| YouTube                | 20                            | 43.48                         | 4  | 6         | Maximum            | 8      |      |         |
| Official Blogs         | 10                            | 21.74                         | 5  | 9         | Minimum            | 1      |      |         |
| Flickr                 | 11                            | 23.91                         | 6  | 2         | Standard deviation | 1.64   |      |         |
| Tuenti                 | 6                             | 13.04                         | 7  | 0         |                    |        |      |         |
| Friend Feed            | 5                             | 10.87                         | 8  | 1         |                    |        |      |         |
| Linked in              | 5                             | 10.87                         | <b>TOTAL</b>                                     | <b>46</b> |                    |        |      |         |
| Delicious              | 1                             | 2.17                          |  |           |                    |        |      |         |
| Slice                  | 0                             | 0.00                          |  |           |                    |        |      |         |
| Formspring             | 0                             | 0.00                          |  |           |                    |        |      |         |
| <b>TOTAL</b>           | <b>149</b>                    |                               |  |           |                    |        |      |         |

NOTE:

\* This column indicates the number of local governments that use each one of the Web 2.0 applications. In this regard, one local government can use more than one Web 2.0 application at the same time, as noted in the following columns of this table. The column named "%Total sample municipalities" is calculated using the number of municipalities that use the Web 2.0 application and the total number of municipalities that responded the e-survey (46 municipalities).

### 3.2 Methodology of Research

To address the research questions established, a questionnaire was designed and sent to all policy makers in the sample municipalities with the aim at capturing their perceptions on the issues that are analysed in this paper. Policy makers were addressed in this survey taking into account not only their significant role in the policy-making process within local government, but also their direct involvement in the possible implementation of Web 2.0 technologies in public sector delivery.

The questionnaire was made up of 16 questions covering the role that local governments must play in delivering public services with the implementation of Web 2.0 technologies –Table 3 in Annex-. Two draft versions of the survey were pre-tested on a selected group of stakeholders, to refine the design of the questionnaire items. First, the research team drafted a preliminary version based on the conclusions of previous work in the field of Web 2.0 technologies [36, 8, 19]. Then, the initial text was presented to two specialists on Web 2.0 technologies and to ten policy makers, to ascertain their opinions on the understandability and clarity of the questionnaire and the

possible inclusion of other questions relevant to the study aims. Comments and suggestions made were analysed and incorporated into the text of the questionnaire. The link to the second version of the questionnaire was provided to the policy makers of each sample local government. Also, they were offered the possibility of clarifying any remaining doubts before completing the questionnaire.

Based on prior studies on attitude analysis [9], respondents were asked to describe their degree of agreement with each statement on a five-point Likert scale (from strongly disagree, “1” to strongly agree, “5”). Although the Likert scale has some limitations [16], they do not invalidate conclusions about the numbers [28] and the results obtained have proven to be robust, reliable and valid [28].

After the questionnaire was completed, each item was analysed separately using the median and the mode of the responses, because the mean can have scale problems [4]. Also, the tests of the hypotheses were performed using the multi-regression analysis and cluster analysis. In this regards, we estimate the following OLS regression:

$$y_i = \alpha + \beta_1 \text{POL IDEOLOGY} + \beta_2 \text{POL COMPETITION} + \beta_3 \text{POL STABILITY} + \beta_4 \text{POL STRENGTH} + \varepsilon_i$$

where  $y_i$  is the dependent variable (total score for “Do it Yourself”, “Citizen Sourcing”, “Government as a Platform” and “Bureaucratic” models of governance),  $\alpha$  is the constant of the equation, each of the independent variables analysed in this paper is represented by their name (Political ideology, Political Competition, etc.),  $\beta_i$  is the parameter to be estimated and  $\varepsilon_i$  is the error term.

Besides, based on [32], cluster analyses were performed using the k-means algorithm with the aim at identifying homogenous groups of attributes. Variables’ description and basic statistics of political incentives are displayed in Table 2 in Annex.

### 3.3 Analysis of results

Although the policy makers who responded to the questionnaire believe local governments could play any of the roles identified in prior research (initiator, partner or executor), the results obtained reflect their preference to act as executor (or commissioner) (mean scores for items 1.13, 1.15 and 1.16 –Table 3-). Nonetheless, the respondents also showed their preference for greater openness in the information exchanged (median score: 4.5; mode score: 5) as well as for sharing government knowledge, infrastructure and other assets for use by the public (median and mode scores: 4). Thus, Information and Nudging is also a model in which respondents could be interested, while the municipal authorities would retain a leading role in the design and execution of public services delivery. This could be a means of enhancing e-democracy and at the same time help improve the government’s image.

By contrast, the least-favoured model of governance of Web 2.0 technologies in providing public services is that of the Do-it-yourself Government model (C2C) (the median and mode scores for items 1.1, 1.2, 1.3 and 1.4 –Table 3-) and policy makers are opposed to the creation of associations to represent citizens in managing the provision of public services (median and mode scores: 1). The co-production model of governance, too, obtained scores lower than those for the Bureaucratic model and the Informing-and-Nudging model. Respondents believe that, although effective collaboration between citizens and local governments should be encouraged (median and

mode scores: 4), this collaboration should be conducted mainly in terms of enhancing the quality of information (median score: 4; mode score: 5) rather than via the co-execution of public services (median score: 3; mode score: 4).

Regarding the hypothesis testing, table 4 in Annex shows OLS coefficients and Table 4 in Annex depicts the clusters analysis for each one of the governance models. Based on the OLS models, results indicate that the political ideology is a determinant factor for the model chosen to manage Web 2.0 technologies in providing public services (“Do it Yourself” and “Bureaucratic Model” -Table 4-). By contrast, no significant association has been found regarding political competition, political stability and political strength. In Table 4, clusters analysis seem to indicate that right-wing parties are prone to implement the “Do it Yourself” whilst the left-wing parties are prone to implement “Bureaucratic Model” of governance. Thus, H1 is supported and we can conclude that countries ruled by conservative parties are more likely to adopt collaborative governance models of Web 2.0 technologies in the delivery of public services, than countries ruled by progressive parties.

The political competition is not significant for choosing a model of governance of Web 2.0 technologies for the delivery of public services. Therefore, H2 is not supported by the data. Nonetheless, it seems that majority governments are more prone to collaborative models of governance whereas minority governments are in favour of the Bureaucratic Model of governance (Table 4). This result does not support prior research which indicates that governments with broad electoral majorities are not motivated to remain cued to citizens’ feedback [12].

Finally, regarding political stability and political strength, results indicate that these variables do not impact on the governance model to manage Web 2.0 technologies in providing public services. Therefore, H3 and H4 are not supported. This result does not confirm prior research that indicates that the higher level of political stability and the higher political strength have the potential to influence the level of engagement of citizens, promoting participatory governments [34, 25]. Also, no differences exist in the cluster analysis performed regarding these variables (Table 4).

As for the cluster analysis, results in Table 4 in Annex indicate that political ideology and political competition could have influence on the perception of policy makers regarding the model of governance when Web 2.0 technologies are used for e-services delivery. Collaborative models are characterized for being supported by right-wing ideologists and majority governments (clusters 1, 3 and 5 in Table 4), whilst non-collaborative models are preferred by left-wing ideologists and minority governments (cluster 7 in Table 4). In fact, right-wing ideologists think that “Government as a platform”, “Citizen Sourcing” and “Do it Yourself” models of governance are the best models of governance with a focus on the “Do it Yourself” model of governance – clusters 1, 3 and 5 in Table 4 in Annex-. By contrast, left-wing ideologists seem to prefer the “Bureaucratic Model” of governance (cluster 7, Table 4).

## **4 Discussions and conclusions**

Although social networks are forcing governments to foster open and user-driven governance [3], findings indicate that the main goal pursued by governments is the representation of the agency function through all available online channels. In fact,



sample policy makers show a preference for the “Bureaucratic Model” and the “Government as a Platform” models, and wish to retain a predominant role in the implementation of Web 2.0 technologies for the delivery of public services, monitor and manage the Web 2.0 technologies directly, and are less favourable to the inclusion of citizens in the generation of content and information. This model of Web involvement shows that social media services are by no means immune to government censorship or government-sponsored censorship [21].

Also, findings indicate that the “do it yourself” model is preferred by right-wing ideologists, which indicate their preference for privatizing public services and leaving them to the market [2]. By contrast, the left-wing ideologists think that government must design and provide the e-services. So, senior officials are responsible for the coordination of all municipal Web 2.0 activities, which is agree with the findings of prior research regarding open communication [14]. Nonetheless, employee training could be a highly significant factor for networking and network management [10].

On the other hand, although political competition is not found a statically significant variable in governance models. Results indicate that majority governments are prone to implement collaborative models of governance whereas the minority governments are not. This result does not support prior research which has demonstrated that political competition plays a key role to devolve institutional power to citizens [35].

Finally, political stability and political strength do not impact on the governance model to manage Web 2.0 technologies for e-services delivery. This finding is confirmed in both statistical methods used (OLS and cluster analysis) and it is not agree with prior research which indicates that political conditions must be stable for e-government success [18]. Therefore, future studies should examine the relationship between the political stability and the use of e-participation as a medium of citizen participation, especially regarding e-services.

In brief, although the political value of e-participation applications has been seen as instruments of bureaucratic reform [1], our findings confirms other recent research findings according to which social media have their own logic, but it is only manifest when it encounters fertile ground within a government bureaucracy [22]. Only right-wing ideologists and policy makers of majority governments have indicated the collaborative models of governance, as the “Citizen Sourcing” or the “Do it yourself” models, and the role of co-producer as mainly relevant. But, are these findings influenced by the public administration style of countries?; Will the introduction of Web 2.0 technologies widen the digital divide?. Can we use different modelling techniques to analyse this topic?. For example, data panel techniques could be used if we can collect multiple data over time and its application could help to know trends in the topic analysed in this paper. All these questions remain to be addressed in future research.

## **5 Acknowledgments**

This research was carried out with financial support from the Regional Government of Andalusia (Spain), Department of Innovation, Science and Enterprise (Research project number P11-SEJ-7700).

## 6 References

1. Ahn, M. J., Bretschneider, S.: Politics of E-Government: E-Government and the Political Control of Bureaucracy. *Public Administration Review*, 71(3), 414-424 (2011)
2. Bel, G., Fageda, X.: Why do local governments privatise public services?. A survey of empirical studies. *Local Government Studies*, 33(4), 517-534 (2007)
3. Bertot, J. C., Jaeger, P. T., Grimes, J. M.: Crowd-sourcing transparency: ICTs, social media, and government transparency initiatives. Proceedings of the *11th Annual International Conference on Digital Government Research*, Puebla, Mexico (2010)
4. Bertram, D.: Likert scales. Retrieved June 28, 2014, from the University of Calgary, Department of Computer Science Web Site: <http://poincare.matf.bg.ac.rs/~kristina/topic-dane-likert.pdf> (2007)
5. Bovens, M., Zouridis S.: From Street-Level to System-Level Bureaucracies: How Information and Communication Technology is Transforming Administrative Discretion and Constitutional Control. *Public Administration Review*, 62(2), 174-184 (2002)
6. Chang, A-M., Kannan, P.K.: *Leveraging Web 2.0 in Government*. Washington, D.C.: E-Government/Technology Series, IBM Center for the Business of Government (2008)
7. Criado, J. I., Sandoval-Almazan, R., Gil-Garcia, J. R.: Government innovation through social media. *Government Information Quarterly*, 30(4), 319-326 (2013)
8. Dunleavy, P., Margetts, H. Z.: The second wave of digital era governance. Paper presented at *American Political Science Association Conference 2010 Annual Meeting Papers*, Washington DC, USA (2010)
9. Emerson, T. L. N., Conroy, S. J., Stanley, W.: Ethical Attitudes of Accountants: Recent Evidence from a Practitioners' Survey. *Journal of Business Ethics*, 71(1), 73-87 (2007)
10. Ferro, E., Loukis, E. N., Charalabidis, Y., Osella, M.: Policy making 2.0: From theory to practice. *Government Information Quarterly*, 30(4), 359-368 (2013)
11. Gallego, R., Barzelay, M.: Public Management policymaking in Spain: The Politics of Legislative Reform of Administrative Structure, 1991-1997. *Governance*, 23 (2), 277-296 (2010)
12. Garcia-Sánchez, I-M., Rodríguez-Domínguez, L., Gallego-Álvarez, I.: The Relationship between Political Factors and the Development of E-Participatory Government. *The Information Society: An International Journal*, 27(4), 233-251 (2011)
13. Graells-Costa, J.: Administración colaborativa y en red. *El profesional de la información*, 20 (3), 345-347 (2011)
14. Harrison, J., Wessels, B.: A new public service communication environment? Public service broadcasting values in the reconfiguring media. *New Media & Society*, 7(6), 834-853 (2005)
15. Ho, A. T. K.: Reinventing local governments and the e-government initiative. *Public Administration Review*, 62 (4), 434-444 (2002)
16. Hodge, D. R., Gillespie, D.: Phrase completions: An alternative to Likert scales. *Social Work Research*, 27(1), 45-55 (2003)
17. Johnston, E., Hansen, D.: Design lessons for smart governance infrastructures. In D. Ink, A. Balutis, & T. Buss (Eds.), *American Governance 3.0: Rebooting the Public Square?*, USA: National Academy of Public Administration (2011)
18. Krishnan, S., Teo, T. S. H.: Moderating effects of governance on information infrastructure and e-government development. *Journal of the American Society Information Science and Technology*, 63(10), 1929-1946 (2012)
19. Linders, D.: From e-government to we-government: Defining a typology for citizen co-production in the age of social media. *Government Information Quarterly*, 29(4), 446-454 (2012)

20. Lukensmeyer, C. J., Torres, L. H.: Citizensourcing: Citizen participation in a networked nation. In K. Yang, & E. Bergrud (Eds.), *Civic engagement in a network society* (pp. 207–233). Charlotte, NC: Information Age Publishing (2008)
21. MacKinnon, R.: Flatter world and thicker walls? Blogs, censorship and civic discourse in China. *Public Choice*, 134, 31–46 (2008)
22. Meijer, A., Thaens, M.: Social media strategies: Understanding the differences between North American police departments. *Government Information Quarterly*, 30(4), 343-350 (2013)
23. Meijer, A.: Networked Co-production of Public Services in Virtual Communities: From a Government-Centric to a Community Approach to Public Service Support. *Public Administration Review*, 71 (4), 598-607 (2011)
24. Meijer, A.: The Do It Yourself State. The future of participatory democracy. *Information Polity*, 17 (3-4), 303-314 (2012)
25. Meso, P., Musa, P., Straub, D., Mbarika, V.: Information infrastructure, governance, and socio-economic development in developing countries. *European Journal of Information Systems*, 18(1), 52–65 (2009)
26. Moon, M.J.: The evolution of e-government among municipalities: Rhetoric or reality?. *Public Administration Review*, 62 (4), 424-433 (2002)
27. Nam, T.: Suggesting frameworks of citizen-sourcing via Government 2.0. *Government Information Quarterly*, 29 (1), 12–20 (2012)
28. Norman, G.: Likert scales, levels of measurement and the "laws" of statistics. *Advances in Health Sciences Education*, 15(5), 625-632 (2010)
29. Oakerson, R. J.: *Governing local public economies: Creating the civic metropolis*. Richmond: ICS Press (1999)
30. Orange Foundation: *eEspaña. Informe anual 2014 sobre el desarrollo de la sociedad de la información en España*. Madrid: Fundación Orange (2014)
31. Peters, B.G.: *The future of governing*. Lawrence, Kansas: University Press of Kansas (2001)
32. Rapkin, B. D., Luke, D. A.: Cluster Analysis in Community Research: Epistemology and Practice. *American Journal of Community Psychology*, 21(2), 247–277 (1993)
33. Rodríguez Bolívar, M. P. Governance Models for the Delivery of Public Services Through the Web 2.0 Technologies A Political View in Large Spanish Municipalities. *Social Science Computer Review* (2015, in proof).
34. Roubini, N., Sachs, J. D.: Political and Economic Determinants of Budget Deficits in the Industrial Democracies. *European Economic Review*, 33(5), 903-938 (1989)
35. Smith, D. A., Fridkin, D.: Delegating direct democracy: Interparty legislative competition and the adoption of the initiative in the American states. *American Political Science Review*, 102(3), 333-350 (2008)
36. Span, K.C.L., Luijckx, K.G., Schols, J.M.G.A., Schalk, R.: The relationship between governance roles and performance in local public interorganizational networks: A conceptual analysis. *American Review of Public Administration*, 42 (2), 186-201 (2012)
37. Spanish National Statistics Institute (SNSI): Internet document available at: [http://www.ine.es/inebmenu/mnu\\_padron.htm](http://www.ine.es/inebmenu/mnu_padron.htm) (2014)
38. Sriramesh, K., Rivera-Sánchez, M.: E-government in a corporatist, communitarian society: The case of Singapore. *New Media & Society*, 8(5) 707-730 (2006)
39. The White House. The Open Government Initiative. From. <http://www.whitehouse.gov/open> (2009)
40. Tolbert, C. J., Mossberger, K., McNeal, R.: Institutions, policy and e-government in the American States. *Public Administration Review*, 68(3), 549-563 (2008)
41. Ya Ni, A., Bretschneider, S.: The Decision to Contract Out: A Study of Contracting for E-Government Services in State Governments. *Public Administration Review*, 67 (3), 531–544 (2007)

## ANNEX. RESULTS OF THE RESEARCH

**Table 2.** Definition of variables and descriptive statistics.

| Variable                                | Description  | Calculation   | Source  | Hypothesis | Cases | Mean  | Median | Mode  | Standard deviation | Min  | Max   |
|---|--|---|---|------------|-------|-------|--------|-------|--------------------|------|-------|
| <b>Total “Do it Yourself”</b>           | Total score in favour of this model of governance                                    | $\sum_{i=item\ 1.1}^{item\ 1.4} q_i$  | Based on data collection  |            | 46    | 12.76 | 13.00  | 12.00 | 3.11               | 5.00 | 20.00 |
| <b>Total “Citizen Sourcing”</b>         | Total score in favour of this model of governance                                    | $\sum_{i=item\ 1.3}^{item\ 1.5} q_i$  | Based on data collection  |            | 46    | 13.87 | 15.00  | 15.00 | 3.59               | 6.00 | 20.00 |
| <b>Total “Government as a Platform”</b> | Total score in favour of this model of governance                                    | $\sum_{i=item\ 1.12}^{item\ 1.16} q_i$  | Based on data collection  |            | 46    | 16.17 | 17.00  | 17.00 | 2.76               | 7.00 | 20.00 |
| <b>Total “Bureaucratic Model”</b>       | Total score in favour of this model of governance                                    | $\sum_{i=item\ 1.12}^{item\ 1.16} q_i$  | Based on data collection  |            | 46    | 14.34 | 15.00  | 16.00 | 2.82               | 5.00 | 20.00 |
| <b>Political Ideology</b>               | Political Ideology of the ruling party   | 0-Right wing<br>1-Left wing<br>2-Others   | Spanish Ministry of Public Administrations database   | H1         | 46    | 0.61  | 0.00   | 0.00  | 0.74               | 0.00 | 2.00  |
| <b>Political Competition</b>            | Majority vs. minority governments  | 1-Majority<br>0-Minority  | Spanish Ministry of Public Administrations database   | H2         | 46    | 0.65  | 1.00   | 1.00  | 0.48               | 0.00 | 1.00  |
| <b>Political Stability</b>              | Numerical variable that proxies for the popularity of the party in office            | Difference in percentage of votes of the ruling party with respect to the second most-voted party | Spanish Ministry of Public Administrations database   | H3         | 46    | 0.23  | 0.19   | 0.12  | 0.15               | 0.04 | 0.56  |
| <b>Political Strength</b>               | Numerical variable that reflects the local governments’ level of political strength. | $\frac{\sum_{i=1}^n p_i^2}{(\sum_{i=1}^n p_i)^2}$   | Based on data collection. Herfindahl index is used, from 0 (maximum fragmentation) to 1 (minimum fragmentation) | H4         | 46    | 0.42  | 0.42   | 0.38  | 0.07               | 0.29 | 0.56  |

**Source:** Own elaboration.

**Key:** (1) dependent variables; (2) independent variables.

**Table 3.** Results for items related to the governance model and the role of local governments in the use of Web 2.0 technologies.

| Questionnaire   | Frequency | Response Rate | Mean | Median | Mode | Standard Deviation | Min  | Max  |
|---|-----------|---------------|------|--------|------|--------------------|------|------|
| <b>RQ1. Governance model and role of local governments in the use of Web 2.0 technologies</b>   |           |               |      |        |      |                    |      |      |
| <b>a) Initiator (Facilitator) (C2C). “Do it Yourself” model</b>   |           |               |      |        |      |                    |      |      |
| 1.1. For Web 2.0 technologies to be efficient as a means of interaction between local governments and citizenry, citizens should be represented by associations but they should not interact directly with the local government as individuals. | 46        | 32.62%        | 1.73 | 1.00   | 1.00 | 1.56               | 1.00 | 5.00 |
| 1.2. The creation of public/private/user/academic communities for the delivery of public services should be encouraged and developed.   | 53        | 37.59%        | 3.58 | 4.00   | 4.00 | 0.97               | 1.00 | 5.00 |
| 1.3. The implementation of Web 2.0 in providing public services gives an essential role to users of these services.   | 54        | 38.30%        | 3.72 | 4.00   | 4.00 | 1.00               | 1.00 | 5.00 |
| 1.4. Social networks and blogs are suitable spaces in which discussion topics and issues of interest for citizens can be put forward.   | 48        | 34.04%        | 3.83 | 4.00   | 4.00 | 0.95               | 1.00 | 5.00 |
| <b>b) Partner (Co-producer) (G2C) Co-production. “Citizen sourcing” model</b>   |           |               |      |        |      |                    |      |      |
| 1.5. Web 2.0 technologies foster effective collaboration between citizens and government.   | 54        | 38.30%        | 3.67 | 4.00   | 4.00 | 0.95               | 1.00 | 5.00 |
| 1.6. Citizens may participate in the generation of content and information.   | 53        | 37.59%        | 3.15 | 3.00   | 4.00 | 1.20               | 1.00 | 5.00 |
| 1.7. The local government opens up a problem or activity for resolution or co-execution by citizens in order to tap into the unique skills, talents, and knowledge of the population.   | 54        | 38.30%        | 3.13 | 3.00   | 4.00 | 1.20               | 1.00 | 5.00 |
| 1.8. User contributions enhance the quality of information, and Web 2.0 describes these contributions.  | 53        | 37.59%        | 3.96 | 4.00   | 5.00 | 1.14               | 1.00 | 5.00 |
| <b>c) Partner (Co-producer) (C2G) Informing and Nudging. “Government as a platform” model</b>   |           |               |      |        |      |                    |      |      |
| 1.9. The local government uses Web 2.0 technologies to openly share government knowledge, infrastructure, and other assets for use by the public.   | 55        | 39.01%        | 4.20 | 4.00   | 4.00 | 0.85               | 2.00 | 5.00 |
| 1.10. Public sector information is released for use by citizens.  | 50        | 35.46%        | 3.70 | 4.00   | 4.00 | 0.99               | 1.00 | 5.00 |
| 1.11. Greater openness of all kinds of information is obtained.   | 48        | 34.04%        | 4.31 | 4.50   | 5.00 | 0.88               | 1.00 | 5.00 |
| 1.12. The local government uses Web 2.0 technologies to disclose information pro-actively, to open up the inner workings and performance of government and thus empower citizens to hold their government to account.                           | 48        | 34.04%        | 3.92 | 4.00   | 4.00 | 0.85               | 2.00 | 5.00 |
| <b>d) Executor (Commissioner) (G2G). “Bureaucratic Model”</b>   |           |               |      |        |      |                    |      |      |
| 1.13. A plan is created to document security controls, and this plan is reviewed at regular intervals.  | 46        | 32.62%        | 4.26 | 5.00   | 5.00 | 0.95               | 1.00 | 5.00 |
| 1.14. For Web 2.0 management, external advisors are hired to monitor government policies and procedures with respect to external communications activities.   | 46        | 32.62%        | 1.96 | 1.00   | 1.00 | 1.73               | 1.00 | 5.00 |
| 1.15. Local governments should designate a senior official responsible for the coordination of their Web 2.0 activities.  | 48        | 34.04%        | 4.35 | 5.00   | 5.00 | 1.08               | 1.00 | 5.00 |
| 1.16. Local governments must always play the lead role in the implementation of Web 2.0 technologies regarding the delivery of public services.   | 48        | 34.04%        | 4.42 | 5.00   | 5.00 | 1.43               | 1.00 | 5.00 |

**Source:** Own elaboration.

**Table 4.** Regressions and cluster analysis..

| Regressions                             | Dependent Variable        |                             |                                     |                               | Variance Inflation Factors (VIF) (no multicollinearity) |           |                      |           |
|---|---------------------------|-----------------------------|-------------------------------------|-------------------------------|---|-----------|----------------------|-----------|
|   | Total<br>"Do it Yourself" | Total<br>"Citizen Sourcing" | Total<br>"Government as a Platform" | Total<br>"Bureaucratic Model" |   |           |                      |           |
| Constant                                | 29.925<br>(3.396)***      | 22.663<br>(2.077)**         | 24.782<br>(2.492)***                | 21.354<br>(2.685)**           |   |           |                      |           |
| Political ideology                      | -1.977<br>(-2.485)**      | -1.062<br>(-1.078)          | -0.944<br>(-1.241)                  | -1.980<br>(-2.758)***         | 1.711   |           |                      |           |
| Political Competition                   | 0.000<br>(0.000)          | -1.061<br>(-0.620)          | -0.861<br>(-0.652)                  | -0.687<br>(-0.551)            | 2.160   |           |                      |           |
| Political Stability                     | 1.896<br>(0.380)          | 7.889<br>(1.278)            | 3.568<br>(0.749)                    | 0.799<br>(0.178)              | 2.657   |           |                      |           |
| Political Strength                      | -7.595<br>(-0.603)        | -3.370<br>(-0.216)          | -5.474<br>(-0.454)                  | -4.469<br>(-0.393)            | 3.392   |           |                      |           |
| N                                       | 46                        | 46                          | 46                                  | 46                            |   |           |                      |           |
| R <sup>2</sup>                          | 0.196                     | 0.074                       | 0.064                               | 0.203                         |   |           |                      |           |
| Durbin-Watson Test (no autocorrelation) | 1.680                     | 1.837                       | 1.893                               | 2.151                         |   |           |                      |           |
| Cluster analysis                        | Governance Models         |                             |                                     |                               |   |           |                      |           |
|   | "Do it Yourself"          |                             | "Citizen Sourcing"                  |                               | "Government as a Platform"                              |           | "Bureaucratic Model" |           |
|   | Cluster 1                 | Cluster 2                   | Cluster 3                           | Cluster 4                     | Cluster 5   | Cluster 6 | Cluster 7            | Cluster 8 |
| Total score                             | 20.00                     | 5.00                        | 20.00                               | 6.00                          | 20.00   | 7.00      | 20.00                | 5.00      |
| Political ideology                      | 0.00                      | 0.00                        | 0.00                                | 2.00                          | 0.00  | 1.00      | 1.00                 | 2.00      |
| Political Competition                   | 1.00                      | 1.00                        | 1.00                                | 1.00                          | 1.00  | 0.00      | 0.00                 | 0.00      |
| Political Stability                     | 0.07                      | 0.19                        | 0.07                                | 0.24                          | 0.40  | 0.08      | 0.15                 | 0.19      |
| Political Strength                      | 0.47                      | 0.45                        | 0.47                                | 0.43                          | 0.38  | 0.43      | 0.35                 | 0.37      |
| N                                       | 24.00                     | 22.00                       | 28.00                               | 18.00                         | 37.00   | 9.00      | 37.00                | 9.00      |

Source: Own elaboration.

a) Key for regressions analysis:

Notes: None of VIF exceeded 4.79, which suggests that no strong multicollinearity exists.

t-value in parentheses.

Significance: \*\*\*1%, \*\* 5%, \*10%.

b) Key for clusters analysis:

(1) Political Ideology: 2.00 (Others), 1.00 (Left wing) and 0.00 (Right wing).

(2) Political Competition: 1.00 (Majority Governments) and 0.00 (Minority Governments).