Information Polity 20 (2015) 199–220
DOI 10.3233/IP-150365
IOS Press

The influence of political factors in policymakers' perceptions on the implementation of Web 2.0 technologies for citizen participation and knowledge sharing in public sector delivery

Manuel Pedro Rodríguez Bolívar
Department of Accounting and Finance, Faculty of Business Studies, University of Granada, C/ Campus Universitario de Cartuja, s/n 18071, Granada, Spain
Tel.: +34 958242881; Fax: +34 958246249; E-mail: manuelp@ugr.es

Abstract. Public administration is being pressured for innovation, driving service delivery towards a more personalized, outcome-driven, participative, efficient and collaborative model. In this regard, Web 2.0 technologies are potential powerful tools for supporting public engagement, intended to improve public services and to establish relationships between government and citizens based on information sharing and dialogue. This paper seeks to analyse the influence that political variables could have in the perception of policymakers regarding the use of Web 2.0 technologies for user participation, for knowledge sharing, and for technological innovation in public service delivery. Findings indicate that policymakers are prone to using Web 2.0 technologies to improve internal productivity of local governments and the engagement of citizens in the process of public services' delivery, but with the aim of making suggestions through consultations. In addition, political factors such as ideology, political competition or political stability could influence the perception of policymakers regarding the use of Web 2.0 technologies for citizen participation and knowledge sharing in public sector delivery.

Keywords: Web 2.0, political factors, local governments

1. Introduction

Public administration is being pressured for innovation, driving service delivery towards a more personalized, outcome-driven, participative, efficient and collaborative model [27]. The implementation of information and communication technologies (ICT) in public administration, which has been called e-government [94], is understood to be one of the forms of expression of the information society, in addition to being a central part of the process of the modernization of public administration [85], allowing a strategic and intensive use of ICT, both in the internal relations of public administrations [86], and in terms of the relationship with citizens [87] and with companies in the private sector [88]. Indeed, an increasing number of government initiatives for the implementation of e-government projects with the view of providing better and more accessible services to citizens are recorded worldwide [96].

E-government facilitates interaction between the administration and the public, providing more information and making citizens better informed and better equipped to take an active role in public

1570-1255/15/$35.00 © 2015 – IOS Press and the authors. All rights reserved

affairs [84]. Nonetheless, a common trend around the world is a widespread and growing dissatisfaction with old forms of civic engagement and participation [62]. Indeed, satisfaction with e-government services has also fallen behind that of e-commerce services [16]. In this milieu, a recent demand-side survey performed by the European Commission [16] has placed emphasis on the need to change the way in which public services are provided [11] in order to offer a new generation of e-government services based around user needs [16], with the ultimate goal of creating public value for the citizen [102]. In this regard, the improvement of the quality of public services and the achievement of desired outcomes help to obtain better public values [103,104].

Web 2.0 technologies hold an enormous potential to enhance the effectiveness and legitimacy of government and, therefore, Government 2.0 is presented as the appropriate reaction to changes in society [82] and could be a means to improve public value using ICT [105]. Although there is not a comprehensive definition of Web 2.0 technologies, this paper adopts the definition proposed by Frissen et al. [100], who indicates that Web 2.0 consists of new platforms for interactions with extensive input from users, integration of knowledge and user participation in the production of web services. So, under this framework, governments seek to engage citizens, promote transparency and advance public service through the incorporation of Web 2.0 technologies into the governmental workplace [57].

The implementation of these technologies is changing the roles played by citizens, who will become partners and co-creators of information and services [25,28]. It promotes putting citizens into the heart of the value chain [71], and expects them to provide insight and knowledge and thus improve public services. In brief, in the era of Web 2.0 technologies, the citizen needs to play a distinct and more direct role in designing public services with the aim of obtaining more citizen-oriented services, and this has led to a blurred distinction between production and consumption [73].

In addition, the involvement of governments in the process of implementing Web 2.0 technologies in e-services can improve democratization, citizens' trust in the government [12], governmental legitimacy, governmental efficiency [27], and governmental responsiveness [78]. Nonetheless, it is essential to understand that technology should be considered as architecture, which means that it would be naive to posit that the discussion, knowledge sharing and technological innovation of public services are taking place based solely on the structural features of Web 2.0 technologies [98]. Therefore, it would be relevant to analyse whether main stakeholders are prone to introducing these technologies as knowledge-sharing centres and as a source of technological innovations for improving public sector services.

However, despite the great significance of the implementation of Web 2.0 technologies in public administration and calls for studies to analyse the impact of legal, institutional, and political challenges regarding the use of IT in local governance [14,60], little research has been conducted in the field of public administration to analyse the political factors that could influence the use of these technologies for improving citizen engagement, technological innovation and knowledge sharing in public services. This analysis is especially relevant in local governments because they are mostly concerned with the daily life of people [10], provide a wide variety of services [59] and they are an important subject for the study of Web 2.0 technologies and interactivity in accordance with the traditions of citizen participation at the local level [43]. Policymakers are key actors in the introduction of Web 2.0 technologies in public administrations, taking into account not only their significant role in the policymaking process within local government, but also their direct involvement in the possible implementation of Web 2.0 technologies in public sector delivery and the role of leadership that governments must take in the realization of Government 2.0 [82].

This paper contributes to the current literature of e-government by analysing the implication of Web 2.0 technologies for user participation, for knowledge sharing, and for technological innovation in public

service delivery, seeking to examine the influence that political variables could have on the perception of policymakers regarding the use of Web 2.0 technologies for achieving of these purposes. Specifically, this paper seeks to identify whether political variables, such as political ideology, political competition, political stability and political strength, could influence the perceptions of policymakers of local governments regarding the role of Web 2.0 technologies in improving user participation, knowledge sharing, and technological innovation in public service delivery. To achieve this aim, a questionnaire has been sent to policymakers of local governments in order to collect their opinions about citizen participation in public service and in the technological innovation and knowledge sharing produced in public services under the Web 2.0 era.

The remainder of this paper is structured as follows. Section 2 discusses the opportunities that Web 2.0 applications offer for the co-production of public services in local governments.[1] Section 3 describes the methodology of our study and section four shows the results of the empirical research. Finally, the discussion and conclusions bring the paper to an end.

2. Political view of Web 2.0 technologies' implementation for public sector services

2.1. Review of the literature about Web 2.0 technologies and their relevance for participation, knowledge sharing and technological innovation in providing public services

E-government development has been characterized by a three-stage process [66]. The first one is called the era of 'direct government' and is characterized by the pronouncements of a set of guiding principles to underpin development – the main ones were choice, confidence and accessibility. In the second stage, called 'orthodox government', a new wave of investment by government in ICT applications was expected. Services tailored to individual needs, more joined-up government services, and opportunities for a 'mixed economy' of service provision that could include organizations from private and voluntary sectors were promised in this stage. Nonetheless, e-government initiatives over the past decade have been based mainly on first-generation web-based resources – HTML, a relatively primitive, static page mark-up technology that simply outlines what a page should look like on-screen. These initiatives have suffered from poor coordination among agencies [99].

Finally, from 2005 to the present time, a shift in strategic emphasis has occurred whereby the separate designation and practice of e-government has been largely removed in favour of a whole-of-government approach, carrying the title 'transformational government'. Under this third stage of e-government, governments must strengthen their capacity to assess the needs of users and involve user groups through the use of second-generation web technologies (Web 2.0) in order to listen, to engage users in the design of services and in the production of policies and to forge collective initiatives and interaction [83]. The advent of social media using Web 2.0 technologies has opened up unprecedented new possibilities for engaging the public in government work and has changed public expectations about how government work should be done [12,38]. In fact, these new technologies have introduced new competition for 'nodality' in social and informational networks [24] and have offered the potential for 'co-production' and even 'co-creation' of government services [36]. In this regard, Web 2.0 has the potential to transform public administration services, enabling the development of better policies and eliminating data silos [89], see Table 1.

[1] Originally, the concept of co-production related primarily to the involvement of citizens or clients in production, i.e. direct user involvement, either in the public or private sectors [107]. It emphasizes the role that service users play in both the consumption and production of public services [107,108].

Table 1
Differences between Government 1.0 and Government 2.0

Dimension	Direct and orthodox government Government 1.0	Transformational government Government 2.0
Operating model	– Hierarchical – Rigid	– Networked – Collaborative – Flexible
New models of service delivery	– One-size-fits-all – Monopoly – Single channel	– Personalized – Choice-based – Multi-channel
Performance	– Input-oriented – Closed	– Outcome-driven – Transparent
Decision-making	– Spectator	– Participative

Source: Author based on Deloitte [90] and Taylor [66].

The increasing interest in the implementation of Web 2.0 technologies in governments is reflected in the large number of studies published in this respect over the last few years. It draws upon various reference disciplines, including public administration, information science and communication. Since their appearance, Web 2.0 technologies researchers in public administration have mainly analysed the usefulness of these technologies for different purposes, such as political campaigns [91,92], the disclosure of a greater volume of information to a wider range of citizens [8] and the citizen co-production initiatives [33]. The first two of these aspects concern the transparency and visibility of local government actions, while the second, in addition, favours more participative management [93].

In this regard, prior research recognizes the potential of Web 2.0 technologies to change the way government delivers services and its relationship with the public, enabling more effective citizen engagement and collaboration with the community, more personalized, faster, easier to use and deliverable services, effective collaboration and teamwork, and higher productivity than the Web alone can provide [101]. To achieve this aim, it has been reported that knowledge of citizens' needs and skills is seen as essential for successful public e-service development [74].

Accordingly, local governments are increasingly embracing Web 2.0 technologies to encourage the use of means of bidirectional communication to change how they interact with stakeholders and to become more efficient in their response to stakeholders' demands, thus providing the greater accountability demanded [31]. Therefore, a push towards government co-production of services with citizens has been very clear in behavioural public policy fields, the 'nudge' territory of changing life choices [67], where even more interventionist European governments acknowledge that government-only interventions are unlikely to be successful [36].

This new order in the public arena has led to the emphasis being placed on the political dimension of these new technologies over their technical side [14,97], because political considerations must be taken into account when public sector decisions regarding public services are going to be taken [77]. The potential of Web 2.0 technologies for engaging citizens in the co-production of public services could be welcome to policymakers looking for public service cuts and could lead to new interest in Digital-Era Government-type models [36]. In fact, with public spending cuts squeezing public services at all levels, the strategies adopted by public administrations have been aimed at achieving higher levels of online service uptake and at developing public e-services [49,51], as well as obtaining the anticipated cost efficiencies [66].

Leadership in government is crucial for the realization of Government 2.0 since governments need to be willing to shift their interaction patterns from formal interactions with representatives of interest

groups to informal information exchanges with individuals in networks [82]. In this regard, a political structure of citizen accountability for elected officials and leadership skills at the highest level have been recognised as key variables that affect the likelihood and nature by which e-government activity enhances citizen participation [1]. Thus, while the potential impact of Web 2.0 technologies on the functioning of government is expected to be 'profound', they will come with 'challenges in the areas of policy development, governance, process design, and conceptions of democratic engagement' [5]. Nonetheless, whether or not citizens actually participate online, a municipal presence on social networks may convey the message that government is more responsive, open, and democratic, by allowing citizens to express their views via this channel [21]. Therefore, an interesting research question derived is:

RQ1: Do policymakers think that Web 2.0 technologies could promote effective citizen involvement with the aim of improving public sector services?

In addition, Web 2.0 technologies have the potential to share knowledge and experiences in delivering public sector services that could help governments to improve their internal productivity and interoperability. Various popular Web 2.0 technologies, such as social networking (Facebook, MySpace), wikis, blogs, microblogs (Twitter), mashups and multimedia sharing (YouTube, Flickr), facilitate interactive information sharing, interoperability and collaboration [72] and can promote open, user-driven governance [3–5]. Furthermore, Web 2.0 applications, such as Twitter and Facebook, enable two-way communication and rich data exchange among members for the purposes of communication with the network, knowledge exchange, and problem solving [75]. Therefore, it could be relevant to focus research on the use of Web 2.0 for knowledge sharing and technological innovation for public sector services.

Despite previous comments, little is known about the use of Web 2.0 technologies by government for technological innovation purposes in public services (improvement of services quality, design of public services, etc.), and, also, little is known about how Web 2.0 technologies can affect knowledge-sharing purposes. Therefore, it would be interesting to know whether policymakers think that Web 2.0 technologies could be relevant tools for improving innovation in public services and in sharing knowledge. Therefore, the following research questions are derived:

RQ2: Do policymakers think that Web 2.0 technologies promote technological innovation in public services?
RQ3: Do policymakers think that Web 2.0 technologies promote the sharing of knowledge needed to improve public sector services?

2.2. Political factors for promoting the implementation of Web 2.0 technologies in citizen engagement, technological innovation and knowledge sharing in public services

As noted previously, although the debate about the political dimension of Web 2.0 technologies is more relevant than that of their technical dimension [14], and the political structure of citizen accountability has been recognised as a key variable to enhancing citizen participation [1], up to now there has been little empirical information provided on the effects of the political environment on the implementation of new technologies and, specifically, of Web 2.0 technologies. Therefore, an analysis of the perceptions of the policymakers regarding the implementation of Web 2.0 technologies in providing public sector services, and the analysis of the political factors that could affect their perceptions, could be of interest for identifying political patterns of the implementation of Web 2.0 technologies regarding citizen engagement, technological innovation and knowledge sharing in the public sector delivery.

As for the political factors, the main political variables that have been analysed in prior research regarding the introduction of new technologies are those related to political ideology, political competition, political stability and political strength.

Regarding the dominant party ideology, prior research has demonstrated that ideological attitudes of politicians could influence the policies they make [77]. According to Meijer [39], left-wing ideologists argue in favour of civil society whereas right-wing ideologists plead for less restrictions of the market and see corporate interests as a form of citizen interests and hence these interests are free to play a role in the governance of public spaces. Therefore, right-wing parties have been linked to more pro-private business values, whereas left-wing organizations are conventionally associated with public values.

If these assumptions are correct, right-wing governments should be positively associated with lower public spending and are more likely to adopt e-government for collaboration with third parties, since this implies an increase in efficiency and a cost reduction [69], whereas left-wing governments should be associated with non-collaborative models, feeling the governments to be instruments for the protection of public values. Under this framework, politicians that belong to right-wing parties are expected to perceive Web 2.0 technologies as potential tools for improving citizen engagement and participation and knowledge sharing, whereas politicians that belong to left-wing parties could perceive these new technologies only as a broadcasting channel to disclose information but not to encourage citizen participation and knowledge sharing. Therefore, the following research question is derived:

> **RQ4**: Does the right-wing ideology of sample policymakers make them more likely to adopt Web 2.0 technologies for promoting participation, knowledge sharing and technological innovation in the delivery of public services?

As for political competition, Smith and Fridkin [61] argue that political competition plays a key role in the decision of politicians to devolve institutional power to citizens. Governments with broad electoral majorities tend to think that they have a mandate for their electoral programme and therefore are not motivated to remain cued to citizens' feedback [18]. By contrast, prior research demonstrates that a high degree of political competition can create a favourable environment for technological reforms [69] and e-governance [65], especially regarding the improvement of government accountability and the delivery of e-services [76]. This means that higher political competition can create a favourable environment for citizen involvement in the co-production of e-services. This way, for political leaders seeking to obtain more votes, the more the political competition – in minority governments – the more incentives they have for meeting a higher volume of voters' needs [2] and, therefore, the more they are prone to undertaking public sector reforms to be more transparent and participative. Thus the following research question is derived:

> **RQ5**: Does a more competitive political environment influence policymakers to be more likely to adopt Web 2.0 technologies for promoting participation, knowledge sharing and technological innovation in the delivery of public services?

On the other hand, the level of political stability could also have influence on e-government development [30], because the implementation of e-government technologies tends to require political support for the assignment of adequate resources, whose pay-off will become apparent only in the medium-to-long term [18]. In addition, Meso et al. [40] 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 research question is derived:

RQ6: Does a more stable environment influence policymakers to be more prone to adopt Web 2.0 technologies for promoting e-participatory government, knowledge sharing and technological innovation in the delivery of public services?

Finally, Roubini and Sachs [55,56] indicate that coalition governments may experience some kind of weakening due to internal conflicts. This can lead to these governments showing some problems of coordination and being less effective in undertaking budgetary reforms, which can affect the implementation of e-government technologies. Indeed, in cases of less political strength, due to the lack of sufficient electoral support, digital governments are unlikely to become a priority for political parties. Therefore, the following hypothesis is derived:

RQ7: Does greater political strength in governments influence policymakers to be more prone to adopt Web 2.0 technologies for promoting e-participatory government, knowledge sharing and technological innovation in the delivery of public services?

Figure 1 summarizes the relationships to be explored in this paper.

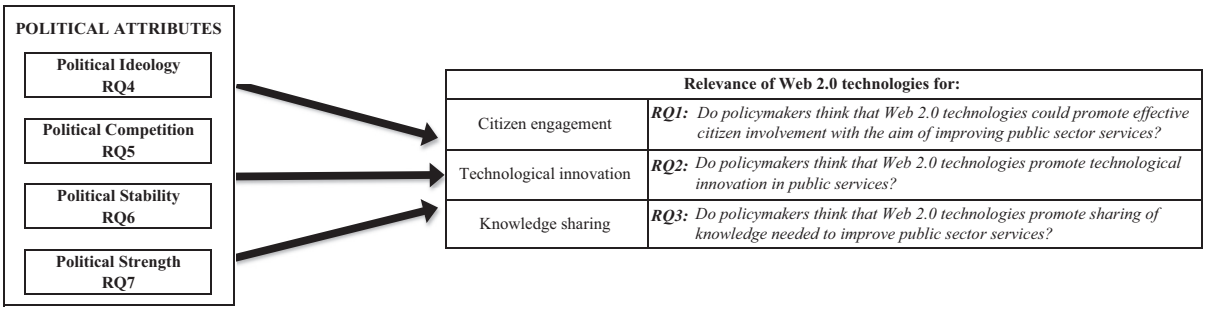

Fig. 1. Political attributes and their influence on promoting Web 2.0 technologies regarding citizen engagement, technological innovation and knowledge sharing in public services.

3. Research design and method

Local government is an important subject for the study of Web 2.0 technologies and interactivity because of the traditions of citizen participation at the local level [42] and the tradition of these governments to use more mechanisms that permit direct citizen involvement, partly because they are more manageable on that scale [47], as well as providing a wide variety of services [58]. This has made Web 2.0 technologies become relevant in the local government context [19], particularly in the largest cities because they have generally been at the forefront in the adoption of e-government innovations [22,41].

This paper focuses on Spanish local governments in view of the managerial devolution process implemented in Spain in the 1990s [17] and the rapid introduction of new technologies by these local governments, which has been fostered with the promulgation of e-services legislation in Spain in the last decade. In addition, according to recent studies, the e-services provided by local administrations in Spain account for 66% of all public services [44] and 79% of Internet users in Spain use some Web 2.0 applications [26] mainly as a means to chat with friends or organizations as well as to generate content – this figure is over the mean of the European Union (57%) [44].

Municipalities with relatively large populations are examined in this paper because they are usually among the first to adopt new technologies [8] with the aim of providing efficient services to the public [10] and their delivery of services is more complex [70] and comparable. Based on this rationale, a

sample of large Spanish municipalities has been selected (those with a population of over 50,000 inhabitants and those which are provincial capitals, regional capitals or in which the headquarters of regional institutions are located (Regulatory Acts No. 7/1985 and 57/2003-)). In total, 148 Spanish municipalities meet these conditions, and account for over 50% of the total population of Spain [63].

Data were obtained by sending a link to perform an e-survey and this was sent to the policymakers of all the local authorities studied, via email. The contact details were obtained from the Spanish central government's website. Of the 148 municipalities that comprised the survey sample, seven of them stated that the municipality had not yet introduced communication channels such as 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 policymakers (thus there were 107 incomplete responses to the questionnaire). To date, therefore, the minimum response rate is 32.62%. Nonetheless, some policymakers of local governments have responded to some items without finishing the full e-survey. In consequence, for some questionnaire items, the response rate exceeded the above-mentioned minimum see Tables 2, 3 and 4 in the Appendix. This sample size is reasonable; according to Roscoe [53], a sample size between 30 and 500 is considered satisfactory. Data were compiled over the research period utilizing an appropriate sampling technique.

Regarding the research methodology, a questionnaire was sent to all policymakers responsible for the e-government of sample municipalities in order to capture their perceptions on the issues that are analysed in this paper. The questionnaire was made up of 15 questions covering the role that the implementation of Web 2.0 technologies can play in local governments regarding citizen engagement, technological innovation and knowledge sharing in public sector services (see Tables 2, 3 and 4 in Appendix).

According to Yildiz [79], researchers should try to learn about e-government experiences directly from politicians, since their perceptions represent an important part of the functions and formulation of policies and this knowledge will allow us to obtain information about what is happening inside the black box of e-administration and to offer information on successful cases that could be imitated. In addition, policymakers responsible for the e-government of the sample municipalities were addressed in this survey taking into account not only their significant role in the policymaking process within local government, but also their direct involvement in the possible implementation of Web 2.0 technologies in public sector delivery and the role of leadership that governments must play in the realization of Government 2.0 [82]. Therefore, the perspective of politicians and public managers in terms of e-government is crucial in order to learn about internal questions that researchers are incapable of perceiving from the outside.

Before the e-survey was sent out, every policymaker in the sample population was contacted and asked to participate in the study, after being informed of the study goals and of what was required by the questionnaire. They were also assured of its strictly scientific and confidential nature, and of the global, anonymous treatment of the data to be obtained. In addition, a two-phase process was followed to design and pre-test the questionnaire items of our study. First, the research team drafted a preliminary version based on the conclusions of previous work in the field of Web 2.0 technologies [20,33,46,48]. Based on this analysis, 15 items have been selected to analyse the role of Web 2.0 technologies in improving citizen engagement, technological innovation and knowledge sharing for public service delivery (five items for each one of the issues) (see Tables 2, 3 and 4 in Appendix). Second, the initial text was presented to two specialists on Web 2.0 technologies and to ten policymakers, to ascertain their opinions on: a) the understandability of the questionnaire; b) the clarity of the questions posed and possible ambiguities; c) the possible inclusion of other questions relevant to the study aims. The comments and suggestions made were analysed and, when considered appropriate, incorporated into the text of the questionnaire.

Then, the link to the second version of the questionnaire was provided to the policymakers of each local government in our sample. Policymakers were offered the possibility of clarifying any remaining doubts before completing the questionnaire. Thus, some emails were received concerning the exact meaning of some items; these questions were answered, and thus we may be reasonably sure that the questions measured the intended constructs.

Based on prior studies on attitude analysis [13,15], a questionnaire was designed in which respondents were asked to describe their degree of agreement with each statement on a five-point Likert scale (ranging from strongly disagree, '1' to strongly agree, '5'). Although the Likert scale has some limitations for research [23,45,58], these limitations do not invalidate conclusions regarding the scores [42] and the Likert scale is suitable for attitude studies – the measures are simple to administer, quantify and code [64], provide reliable and valid results [32,37] and statistical inference is 'robust' when used for parametric statistics [42]. Therefore, a five-point Likert scale has been used in our research to capture the attitudes of policymakers regarding the implementation of Web 2.0 in public services.

After the questionnaire was completed, each item was analysed separately. Unlike in other methods, in Likert scaling the data obtained from responses could not be analysed using the mean to compare results between questions due to scale problems [6]. By contrast, the analysis of the central tendency summarized by the median and the mode of the responses, has been proved to be useful in order to analyse data obtained using the Likert scale [6].

In addition, the data regarding the political factors of each one of the sample governments (elected political party, minority vs. majority governments, political stability and political strength) have been collected from the official database of the Spanish Ministry of Public Administrations (see https://ssweb.seap.minhap.es/portalEELL/consulta_alcaldes). These variables are defined and and a description provided of how they have been measured in Table 5 in Appendix. Based on the data gathered in the questionnaires answered by the respondents and the data obtained from the official database of the Spanish Ministry of Public Administrations, the tests for research questions 4, 5, 6 and 7 (RQ4, RQ5, RQ6 and RQ7) were performed using cluster analysis (see Table 6 in Appendix). Cluster analysis is the most appropriate method because it allows the grouping of that have similar opinions about Web 2.0 governance models across a set of variables, thus leading to homogeneous empirical types [50]. In this regard, cluster analyses were performed using the k-means algorithm with the aim of identifying homogenous groups of attributes.

4. Research findings

4.1. Descriptive statistics

RQ1: Do policymakers think that Web 2.0 technologies could promote effective citizen involvement with the aim of improving public sector services?

According to our results, policymakers think that Web 2.0 technologies could foster the collaboration of citizens in delivering public sector services (see items 1.1., 1.2. and 1.5. in Appendix, Table 2), but they think that the involvement of citizens must be more passive than active, because only consultation seems to be the main outlet for the implementation of Web 2.0 technologies to improve citizen engagement (see items 1.3 and 1.4 in Appendix, Table 2). Indeed, the co-production of services or the generation of content and information about public services, although relevant, do not achieve a high score and the standard deviation is high (see median and mode scores of items 1.2 and 1.5 in Appendix,

Table 2). This result could indicate that policymakers may have expressed concern about the possible inappropriate use of Web 2.0 technologies by citizens, because comments or content uploaded onto social networks by stakeholders could damage the image of the politicians and local governments responsible for delivering public services.

Also, the involvement of citizens in the co-production of services is an item that has obtained a low score and high standard deviation (see item 1.2. in Appendix, Table 2), which could be due to the policymakers feeling they have had to give up significant control over public services or over the way in which communications and relationships with stakeholders are handled. Therefore, policymakers in Spain may believe that local governments should play the role of commissioner (executor) rather than that of co-producer or facilitator.

Finally, results seem to indicate that Web 2.0 technologies may be the main tools for communication between citizens and government. According to the results, Web 2.0 technologies can stimulate the creation of communities and can improve the communication and collaboration of citizens in public service delivery (see items 1.1, 1.2 and 1.4 in Appendix, Table 2). Nonetheless, the results seem to indicate that governments could only use Web 2.0 technologies as communication channels for broadcasting public services with the information provided by them.

RQ2: Do policymakers think that Web 2.0 technologies promote technological innovation in public services?

Table 3 in Appendix presents the results regarding the role of Web 2.0 technologies in the promotion of technological innovation in public services. The results indicate that policymakers think that the mashups or wiki technologies are not relevant for technological innovation in public services (see items 2.3 and 2.5 in Appendix, Table 3). In addition, policymakers think that Web 2.0 technologies are not appropriated as a space where users can test new public services online before they are made available to the public (see item 2.1 in Appendix, Table 3). This result could indicate that governments think that other different forms should be used for testing public services (if any). Otherwise, policymakers could be prone to implementing new services and to collecting feedback from users and then, to improving that service.

By contrast, policymakers think that Web 2.0 technologies could be a relevant tool for gathering suggestions from users regarding the quality of public services and for making public services more user-centred (see items 2.2 and 2.4 in Appendix, Table 3). This result confirms that policymakers seem to think of using Web 2.0 technologies only for collecting information from citizens, but not for their involvement in the delivery process of public services.

RQ3: Do policymakers think that Web 2.0 technologies promote the sharing of knowledge needed to improve public sector services?

Regarding this section of our study, results indicate that policymakers are aware of the potential of Web 2.0 technologies in creating a benchmark process to improve public sector services (see item 3.3 in Appendix, Table 4), in sharing knowledge of government, infrastructure and other public goods (see item 3.5 in Appendix, Table 4) and, mainly, in creating a network for discussion of local public services in a continuous way (see item 3.4 in Appendix, Table 4).

Therefore, policymakers seem to be prone to using Web 2.0 technologies to improve the internal productivity of local governments more than for taking advantage of the skills, talents and knowledge of citizens to solve problems in the implementation of public services (see median for item 3.1 in Appendix, Table 4).

Also, results indicate that policymakers think that standards for the interoperability of public documents should be set under other different frameworks to those proposed by the Web 2.0 technologies

(see median for item 3.2 in Appendix, Table 4). Perhaps this finding is a result of the public administration style in Spain, which is characterized by administrative law [52]. In this regard, policymakers may think that it is better that interoperability matters are regulated by law and not to develop interoperability standards drawn from practice.

4.2. Cluster analysis

RQ4: Does the right-wing ideology of sample policymakers make them more likely to adopt Web 2.0 technologies for promoting participation, knowledge sharing and technological innovation in the delivery of public services?

Table 6 shows that policymakers with left-wing ideologies think that the impact of Web 2.0 technologies for promoting participation, knowledge sharing and technological innovation in the delivery of public services is going to be low. Indeed, policymakers of left-wing parties have scored all items with the lower scores and most of them do not agree that the implementation of Web 2.0 technologies in the delivery of public sector services will lead to improvements in these areas (see Table 6 Cluster 1 in Appendix), in which all items obtain a score lower than 3 points.

On the other hand, policymakers of right-wing ideologies think that Web 2.0 technologies could mainly improve citizen engagement and knowledge sharing and some aspects regarding technological innovation of public services (see Table 6 Cluster 2 in Appendix). Indeed, they are more prone to introducing Web 2.0 technologies for knowledge sharing, especially for creating networks for discussions and for sharing experiences in the delivery of public services. Also, they are prone to introducing Web 2.0 technologies for fostering effective collaboration with stakeholders and for consultation regarding the transformation of public sector delivery. By contrast, under the area of technological innovation, these policymakers think that only the gathering of suggestions from citizens and the possible citizenry engagement in the design process of the public services could be improved.

Finally, our results indicate that policymakers of political parties that are not included in the left- or right-wing ideologies (independent political parties) are those that believe that Web 2.0 could help to improve participation, knowledge sharing and technological innovation of public services (see Table 6 Cluster 3 in Appendix). This result makes a good contribution to prior research because it has not been obtained before and it means that these independent political parties are prone to introducing new ways of producing public value through public services' delivery.

RQ5: Does a more competitive political environment influence policymakers to be more likely to adopt Web 2.0 technologies for promoting participation, knowledge sharing and technological innovation in the delivery of public services?

The results of our study indicate that policymakers in a less competitive environment are more prone to introducing Web 2.0 technologies for the delivery of public services than in a more competitive environment, which is contrary to that obtained in prior research (see Table 6 Cluster 3 in Appendix). In fact, this result is surprising because it was expected that, when the policymaker is governing in a competitive environment, the impact of Web 2.0 technologies in the delivery of public services would be high because, under this framework, policymakers may tend to think there is a need to engage citizens in the public sector delivery in order to improve government accountability [76].

RQ6: Does a more stable environment influence policymakers to be more prone to adopt Web 2.0 technologies for promoting e-participatory government, knowledge sharing and technological innovation in the delivery of public services?

The results of our study indicate that the more the political stability the more prone the policymakers are to implementing Web 2.0 technologies to improve citizen engagement, technological innovation and knowledge sharing in the delivery of public services. Indeed, Table 6 in Appendix shows that higher political stability is linked to Cluster 3, which indicates a high level of impact of Web 2.0 technologies in citizen engagement, technological innovation and knowledge sharing for public sector service delivery.

In addition, although the results indicate that higher political stability could influence the point of view of the sample policymakers in thinking that the introduction of Web 2.0 technologies in public sector services could improve all areas analysed in this paper, it seems that the participation of the citizens is the area that is most valuable to policymakers. In fact, a higher level of political stability should mainly foster citizen engagement because all items in this area for Cluster 3 are over 3 points. Knowledge sharing is the second most scored area and finally technological innovation is the area with the lowest scores. In any case, as noted previously, differences among the areas analysed in this paper are low and all items in each one of the areas score 3 points or, for the main part, more than 3 points.

RQ7: Does greater political strength in governments influence policymakers to be more prone to adopt Web 2.0 technologies for promoting e-participatory government, knowledge sharing and technological innovation in the delivery of public services?

The results of our study indicate that there is no clear association between political strength and the improvement of citizen engagement, technological innovation and knowledge sharing in the delivery of public sector services when Web 2.0 technologies are implemented. In fact, differences among the three clusters are not significant. Anyway, the data seem to indicate that higher political strength could influence the sample policymakers to think that the implementation of Web 2.0 technologies does not improve citizen engagement, technological innovation or knowledge sharing because the score is higher in Cluster 1 which represents a low impact of Web 2.0 technologies in these areas when these technologies are introduced for public sector service delivery.

5. Discussions

According to the results, policymakers think that the main role of citizens is limited to making suggestions through consultations. This way, policymakers seem to wish to retain a predominant role in the implementation, monitoring and management of Web 2.0 technologies for the delivery of public services, which could indicate that these technologies are by no means immune to government censorship or government-sponsored censorship [34,35]. This is especially relevant in political environments that characterize Cluster 1 in Table 6 in Appendix – in political environments characterized by left-wing parties governing the local government, minority governments and low political stability. Only independent political parties seem to be in favour of implementing Web 2.0 technologies for providing useful tools to citizens to allow them a more active role in public services' delivery.

This result could be the result of the current inexperience of local governments in Spain in providing public sector services with Web 2.0 technologies and in the method of interaction with individuals through these technologies [82]. As Web 2.0 technologies could require government organizations to give up significant control over content and applications or over the way in which communications and relationships with stakeholders are handled [80], policymakers may perceive the higher participation of citizens as the source of additional 'noise'. This could be produced by destructive behaviour by users and the manipulation of content by interested parties and privacy infringements [81], which are primary issues on which no public service should ever fail [95]. Perhaps, the existence of a clear regulatory

framework for the activities related to social networks or the establishment of a process to combat unauthorized or fraudulent postings, could mitigate this risk and could make policymakers be more prone to the effective involvement of citizens in the co-production of public services.

In any case, the introduction of Web 2.0 applications in public services requires support from different actors for successful implementation [82]. In addition, the improvement of public value would need an inclusive framework that allows citizens to express their needs and desired outcomes [106] as well as for examining the performance of public services from the perspective of citizens [104]. Therefore, future research should analyse citizens' perception regarding their role in the use of Web 2.0 technologies for knowledge sharing and innovation of public services with the aim of knowing their relevance for creating public value under this framework. These studies should enable the comparison of this perception with that of policymakers in order to understand the gap between both perceptions and the steps to be taken with the aim of making Web 2.0 technologies a good tool for improving public sector delivery and the creation of public value.

Regarding the role of Web 2.0 technologies in technological innovation in public services' delivery, our findings indicate that policymakers mainly think that Web 2.0 technologies could be a relevant tool for gathering suggestions from users regarding the quality of public services and for making public services more user-centred. This result is derived mainly from the responses of those policymakers who are managing local governments under political environments characterized by Clusters 2 and 3. Policymakers in local governments included in political environments are characterised by Cluster 1 think that the implementation of Web 2.0 technologies does not improve technological innovation in the delivery of public services.

In addition, this finding reinforces that obtained for RQ1 and indicates that the use of Web 2.0 technologies is only seen as a means to collect information from citizens and, therefore, to innovate public services. Perhaps, with the experience of using these new technologies in the future, policymakers will be more prone to involving citizens in the collaboration of delivering public services and they will be more prone to citizens playing a more active role. In fact, future research could analyse the different perception of the same policymakers across time regarding the role of citizens in the delivery process of public services.

In addition, mashups and wikis are not scored as relevant to technological innovation, which could be a consequence of the risks that prior research has indicated regarding these two Web 2.0 technologies [9]. Therefore, regulation concerning the use of these technologies and training for employees to use and monitor Web 2.0 technologies could be relevant aspects in solving these problems.

Finally, the findings seem to indicate that policymakers are prone to using Web 2.0 technologies to improve the internal productivity of local governments more than for increasing the involvement of citizens in the delivery of public services. Although this finding is true for Clusters 2 and 3, policymakers of local governments classified under Cluster 1 think that knowledge sharing is not produced with the implementation of Web 2.0 technologies. In addition, some differences exist between the Clusters regarding the perception of the sample policymakers, In this regard, sample policymakers that belong to independent political parties with majority governments and high political stability support the use of Web 2.0 technologies for sharing knowledge, best practices and for improving interoperability among public administrations, whereas those that belong to right-wing ideologies with minority governments and medium political stability highlight the use of Web 2.0 technologies for sharing knowledge, best practices and for allowing discussions among public administrations.

In brief, the main conclusion to be drawn in this area of the study is that the internal perspective regarding the improvements linked to the introduction of Web 2.0 technologies in the provision of public

services plays an important role. Perhaps this finding is the result of the public administration style in Spain, which is based on the 'Weberian/Bureaucratic Model' of production, characterized by administrative law, which decisively influences the content, logic and institutional autonomy of the public administration [29,54]. Future research could collect the perception of other policymakers in different contexts and countries. Perhaps the administrative culture of the country could be a factor in explaining possible differences regarding the opinion of this group of key stakeholders.

6. Conclusion

Our study is focused on the perception of policymakers regarding the use of Web 2.0 technologies for citizen involvement, knowledge sharing and technological innovation in public service delivery. In addition, this study analyses the influence of main political factors in the thoughts of sample policymakers regarding the relevance of the implementation of Web 2.0 technologies for improving the areas previously mentioned. To achieve this aim, a questionnaire was designed and sent to policymakers of local governments in order to collect their opinions about citizen participation in public service and in the technological innovation and knowledge sharing produced in public services under the Web 2.0 era.

A main conclusion of this paper is the thinking of policymakers regarding the role to be played by citizens in the Government 2.0 era. In this regard, policymakers think that citizens must play a passive role in the co-production of public services and they wish to retain control over the content and way of providing these services. This confirms prior research, which indicates that local government still represents the Achilles heel of Spanish society as regards the advancement of e-government [10], provoked by the possible resistance of policymakers who wish to maintain a parallel structure of working simultaneously with old-fashioned practices and with digital structures in public services' delivery [14] and citizen engagement [7].

In fact, citizens are only required to provide feedback information regarding the quality of public sector services and the way of making public services more user-centred. Policymakers think that this information collected from citizens could help them to innovate their public services and to create public value but they do not facilitate the citizens' involvement in the design or creation of public services, thus limiting, in this way, their collaboration in the co-production of services.

By contrast, our study highlights the potential of Web 2.0 technologies for improving the internal productivity of public administrations and for interoperability purposes, through information sharing and knowledge sharing of best practices in the provision of public sector services. This means that policymakers think that Web 2.0 technologies could be good for reinforcing efficiency in local governments, introducing these technologies to build links between administrations, but not for facilitating citizens' involvement.

In brief, governance models of Web 2.0 technologies could be a key aspect in the implementation of these technologies in local governments. These governance models seem to be influenced by the government styles presented in the sample local governments. In Spain, the traditional Bureaucratic Model of production is currently present in local governments, which may have influenced the role that sample policymakers assigned to Web 2.0 technologies. This role is basically linked to disclosing information more than to facilitating citizen participation. Is this a result provoked by the fact that the implementation of Web 2.0 technologies is still in the early stages? Does it allow the creation of public value for society? Future research should analyse whether policymakers have taken advantage of these technologies or whether they have been doomed to be only another channel of communication. The latter would mean the death of Web 2.0 technologies in their application to public sector services and

means they would only serve as an innovative channel for government online representation and for the broadcasting of government information about public services via social media sites [68].

Acknowledgements

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).

References

[1] Ahn MJ, Bretschneider S. Politics of E-Government: E-Government and the Political Control of Bureaucracy. Public Administration Review. 2011; 71(3): 414-424.
[2] Baber WB. Toward Understanding the Role of Auditing in the Public Sector. Journal of Accounting and Economics. 1983; 5: 213-227.
[3] Bertot JC, Jaeger PT, Grimes JM. Crowd-sourcing transparency: ICTs, social media, and government transparency initiatives, Proceedings of the 11th Annual International Conference on Digital Government Research, 2010a.
[4] Bertot JC, Jaeger PT, Grimes JM. Using ICTs to create a culture of transparency: E-government and social media as openness and anti-corruption tools for societies. Government Information Quarterly. 2010; 27(3): 264-271.
[5] Bertot JC, Jaeger PT, Munson S, Glaisyer T. Social media technology and government transparency. Computer. 2010; 43(11): 53-59.
[6] D. Bertram. Likert scales (available at http://poincare.matf.bg.ac.rs/∼kristina/topic-dane-likert.pdf), 2007.
[7] Blank G, Reisdorf BC. The Participatory Web. Information, Communication & Society. 2012; 15(4): 537-554.
[8] Bonsón E, Torres L, Royo S, Flores F. Local e-government 2.0: Social media and corporate transparency in municipalities. Government Information Quarterly. 2012; 29(2): 123-132.
[9] Boulos MNK, Maramba I, Wheeler S. Wikis, blogs and podcasts: A new generation of Web-based tools for virtual collaborative clinical practice and education, BMC Medical Education, (available at http://www.biomedcentral. com/1472-6920/6/41.#B68, 2006.
[10] Cegarra Navarro JG, Córdoba Pachón JR, Moreno Cegarra JL. E-government and citizen's engagement with local affairs through e-Websites: The case of Spanish municipalities. International Journal of Information Management. 2012; 32(5): 469-478.
[11] Chan CML, Lau YM, Pan SL. E-government implementation: A macro analysis of Singapore's e-government initiatives. Government Information Quarterly. 2008; 25(2): 239-255.
[12] Chun S, Shulman S, Sandoval-Almazan R, Hovy E. Government 2.0: Marking connections between citizens, data and government. Information Polity. 2010; 15: 1-9.
[13] Collison D, Lorraine N, Power D. An exploration of corporate attitudes to the significance of environmental information for stakeholders, Corporate Social Responsibility and Environmental Management. 2003; 19(4): 199-211.
[14] Criado JI, Sandoval-Almazan R, Gil-Garcia JR, Government innovation through social media. Government Information Quarterly. 2013; 30(4): 319-326.
[15] Emerson TLN, Conroy SJ, Stanley W. Ethical Attitudes of Accountants: Recent Evidence from a Practitioners' Survey. Journal of Business Ethics. 2007; 71(1): 73-87.
[16] European Commission. Public Services Online. 'Digital by Default or by Detour'. Assessing User Centric eGovernment performance in Europe – eGovernment Benchmark 2012, (available at http://ec.europa.eu/digital-agenda/sites/digital-agenda/files/eGov%20Benchmark%202012%20insight%20report%20published%20version%200.1%20_0.pdf), 2013.
[17] Gallego R, Barzelay M. Public Management policymaking in Spain: The Politics of Legislative Reform of Administrative Structure, 1991–1997, Governance. 2010; 23(2): 277-296.
[18] García-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. 2011; 27(4): 233-251.
[19] Gibson A. Local by Social. How local authorities can use social media to achieve more for less, NESTA: London, 2010.
[20] Gomes R, Sousa L. Contributions to the Development of Local e-Government 2.0. Future Internet. 2012; 4(4): 882-899.
[21] Hibbing JR, Theiss-Morse E. Stealth Democracy: Americans' Beliefs about How Government Should Work, Cambridge University Press, 2002.
[22] Ho ATK. Reinventing local governments and the e-government initiative, Public Administration Review. 2002; 62(4): 434-444.

[23] Hodge DR, Gillespie D. Phrase completions: An alternative to Likert scales. Social Work Research. 2003; 27(1): 45-55.
[24] Hood C, Margetts H. The tools of government in the digital age. Basingstoke, Palgrave: UK, 2007.
[25] Huijboom N, Van den Broek T, Frissen V, Kool L, Kotterink B, Nielsen M, Millard J. Public Services 2.0: The Impact of Social Computing on Public Services, Institute for Prospective Technological Studies, Joint Research Centre, European Commission, Office for Official Publications of the European Communities: Luxembourg, (2009).
[26] IAB Spain Research (IAB). V Estudio Anual de Redes Sociales, IAB: Madrid, 2014.
[27] International Development Association (IDA). Information and Communication Technology Agency of Sri Lanka (ICTA), Volume 3, Colombo-05: Sri Lanka, 2011.
[28] Johnston E, Hansen D. Design lessons for smart governance infrastructures, in American Governance 3.0: Rebooting the Public Square? D. Ink, A. Balutis and T. Buss, eds, National Academy of Public Administration: Washington, DC, 2011.
[29] Kickert W. Public Management in the United States and Europe, in Public Management and Administrative Reform in Western Europe, W. Kickert, ed., Edward Elgar: Cheltenham, UK, 1997.
[30] Krishnan S, Teo TSH. Moderating effects of governance on information infrastructure and e-government development. Journal of the American Society Information Science and Technology. 2012; 63(10): 1929-1946.
[31] Leighninger M. Using Online Tools to Engage – And Be Engaged By – The Public, IBM Center for The Business of Government, IBM Center for The Business of Government: Washington, USA, 2011.
[32] Li Q. A novel Likert scale based on fuzzy sets theory. Expert Systems with Applications. 2013; 40(5): 1609-1618.
[33] Linders D. From e-government to we-government: Defining a typology for citizen co-production in the age of social media. Government Information Quarterly. 2012; 29(4): 446-454.
[34] MacKinnon R. Flatter world and thicker walls? Blogs, censorship and civic discourse in China. Public Choice. 2008; 134: 31-46.
[35] MacKinnon R. China's censorship 2.0: How companies censor bloggers. First Monday. 14(2): (available at http:// firstmonday.org/htbin/cgiwrap/bin/ojs/index. php/fm/article/viewArticle/2378/2089), 2009.
[36] Margetts H, Dunleavy P. The second wave of digital-era governance: A quasi-paradigm for government on the Web. Philosophical Transaction Royal Society. 2013; A: 1-17.
[37] Matell MS, Jacoby J. Is There an Optimal Number of Alternatives for Likert Scale Items? Study I: Reliability and Validity. Educational and Psychological Measurement. 1971; 31(3): 657-674.
[38] McDermott P. Building open government. Government Information Quarterly. 2010; 27(4): 401-413.
[39] Meijer A. The Do It Yourself State. The future of participatory democracy, Information Polity. 2012; 17(3-4): 303-314.
[40] Meso P, Musa P, Straub D, Mbarika V. Information infrastructure, governance, and socio-economic development in developing countries, European Journal of Information Systems. 2009; 18(1): 52-65.
[41] Moon MJ. The evolution of e-government among municipalities: Rhetoric or reality? Public Administration Review. 2002; 62(4): 424-433.
[42] Norman G. Likert scales, levels of measurement and the "laws" of statistics. Advances in Health Sciences Education. 2010; 15(5): 625-632.
[43] Oakerson RJ. Governing local public economies: Creating the civic metropolis, ICS Press: Richmond, 1999.
[44] Orange Foundation. eEspaña. Informe anual 2014 sobre el desarrollo de la sociedad de la información en España, Fundación Orange: Madrid, 2014.
[45] Orvik JM, Social desirability for individual, his group, and society, Multivariate Behavioral Research. 1972; 7: 3-32.
[46] Oxley A. A Best Practices Guide for Mitigating Risk in the Use of Social Media, IBM Center for The Business of Government, Washington DC, 2011.
[47] Peters BG. The future of governing, Lawrence, University Press of Kansas: Kansas. 2001.
[48] Picazo-Vela S, Gutiérrez-Martínez I, Luna-Reyes LF. Understanding risks, benefits, and strategic alternatives of social media applications in the public sector. Government Information Quarterly. 2012; 29(4): 504-511.
[49] Queensland State Archives. Recordkeeping and Web 2.0. Survey Report, Queensland State Archives: Sunnybank Hills, 2010.
[50] Rapkin BD, Luke DA. Cluster Analysis in Community Research: Epistemology and Practice. *American Journal of Community Psychology.* 1993; 21(2): 247-277.
[51] Reggi L, Scicchitano S. European Regions Financing Public e-Services: the Case of EU Structural Funds. Working Papers 1110, Rome: University of Urbino Carlo Bo, 2011.
[52] Rodríguez Bolívar MP, Caba MC, López Hernández AM. Cultural contexts and governmental digital reporting, International Review of Administrative Sciences. 2006; 72(2): 269-290.
[53] Roscoe JT. Fundamental research statistics for the behavioural sciences (2nd ed.), Holt, Rinehart and Winston: New York, 1975.
[54] Rouban L. The Administrative Modernisation Policy in France, in Public Management and Administrative Reform in Western Europe, W. Kickert (ed.), Edward Elgar: Cheltenham, UK, 1997.

[55] Roubini N, Sachs JD. Government Spending and Budget Deficits in the Industrial Countries. Economic Policy: A European Forum. 1989; 4(8): 99-132.
[56] Roubini N, Sachs JD. Political and Economic Determinants of Budget Deficits in the Industrial Democracies. European Economic Review. 1989; 33(5): 903-938.
[57] Rowe G, Frewer L. A typology of public engagement mechanisms. Science, Technology and Human Values 2005; **30**(2): 251-290.
[58] Russell CJ, Bobko P. Moderated regression analysis and Likert scales: Too coarse for comfort. Journal of Applied Psychology. 1992; 77(3): 336-342.
[59] Saiz MP. La Ley de Economía Sostenible: La sostenibilidad financiera del Sector Público. Revista de Contabilidad y dirección. 2011; 13: 21-42.
[60] Sandoval-Almazan R, Gil-Garcia JR. Are Government Internet Portals Evolving Towards More Interaction, Participation, and Collaboration? Revisiting the Rhetoric of E-government Among Municipalities. Government Information Quarterly. 2012; 29(Supplement 1): S72-S81.
[61] Smith DA, Fridkin D. Delegating direct democracy: Interparty legislative competition and the adoption of the initiative in the American states. *American Political Science Review.* 2008; 102(3): 333-350.
[62] Smyth P, Reddel T. Place Management; A New Way Forward in Redressing Social Exclusion in Queensland. National Housing Action. 2000; 14(2): 9-14.
[63] Spanish National Statistics Institute (SNSI), (available at http://www.ine.es/inebmenu/mnu_padron.htm), 2014.
[64] Spector PE. Summated rating scale construction: An introduction, Sage: Newbury Park, CA, 1992.
[65] Sriramesh K, Rivera-Sánchez M. E-government in a corporatist, communitarian society: The case of Singapore. New Media & Society. 2006; 8(5): 707-730.
[66] Taylor JA. The Information Polity: Towards a two-speed future? Information Polity: The International Journal of Government & Democracy In The Information Age. 2012; 17(3/4): 227-237.
[67] Thaler M, Sunstein C. Nudge: improving decisions about health, wealth and happiness, Penguin: London, UK, 2009.
[68] The White House. The Open Government Initiative, (available at http://www.whitehouse.gov/open), 2009.
[69] Tolbert CJ, Mossberger K, McNeal R. Institutions, policy and e-government in the American States. Public Administration Review. 2008; 68(3): 549-563.
[70] Torres L, Pina V, Acerete B. Gauging E-Government Evolution inEU Municipalities. Journal of Systemics, Cybernetics and Informatics. 2005; 3(6): 43-54.
[71] Tuomi I. Theory of Innovation: Change and Meaning in the Age of Internet, Oxford University Press: Oxford, 2002.
[72] United Nations. E-Government Survey 2010. Leveraging e-government at a time of financial and economic crisis, United Nations: New York, 2010.
[73] Valtysson B. Access Culture: Web 2.0 and Cultural Participation, International Journal of Cultural Policy. 2010; 16(2): 200-214.
[74] Verdegem P, Verleye G. User-centered e-Government in practice: A comprehensive model for measuring user satisfaction. Government Information Quarterly. 2009; 26(3): 487-497.
[75] Welch EW. The Rise of Participative Technologies in Government, in Transformational Government through eGov Practice: Socioeconomic, Cultural, and Technological Issues, M.A. Shareef, N. Archer, Y.K. Dwivedi, A. Mishra and S.K. Pandey, eds, Emerald Group Publishing Limited: Bingley, United Kingdom, 2012.
[76] Wong W, Welch E. Does E-Government Promote Accountability? A Comparative Analysis of Website Openness and Government Accountability, Governance: An International Journal of Policy Administration and Institution. 2004; 17(2): 275-297.
[77] Ya Ni A, Bretschneider S. The Decision to Contract Out: A Study of Contracting for E-Government Services in State Governments. Public Administration Review. 2007; 67(3): 531-544.
[78] Yang KF, Holzer M. The performance-trust link: Implications for performance measurement. Public Administration Review. 2006; 66(1): 114-126.
[79] Yildiz M. E-Government research: Reviewing the literature, limitations, and ways forward. Government Information Quarterly. 2007; 24(3): 646-665.
[80] Graells-Costa J. Administración colaborativa y en red. El profesional de la información. 2011; 20(3): 345-347.
[81] Osimo D. Web 2.0 in Government: Why? and How?, Institute for Prospective Technological Studies, Joint Research Centre, European Commission, Luxembourg: Office for Official Publications of the European Communities, 2008.
[82] Meijer A, Koops B, Pieterson W, Overman S, ten Tije S. Government 2.0: Key Challenges to Its Realization. Electronic Journal of e-Government. 2012; 10(1): 59-69.
[83] OECD. Denmark: Efficient e-Government for Smarter Service Delivery, OECD Publishing, (Available at http://dx.doi.org/10.1787/9789264087118-en), 2010.
[84] Kim S, Schachter H.L. Citizen participation in the budget process and local government accountability. Public Performance and Management Review. 2013; 36(3): 456-471.

[85] O'Neill R. The transformative impact of e-Government on public governance in New Zealand. Public Management Review. 2010; 11(6): 751-770.
[86] Edelenbos J. Institutional Implications of Interactive Governance: Insights from Dutch Practice. Governance: An International Journal of Policy, Administration and Institutions. 2005; 18(1): 11-134.
[87] Taylor J, Lips M, Organ J. Information-Intensive Government and the Layering and Sorting of Citizenship. Public Money and Management. 2007; 27(2): 161-164.
[88] Callanan M. Institutionalizing Participation and Governance? New Participative Structures in Local Government in Ireland. Public Administration. 2005; 83(4): 909-929.
[89] Klein P. Web 2.0: Reinventing Democracy. CIO Insight. 2008; 30-43.
[90] Deloitte. Change your world or the world will change you. The future of collaborative government and Web 2.0, Quebec: Deloitte & Touche LLP and affiliated entities, 2008.
[91] Aparaschivei P. The use of new media in electoral campaigns: Analysis on the use of blogs, Facebook, Twitter and YouTube in the 2009 Romanian presidential campaign. Journal of Media Research. 2011; 4(2): 39-60.
[92] Williams CB, Gulati GJ. Social networks in political campaigns: Facebook and the Congressional elections of 2006 and 2008. New Media & Society. 2013; 15(1): 52-71.
[93] Kovac P, Decman M. Implementation and Change of Processual Administrative Legislation through an Innovative Web 2.0 Solution, Transylvanian Review of Administrative Sciences. 2009; 28E: 65-86.
[94] A. Chadwick. Internet Politics: States, Citizens, and New Communication Technologies, New York: Oxford University Press, 2006.
[95] Corradini F, Paganelli E, Polzonetti A. The e-government digital credentials. International Journal of Electronic Governance. 2007; 1(1): 17-37.
[96] Weerakkody V, Dhillon G. Moving from e-government to t-government, International Journal of Electronic Government Research. 2008; 4(4): 1-16.
[97] Kumar V, Mukerji B, Butt I, Persaud A. Factors for successful e-government adoption: A conceptual framework. The Electronic Journal of e-Government. 2007; 5(1): 63-76.
[98] Papacharissi ZA. On convergent supersurfaces and public spheres online, International Journal of Electronic Governance. 2011; 4(1/2): 9-17.
[99] Tranmüller R, Wimmer MA. E-Government at a Decisive Moment: Sketching a Roadmap to Excellence, in *EGOV 2003, LNCS 2739*, R. Tranmüller, ed., Springer-Verlag Berlin Heidelberg, 2003.
[100] Frissen V, Van Staden M, Huijboom N, Kotterink B, Huveneers S, Kuipers M, Bodea G. Naar een 'User Generated State'? De impact van nieuwe media voor overheid en openbaar bestuur, Rapport voor het ministerie van BZK, Den Haag, 2008.
[101] Accenture. Web 2.0 and the Next Generation of Public Service. Driving high performance through more engaging, accountable and citizen-focused service, (available at https://joinup.ec.europa.eu/sites/default/files/files_epractice/sites/Web%202.0%20and%20the%20Next%20Generation%20of%20Public%20Service%20-%20Driving%20high%20performance%20through%20more%20engaging,%20accountable%20and%20citizen-focused%20service.pdf), 2009.
[102] T. Meynhardt, Public value inside: What is public value creation? International Journal of Public Administration. 2009; 32(3): 192-219.
[103] O'Flynn J. From new public management to public value: Paradigmatic change and managerial implications. Australian Journal of Public Administration. 2007; 66(3): 353-366.
[104] Kelly G, Mulgan G, Muers S. Creating public value: An analytical framework for public service reform, Strategy Unit, Cabinet Office, UK, (available at http://www. cabinetoffice.gov.uk), 2002.
[105] Castelnovo W, Simonetta M. The public value evaluation of e-government policies. The Electronic Journal of Information System Evaluation. 2007; 11(2): 61-72.
[106] UNDESA. World public sector report 2003: E-government at cross road – Global e-government survey, Department of Economic and Social Affairs, United Nations, New York, 2003.
[107] Parks RB, Baker PC, Kiser L, Oakerson R, Ostrom E, Ostrom V, Percy SL, Vandivort MB, Whitaker GP, Wilson R. Consumers as co-producers of public services: some economic and institutional considerations. Policy Studies Journal. 1981; 9(7): 1001-1011.
[108] Alford J. A public management road less travelled: Clients as co-producers of public services. Australian Journal of Public Administration. 1998; 57(4): 128-137.

Appendix

Table 2
Results for items related to citizen engagement using Web 2.0 technologies in providing public services

Questionnaire	Frequency	Response rate	Median	Mean	Mode	Standard deviation	Maximum	Minimum
RQ1. Citizen engagement in the improvement of public sector services								
1.1. Web 2.0 technologies stimulate the creation of public/private communities.	53	37.59%	4	3.58	4	0.97	5	1
1.2. Web 2.0 technologies improve communication between government and stakeholders to promote the co-production of public services.	53	37.59%	4	3.38	4	1.06	5	1
1.3. Web 2.0 technologies facilitate consultation on implementation or transformation of public services to the community.	54	38.30%	4	3.98	4	0.92	5	2
1.4. Web 2.0 technologies foster effective collaboration between citizens and the government in public service delivery.	54	38.30%	4	3.67	4	0.95	5	1
1.5. Web 2.0 technologies promote the involvement of citizens in the generation of content and information about public services.	53	37.59%	3	3.15	4	1.20	5	1

Source: Own elaboration.

Table 3
Results for items related to role of Web 2.0 technologies in technological innovation in public services delivery

Questionnaire	Frequency	Response rate	Median	Mean	Mode	Standard deviation	Maximum	Minimum
RQ2. Role of Web 2.0 technologies in technological innovation in public services delivery								
2.1. Allows the development and promotion of tools and spaces where users can test new public services online before they are made available to the public.	52	36.88%	3	2.75	3	1.10	5	1
2.2. Allows the gathering of suggestions from the users to enhance public services quality and the information disclosed about them.	53	37.59%	4	3.96	5	1.14	5	1
2.3. Wikis allow knowledge in several areas and the creation of knowledge for the improvement of public services.	51	36.17%	3	3.24	4	1.07	5	1
2.4. Allows the design of public services directly aimed at satisfying citizens.	49	34.75%	4	3.71	4	1.08	5	1
2.5. Mashups allow the creation of new public services and improving technological innovation in public services.	46	32.62%	3	3.09	3	1.03	5	1

Source: Own elaboration.

Table 4
Results for items related to role of Web 2.0 technologies in knowledge sharing for public services delivery

Questionnaire	Frequency	Response rate	Median	Mean	Mode	Standard deviation	Maximum	Minimum
RQ3. Role of Web 2.0 technologies in knowledge sharing in public services delivery								
3.1. The local government is taking advantage of the skills, talents and knowledge of citizens to solve problems in the implementation of public services.	54	38.30%	3	3.13	4	1.20	5	1
3.2. Web 2.0 technologies provide digital spaces for consultation and exchange in order to develop standards for interoperability of public documents.	49	34.75%	3	3.16	4	1.05	5	1
3.3. Web 2.0 technologies create a network that allows the transfer of best practice between public administrations is provided.	50	35.46%	4	3.70	4	0.99	5	1
3.4. Web 2.0 technologies facilitate discussion of local public services in a continuous way.	54	38.30%	4	3.72	5	1.12	5	1
3.5. Web 2.0 technologies allow openly share knowledge of government, infrastructure and other public goods.	55	39.01%	4	4.20	4	0.85	5	2

Source: Own elaboration.

Table 5
Definition of variables

	Variable	Description	Calculation	Source	RQ	Expected result
(1)	Citizen engagement	Perception of policymakers regarding the use of Web 2.0 technologies for citizen involvement in the co-production of public services	Likert-scale for each one of the items of the questionnaire	Questionnaire	1	(+)
	Technological innovation	Perception of policymakers regarding the use of Web 2.0 technologies by government for technological innovation purposes in public services	Likert-scale for each one of the items of the questionnaire	Questionnaire	2	(+)
	Knowledge sharing	Perception of policymakers regarding the use of Web 2.0 technologies by government for knowledge sharing purposes in public services	Likert-scale for each one of the items of the questionnaire	Questionnaire	3	(+)
(2)	Political ideology	Political Ideology of the ruling party	0-Right wing 1-Left wing 2-Others	Spanish Ministry of Public Administrations database	4	Right-wing (+)
	Political competition	Political party governs in coalition or absolute majority	1-Majority 0-Minority	Spanish Ministry of Public Administrations database	5	Minority governments (+)
	Political stability	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	6	More stability environment (+)
	Political strength	Numerical variable that reflects the local governments' level of political strength.	$\sum_{i=0}^{n} s_i^2/s^2$ Where: s = Total Councilors in municipality s_i = Councilors in political party "i"	Herfindahl index is used, from 0 (maximum fragmentation) to 1 (minimum fragmentation)	7	High political strength (+)

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

Table 6
Cluster analysis

		Cluster analysis		
N (Frequency)		Cluster 1. Low level of impact of Web 2.0 technologies 12	Cluster 2. Medium level of impact of Web 2.0 technologies 12	Cluster 3. High level of impact of Web 2.0 technologies 31
Citizen engagement	Item 1.1	2,00	3,00	5,00
	Item 1.2	2,00	3,00	4,00
	Item 1.3	2,00	5,00	4,00
	Item 1.4	2,00	4,00	4,00
	Item 1.5	3,00	2,00	4,00
Technological innovation	Item 2.1	3,00	2,00	3,00
	Item 2.2	1,00	5,00	5,00
	Item 2.3	2,00	1,00	5,00
	Item 2.4	3,00	4,00	3,00
	Item 2.5	2,00	1,00	4,00
Knowledge sharing	Item 3.1	2,00	3,00	4,00
	Item 3.2	2,00	1,00	4,00
	Item 3.3	1,00	5,00	5,00
	Item 3.4	2,00	5,00	3,00
	Item 3.5	2,00	5,00	4,00
	Political ideology	Left-wing	Right-wing	Independent political parties
	Political competition	Minority	Minority	Majority
	Political stability	0,0833	0,1600	0,2593
	Political strength	0,4306	0,3120	0,3855

Source: Own elaboration.

Copyright of Information Polity: The International Journal of Government & Democracy in the Information Age is the property of IOS Press and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.