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Electronic Government and Public Policy
Current Status and Future Trends in Latin America*

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This article discusses the implications of electronic government reforms on public policy and management, provides recent data about Latin America, and includes a brief introduction to each of the articles in this special issue. The document inquires into the importance of knowledge about electronic government for public administrations, considering the opportunities to improve government management and public policies. With this purpose, this article describes the level of development of electronic government in Latin American countries, as well as the main strategies implemented by several governments of the region during the last few years. In addition, it examines the contribution of each of the papers included in this special issue to the recent developments in electronic government. Then, the article outlines future areas of interest in the field of electronic government, which are expected to be part of government agendas, as well as research efforts about e-government within the next decade. This is achieved through a presentation of current dynamics and

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future trends of this phenomenon, particularly in the context of Latin American countries. The article concludes emphasizing the importance of connectivity and networks in order to generate innovation in public administrations of the present and future.

Keywords: information and communication technologies, electronic government, public administration, public management, theory, practice, knowledge, Latin America.

Gobierno electrónico, gestión y políticas públicas: Estado actual y tendencias futuras en América Latina

Este artículo discute las implicaciones de las reformas de gobierno electrónico (e-gobierno) en la gestión y las políticas públicas, provee datos recientes sobre América Latina e incluye una breve introducción a cada uno de los artículos en este volumen temático. El documento se pregunta por qué es importante el conocimiento sobre e-gobierno para las administraciones públicas, teniendo en cuenta las potencialidades para mejorar la gestión gubernamental y las políticas públicas. Para ello, aborda el nivel de desarrollo actual del e-gobierno dentro de los países latinoamericanos, así como las principales estrategias puestas en marcha hasta ahora por las administraciones públicas de la región. Además, se plantea la contribución de cada uno de los trabajos que forman parte del volumen temático a los avances experimentados por el e-gobierno. Después, se sugieren futuras líneas de interés que se espera formen parte de la agenda gubernamental, así como de investigación, en torno al ámbito del e-gobierno en la próxima década. Esto se lleva a cabo a través de una aproximación a las dinámicas presentes y perspectivas de futuro de este fenómeno, sobre todo dentro del ámbito de los países de América Latina. El artículo concluye enfatizando la importancia de la conectividad y las redes para concretar las innovaciones en las administraciones públicas del presente y del futuro.

Palabras clave: tecnologías de la información y comunicación, gobierno electrónico, administración pública, metodología, teoría, práctica, conocimiento, América Latina.

INTRODUCTION

Since the turn of the new century, information and communication technologies (ICT) are one of the most significant sources of public sector improvement and innovation in recent years. This article looks deeper into the field by examining the interactions between ICT and public administrations, more recently known as electronic government (e-government), in an attempt to better understand the rela-

tionship between ICT and public policies and management. Moreover, this article acts as an introduction to this special issue of *Gestión y Política Pública (Public Policy and Management)* on e-government, which, to a certain extent, intends to establish the status of e-government in Spanish-speaking countries. The overall aim is to drive our knowledge of e-government forward, while emphasizing the contribution of this collective volume to the study of a phenomenon that is becoming increasingly important to contemporary public administrations.

The last few years have seen the development of different areas of knowledge exchange related to e-government, consolidating it as an area of knowledge. As an example, conferences on topics related to e-government and publications linked to the topic continue to grow, in the same way as specialized research centers and international networks have expanded. Examples include the specialization of academic conferences, such as the International Conference on Theory and Practice of Electronic Governance (ICEGOV), the Annual International Conference on Digital Government Research (dg.o), the IFIP EGOV conference, and the European Conference on Electronic Government (ECEG) or publications like *Government Information Quarterly* (GIQ), *Information Polity* (IP), the *International Journal of Electronic Government Research* (IJEGR), or the *Electronic Journal of E-Government* (EJEG). These all reveal the consolidation that the international academic community is undergoing in the field of e-government. At the same time, it is also important to emphasize that, because of its diverse origins and interests, research efforts are not dominated by authors involved in public policy and management. This disciplinary diversity is even more evident when thinking of Hispanic influence, where contributions to the international academic community are not yet that numerous, regardless of the fact that their experiences are already quite relevant.

Although e-government is a field of knowledge that has grown considerably over the last few years, there is a need to take a closer look at its implications for management and public policies. One of the oft

repeated ideas surrounding e-government is that it has been considered a force for rationalizing the activities of public administrations. Both practitioners and academics believe that the spread of information systems would lead to the systematization of rules and procedures, and the reformulation of known problems with bureaucracy, such as bounded rationality and implementation at the operational level (Criado, 2009a; Gil-García, 2012a) or even improving efficiency, effectiveness, productivity, the quality of public services, citizen participation, and accountability (Gil-García *et al.*, 2012). This transformation would not only brought about by ICT's impacts on specific administrative dimensions or public policy phases, but also through a broad range of cognitive, behavioral, organizational, political, and cultural changes that are linked to information systems inside public organizations (Dunleavy *et al.*, 2006; Fountain, 2001). In other words, e-government involves technological, organizational, institutional, human, and contextual factors (Gil-García, 2012a). The capacity for innovation in public administration is linked to its interaction with ICT and will succeed only to the extent that a government permits constant improvement, different decision making, or more consolidated networking. From this point, it is possible the determine the role of e-government for public policy and management.

This article seeks to review the current state of e-government, taking Latin America into account. Significant efforts have been made by public administrations in the Spanish-speaking world to adopt and use ICT ever more intensively in order to improve public management or certain elements of public policy. Indeed, different authors have tried to capture this reality through academic studies centered around concepts and theories (Criado *et al.*, 2002; Córdoba-Pachón, 2009; Gascó, 2009; Gil-García *et al.*, 2010; Porrúa, 2004), national e-government policies (Criado, 2012a; Gascó, 2007; Gil-García *et al.*, 2008), digital inclusion (Gascó, 2005; Gil-García and Luna-Reyes, 2009; Mariscal *et al.*, 2011), web portals (Luna-Reyes *et al.*, 2009; Sandoval-Almazán and Gil-García, 2012a; Sandoval-Almazán and Gil-García, 2009; San-

doval-Almazán, 2010; Sandoval-Almazán *et al.*, 2010; Welp, 2008), transparency of administration and openness of public information (Corojan and Criado, 2012; Fierro and Gil-García, 2012; Mariscal *et al.*, 2011; Sandoval-Almazán and Gil-García, 2011), open government (Dassen and Cruz, 2012; Purón-Cid and Gil-García, 2012; Purón-Cid *et al.*, 2012; Sandoval-Almazán *et al.*, 2012), digital processes and public policies (Fontdevila, 2009; Gascó, 2010; Ugalde, 2004), interoperability (Criado *et al.*, 2010; Criado *et al.*, 2011; Jiménez *et al.*, 2011; Luna-Reyes *et al.*, 2007; Luna-Reyes *et al.*, 2008; Poggi, 2008), citizen participation (Gil-García and González-Miranda, 2010; Kossick, 2004), or Web 2.0 and social networks (Criado and Rojas-Martín, 2012a; Sandoval-Almazán and Gil-García, 2012b; Sandoval-Almazán *et al.*, 2011). All such works confirm the idea that there is much to be done in the public sector of Latin America in terms of implementing e-government. At the same time, it also demonstrates that although the epistemic e-government community has managed to forge a path within the field of public policy and management, there is still a long way to go.

This article is organized as follows. The section below looks at the interactions between e-government and public policies and management, reflecting on the relationships or similarities between them, since knowledge of e-government is important for public administrations and decision makers in view of its potential for improving public policies and management. The third section describes the level of development of e-government in Latin American countries, including United Nations indicators and some of the key dimensions of its evolution. Section four looks at the articles that comprise this special issue, and speaks to their key contributions. Lastly, the article concludes by addressing some of the topics considered important to a future research agenda on the phenomenon of e-government, as well as to the possible actions of public administrations, which is not only relevant to academic efforts, but also to the implementation of actual public policies.

THE ROLE OF ELECTRONIC GOVERNMENT IN MANAGEMENT AND PUBLIC POLICY

Addressing the interactions between ICT and the management of public administrations, as well as public policy processes, constitutes one of the basic pillars in the field of e-government. Rather than just engaging in conceptual debates or looking at the different approaches to the problem that have gained ground over the last few years, this section views e-government as a kind of administrative reform which has had, and continues to have, important proponents in public administrations around the globe, including some Latin American countries. The intention therefore is to highlight the growing importance of ICT in improving management functions in public administrations and the different phases of public policies. By doing so, we also hope to point out the implications of intensive and ever more generalized use of information technologies in the public sector, as well as their direct connection to the most relevant concerns in the disciplines of public management and contemporary public policies.

The relationship between public policies and management and the adoption and use of ICT is growing more direct. From the somewhat instrumental view assigned to technologies, which assumes a greater or lesser potential to improve organizations as a consequence of their use, the technological dimension of the public sector is becoming increasingly more intense. Aspects like leadership, management of human capital, design and organizational change, inter-administrative and inter-governmental relations, communication and marketing of services, and transparency cannot, nor should they, be understood in the same way in a setting where public administrations are intensive users of information technologies. The same happens with the process of public policies, given the growing use of technology at all phases, from design and implementation to evaluation. In fact, one of the foundational ideas about ICT and their relationship with public administrations is the way in which they bring about, or have the potential to bring about, benefits

or improvements in certain government functions and services (Gil-García, 2012a). In other words, e-government provides the foundation for generating benefits within public administrations derived from the use of ICT in the different dimensions of public action.

By way of example, the inter-governmental and inter-administrative relationships have been viewed from this perspective through what is known as interoperability. Several studies have clearly stated the opportunities derived from the implementation of e-government in improving the exchange of data and information between different government agencies (Gascó, 2012; Pardo *et al.*, 2012; Gil-García, 2012a). The management of specific public services is facilitated through the availability of interoperable platforms that allow better collaboration between the agencies involved in the process, while at the same time granting the opportunity to produce improved services for citizens, as proposed by Luna-Reyes (2013). These improvements generate the need to analyze factors that facilitate collaboration between organizations through the use of ICT, as well as an understanding of why technological cooperation is more complex in certain situations than in others, such as in Latin American public administrations (Criado *et al.*, 2011). In any of these scenarios, what is relevant is that the evidence points to a margin of improvement in coordination efforts between public agencies when organizations are immersed in the appropriate technology.

Conversely, public policies also have a space available in which to transform thanks to the use of ICT (Purón-Cid and Gil-García, 2012). For example, the ability to design public policies with higher margins of public support is one of the aspects that researchers point out as among the potential benefits linked to the consolidation of e-government. In this sense, responsible publics are better equipped to carry out the duties of research and planning as they are able to access more information from external agents that interact with public administrations, updated in real time and at ever decreasing cost (Dunleavy *et al.,* 2006; Hood and Margetts, 2007). This planning improvement reflects how e-gov-

ernment can change the *statu quo* in government, altering the priorities of public administrations in order to improve administrative intelligence in the design of public policies.

At the same time, we cannot forget that the impacts and benefits of e-government are not the sole consequence of using information technologies. E-government also implies a political and organizational construct that requires its users to address diverse factors (Gil-García *et al.*, 2012). Public organizations are not mere spaces in a vacuum to which technologies are applied to trigger specific results. Technologies, therefore, are modified in turn as a result of their interaction with public organizations and their political environment, the people who work in them, and the institutional arrangements that are present within a certain arena of government action. This recursive modification is what limits the ability to generate impacts derived from a greater development of e-government, since the interaction between technologies and public administrations is much more complex than one could expect at the outset. In other words, ICT in public policies and management need to be viewed not only as the origin of certain results or impacts in public administrations, but also from approaches that try to capture the complexity of a multi-faceted relationship influenced by myriad factors, such as those set out below.

The need to understand the complexity of the processes behind the adoption and use of ICT in public administrations implies looking at questions that are not normally taken into account for an e-government approach. As an example, in some cases, there is the expectation that efficiency, effectiveness, or productivity are results that come almost automatically within the dynamics of adopting technology in public administrations (Gil-García and Helbig, 2006). However, many projects are never fully implemented, run over budget, or, at least in the short-term, fail to achieve the desired results. These short fallings are proof that organizational, human, and symbolic resources are also needed to undertake these types of administrative innovation projects (Gil-García and Pardo, 2005). On the other hand, innova-

tions derived from e-government are also subject to a series of trade-offs and/or contradictions that stem from the natural complexity of public action. Quite often, e-government projects have aspired to overcome certain dilemmas inherent to public action; that is, specific e-government initiatives have proven incapable of harmonizing objectives that collide head-on, such as how to achieve a compromise between higher productivity and greater citizen participation (Gil-García *et al*., 2010). In another sense, certain projects have focused on increasing the ability of citizens to lodge online applications without also involving them in the design and improvement of these same administrative procedures, despite this being one of the objectives that the dynamics of governance is currently pursuing. Ultimately, it is about situations that fail to consolidate the innovative abilities of public administrations, which require a more comprehensive view of the phenomenon, as well as new bases for action linked to networks in the broadest possible sense.

ELECTRONIC GOVERNMENT IN LATIN AMERICA: WHERE ARE WE AND WHERE ARE WE HEADED?

E-government in Latin America has undergone noticeable development over the last decade. Although there are no comparative studies about the region, significant progress has been made on different aspects of e-government (CEPAL 2010a; CEPAL, 2010b; CLAD, 2007). Here we present some data on the evolution of e-government in Latin America by looking at the United Nations e-government Readiness Report (UN e-Gov index), as well as an analysis prepared by the authors, which looks at the progress made toward the implementation of ICT in some Latin American countries over the last few years. In terms of the e-Gov index prepared by the UN, the development of the Internet in the government sphere is substantial in several dimensions (online public services, the telecommunications infrastructure index, human capital index, and e-participation index). The progress countries

have made in the region over the last few years in respect to e-government has been analyzed from secondary sources of information about national strategies, portals used to provide electronic services, initiatives on interoperability and interchange of data and information, and the development of social networks and open government. Therefore, this section offers a general overview of the trajectory of e-government in the region.

A Comparative Look at Electronic Government in Latin America

Both dimensions of e-government, demand and supply, need to be looked at in order to gain a clearer understanding of the level of development in a country (Gil-García and Luna-Reyes, 2009; Helbig *et al.*, 2009). Demand looks at the potential users of e-government services and applications. Supply, on the other hand, refers to the digital content that public administrations offer over the Internet, primarily through web pages and portals, simultaneously with other channels that have also developed within this group of countries. As for the potential demand side of e-government, a snapshot of the region reveals notable disparities when looking at the situation on a country-by-country basis, when taking into account other more general data (see table 1). By way of example, there are significant differences between societies in the region in terms of access to Internet. On the one hand, a group of experienced countries leads the way in terms of Internet availability, with more than 50 per cent of citizens using the Internet. This group concentrates almost 30 per cent of Internet demand in the region. On the other hand, a group of six countries is yet to overcome the 50 per cent barrier in terms of a connected population, although they have surpassed the 30 per cent mark. Lastly, a group of less experienced countries has the lowest rates of access to Internet in the region (less than 30%). This last group still shows a significant gap in terms of basic Internet access, epitomizing the most negative aspect of the digital divide.

TABLE 1. Demand (potential) for electronic government in Latin American countries

	*Internet users (latest information, 2011)**	*Internet penetration (% population)*	*Broadband subscribers (2010)***	*Households with computers (%) ****	*Cellular telephone subscribers (per 100 inhabitants) (2010)*
Argentina	27 568 000	66.0	9.56	21.9	141.79
Bolivia	1 225 000	12.1	0.97	17.1	72.30
Brazil	75 982 000	37.4	7.23	30.9	104.10
Chile	9 254 423	54.8	10.45	33.1	116.00
Colombia	22 538 000	50.4	5.66	22.8	93.76
Costa Rica	2 000 000	43.7	6.19	33.9	65.14
Cuba	1 605 000	14.5	0.03	2.1	8.91
Dominican Republic	4 116 870	41.3	3.64	13.0	89.58
Ecuador	3 352 000	22.3	1.36	22.8	102.18
El Salvador	1 035 940	17.1	2.83	10.9	124.34
Guatemala	2 280 000	16.5	1.80	10.7	125.57
Honduras	958 500	11.8	1.00	10.1	125.06
Mexico	34 900 000	30.7	9.98	25.7	80.55
Nicaragua	600 000	10.6	0.82	6.3	65.14
Panama	959 900	27.7	7.84	16.9	184.72
Paraguay	1 104 700	17.1	0.61	14.9	91.64
Peru	9 157 800	31.3	3.14	16.2	100.13
Uruguay	1 855 000	56.1	11.37	38.8	131.71
Venezuela	10 421 557	37.7	5.37	14.6	96.20
Total/Av.	212 401 030	36.7			

Sources: *Internet World Stats (2011). Available at: http://www.internetworldstats.com/stats.htm. Date of access: September 1st, 2011. ** ITU (International Telecommunication Union). Available at: http://www.itu.int/ITU-D/icteye/Indicators/Indicators.aspx#. Date of access: September 1st, 2011. *** CEPAL. Estimations are based on household surveys for each country between 2006 and 2008 (Argentina is an estimation of 2001, last year with household survey information). Available at: http://www.eclac.cl/cgi-bin/getprod.asp?xml=/socinfo/noticias/paginas/6/34246/P34246.xml&xsl=/socinfo/tpl/p18f.xsl&base=/socinfo/tpl/top-bottom.xsl. Date of access: September 1st, 2011.

The potential demand for e-government involves looking at other available data (see table 1). The use of personal computers is an indicator of the reach of one of the oldest types of tools for measuring technological literacy. Generally, the data presented reveals rates in each of the countries analyzed that are open to improvement, despite the fact that the variation is large, with percentages that range from almost 40 per cent in Uruguay to 6.3 per cent and 2.1per cent in Nicaragua and Cuba, respectively. This data is in stark contrast to cellular telephone access in the region, which is much higher in all cases. This is one avenue where governments can identify an opportunity for promoting access to e-government services via these mobile devices, due to their growing level of acceptance, even in those countries where Internet penetration among society is more limited.

Analyzing the demand (potential) for e-government is not complete without looking at the spread of broadband in the region. These types of connections actually facilitate access to more sophisticated Internet services, including electronic commerce, video and music streaming, or transactional interactions with government agencies. However, their spread is still quite limited in all countries of the region, with only two cases (Uruguay and Chile) with more than 10 per cent of its population as broadband subscribers (see table 1). It is obvious then that the data still does not show the spread of this type of technology, which is essential for consolidating a future for more widespread demand for e-government.

From a supply of online public services standpoint (the e-government supply side), the UN e-Gov index offers an indicator called Online Service Delivery, which, like demand, reveals significant differences across countries. This variable denotes the strength of electronic services in each country from a combination of four indicators: basic information about online services; the existence of multimedia technology and two-way exchange with citizens; the use of the Internet by the national government to provide services and the occasional request for contributions in matters of public interest; and the level of connection between

national government public service functions and regular enquiries made by citizens into topics related to public policies. As suggested in the report, when a country performs well in these four dimensions, and has therefore established the digital foundations for the empowerment and inclusion of citizens, it is positioned high on the index (United Nations, 2012). Taking into account the last observation made, the data on the supply of online services show only three cases of Latin American countries among the 50 most evolved in the world (UNPAN, 2012): Colombia (43), Chile (39), and Uruguay (50). In the case of Colombia, this excellent position reflects the policies introduced on interoperability, among other highly evolved areas. Chile's position rests on the progress made in terms of transparency and electronic procurement. But there is still much to be done on the side of the offering of online public services.

When you compare earlier data against the UN e-Gov index, which includes both e-government supply and demand indicators, the results are revealing. The conclusion that can be drawn from this analysis is that Latin American countries hold a better position on the online service delivery index than on the UN e-Gov index, which measures supply and demand together. In other words, the dimension of supply is more developed than demand for e-government in the majority of the countries in the region. Indeed, this is the situation in countries that lead in their service offerings (Colombia, Chile, El Salvador, Mexico, and Uruguay). Nevertheless, there are some cases that present the opposite (Argentina, Cuba, Panama, and Uruguay), where there is a perceived existence of human capital that is better equipped than their administrations, at least in relative terms, to take advantage of the benefits of e-government.

In finishing, this descriptive analysis of the region enables us to pose some final ideas. One such idea is that the region is in serious danger of consolidating a digital divide in relation to e-government, because of the marginal access to ICT and the Internet by large citizen groups that remain on the edge of demand. Secondly, it seems that governments in

the region have invested more into the offering of electronic public services than in improving access and technological literacy. In order to try and understand why this public policy framework has been so successful, one can assume that this gap has been the result of national policy decisions. Nevertheless, this gap needs to be investigated further, since it is possible that this sphere of public policy is undergoing a policy transfer process, which is being encouraged by international organizations and other actors with their own e-government agendas for the region (Criado, 2009b, 2012a). While this research area lies outside the aims of this article, it could constitute a potential area of work in the future.

Electronic government trends in Latin America

Together with the general overview of existing comparative data on e-government, we reviewed documents that appeared in official publications and on web portals, including: *a)* national e-government agendas, *b)* web portals that specialize in providing information and electronic services, *c)* the interoperability strategies introduced, *d)* initiatives linked to social networks, and *e)* open government. With this we hope to complete this snapshot of areas of interest that governments in the region have placed at the forefront of their e-government policies over the last few years.

a) National electronic government agendas. Latin American governments have adopted national agendas, to a greater or lesser extent, to promote e-government, while at the same time focusing their priorities more broadly. As a generalized common aspect, the majority of national e-government strategies have focused on improving online interactions between public administrations and citizens or companies (using web pages to provide electronic services, public e-procurement platforms, etc). However, the internal dimension of management and public administration (how public servants perform their duties, carry out administrative processes, and make decisions, etc.), has not trans-

formed as intensely. Moreover, there seems to be no stability in national e-government strategies, as countries in the region have failed to adopt long-term public policy agendas. On the contrary, different initiatives or agendas, sometimes disconnected from each other, often arise during the first few years of implementing e-government projects. In addition, some national strategies reveal the development of interests in countries like Argentina, Brazil, Chile, Colombia, and Mexico.

b) Portals for providing electronic public services. Another key dimension related to the implementation of e-government in Latin American countries refers to the creation of web portals that specialize in information and electronic public services. This aspect looks at e-government offerings or the online front office of public administrations. These types of public portals are not there to provide information about the country, its government, or other such authorities; instead their aim is to broaden the ability of public administrations to interact with citizens and companies electronically. They generally provide information on administrative procedures, the documents required to apply for services, and even offer the possibility of completing and submitting them electronically, although only some countries allow the entire process to be completed digitally. Table 2 shows that nearly all countries in the region have adopted a services web portal within their national or federal administration (only Cuba, El Salvador, Guatemala and Honduras cannot be included in this group). As a result, and despite large differences here also, almost all countries in the region have adopted this approach aimed at facilitating electronic access to administrative processes for citizens and companies.

c) Interoperability initiatives. One of the most recent areas of development of e-government is related to the term interoperability. Interoperability can be defined as the capacity for two or more systems (agencies, public administrations, levels of government, etc.) to interact and ex-

TABLE 2. National web portals offering electronic services*

	Name of portal	*URL*
Argentina	Argentina.gob.ar. Guía del Estado	http://www.argentina.gob.ar
Bolivia	Trámites Bolivia	http://www.tramites.gob.bo/
Brazil	Brasil.gov.br	http://www.brasil.gov.br/
Chile	Chile Atiende. Personas a tu servicio	http://www.chileatiende.cl/
Colombia	Gobierno en Línea Colombia	http://www.gobiernoenlinea.gov.co
Costa Rica	Gobierno fácil. Portal del Estado Costarricense	http://www.gobiernofacil.go.cr/
Cuba*	Sitio del Gobierno de la República de Cuba	http://www.cubagob.cu/
Dominican Republic	Portal del Estado Dominicano	http://www.gob.do/
Ecuador	Trámites ciudadanos	http://www.tramitesciudadanos.gob.ec/
El Salvador*	El Salvador. Presidencia de la República	http://www.presidencia.gob.sv/
Guatemala*	Secretaría de Comunicación Social de la Presidencia	http://www.guatemala.gob.gt/
Honduras*	Gobierno de Honduras	http://www.gob.hn/
Mexico	Portal ciudadano. Gob.mx	http://www.gob.mx/
Nicaragua	eRegulations Nicaragua	http://nicaragua.eregulations.org/
Panama	Panamá Tramita. Un Gobierno más cerca de ti	http://www.panamatramita.gob.pa/
Paraguay	Trámites Paraguay. Portal del Ciudadano	http://www.tramitesparaguay.gov.py/portal
Peru	Portal de Servicios al Ciudadano y Empresas	http://www.serviciosalciudadano.gob.pe/
Uruguay	Guía completa y organizada de trámites e información del Estado	http://portal.gub.uy/
Venezuela	Gobierno en línea. La red que nos integra	http://gobiernoenlinea.gob.ve

Source: Authors' own elaboration. *It does not include web portals that specialize in online services and applications. It does include the Uniform Resource Locator (URL) of the web portal of the Presidency of the Republic. Accessed: December 2, 2012.

change information using a common method to obtain the desired results (Criado *et al.,* 2011a). Latin American countries have managed to achieve results in this specific field of e-government whose purpose is to facilitate cooperation and exchange between public administrations using ICT and the Internet (Criado, 2009b). At the same time, one might say that this dimension is probably one of the main barriers to full e-government development in the region. In general terms, the majority of Latin American countries have developed measures to promote interoperability of e-government, at least to a certain extent, while only a few have shown general strategies in this dimension. A study by Criado *et al.* (2011) has revealed the relatively high level of priority (6.88 out of 10) that governments in the region have given interoperability in their national agendas for modernizing the public sector. In addition, the authors have also shown that 75per cent of the countries in the region have included some type of strategy for fostering cooperation between its public agencies, at least as an area of action within a more comprehensive e-government strategy. However, the mentioned data does not mean that they have all achieved suitable results or even taken steps in the appropriate direction. On the contrary, only some can be identified as an example to follow in terms of interoperability, particularly in the case of Brazil and its *e-PING* strategy (Dos Santos, 2007).

d) Social media and networks in public administrations. Latin America is one of the leading regions in terms of social network usage. Different studies have shown that societies in this region are intensive users of Facebook, Twitter, and YouTube, as well as other social networks and technologies. Taking this into account, several governments and public administrations in the region are developing these tools in order to meet the expectations of society, although it is not clear whether they include implementation strategies. The governments of Mexico (around 575 000 followers on Twitter and 61 000 likes on Facebook), Chile (more than 400 000 followers on Twitter and 20 000 likes on Facebook), and Colombia (more than 60 000 followers on Twitter and 12 000

likes on Facebook), to January 2013 are leading this process of the spread of social networks. At first glance, Twitter is the most widespread and, in all cases, the one growing the quickest, while Facebook is falling behind, not just in terms of users, but also intensity of use by government authorities.

e) Open government and transparency. In a similar way, e-transparency and open government imply a step forward in the way openness and accountability using digital media operates in the public sector. Although the majority of open government initiatives are still in their infancy, some of the ideas taken from them allude to promising innovations in public administrations of the future. In essence, open government refers to the idea of governments and public administrations that are more transparent, effective and responsible, which also hold participation and collaboration as essential components (Fierro and Gil-García, 2012). Open government is directly connected to the openness of data and information of public bureaucracies, the reuse of data and information by appropriate open technologies, and the open provision of this data and information to citizens and companies (Hrdinová *et al.*, 2010). Many countries in the region (14 in total) have, in one way or another, joined the Open Government Partnership (OGP), a global effort to achieve greater government transparency. Both Brazil and Mexico are signatories to the original declaration dated September 20, 2011. In some cases, a very light concept of open government has been developed in terms of access to public information and the creation of web portals (for example, Brazil: http://brasilaberto.org/es/tag/datos-abiertos/; Chile: http://datos.gob.cl/; Colombia: http://www.datos.gov.co/; Mexico: http://opendata.mx/; Uruguay: http://datos.gub.uy/), although there are more significant examples. What remains certain is that the concept of open government and openness of public information, as well as ideas linked to transparency, reuse, collaboration, and participation, etc., form part of the administrative landscape and modernization agendas of Spanish-speaking public administrations.

ELECTRONIC GOVERNMENT'S PATH TO MATURITY AS A FIELD OF KNOWLEDGE

Extending what has been discussed already, this special issue suggests that the study of e-government has reached a certain level of maturity, although this field of research still has a long way to go. The articles comprising this special issue are a testimony to that. The works selected, which underwent the magazine's rigorous evaluation criteria, reveal a balance between theoretical contributions and more empirical work concerning the different political-administrative levels, taking into account different areas of interest of e-government, the contributions of administrations and researchers on both sides of the Atlantic, and articles written in English and Spanish. In the following we take a closer look at the most relevant contribution from each of the works published in this volume.

The first article is by Dr. Sharon Dawes (Center for Technology in government, University at Albany, SUNY, United States), "Advancing E-government: The Research-Practice Knowledge Connection," which offers an initial look at e-government from the perspective of the different action logics of researchers and public administrators (Dawes, 2013). The article focuses on the need for academic research about e-government to be capable of addressing the practical problems politicians and managers face in public contexts each day in order to improve the transfer of knowledge between both spheres. The study also points out that the challenges of e-government fifteen years ago, such as interoperability of secure and reliable systems, the models for electronic public service transactions, methods for better management of ICT, measuring the participation of citizens, and models for creating public-private associations, still remain, despite new challenges (Dawes, 2013). All that forms the basis of a field of research that is still young and dynamic. The author finishes by making a series of suggestions so that researchers of e-government, if they wish, can benefit from the mutual strengthening of academic research and administrative practice within

this field of public policy and management practice. Starting with a rethinking of methodological aspects, to research management techniques, and ending with paying realistic attention to costs, risks, and benefits, as well as the timing of applied research, the author holds that it is possible, and beneficial, for these two worlds to come together to improve e-government in order to serve citizens better.

The second work in this special issue was submitted by Dr. Manuel Villoria (Departamento de Gobierno, Administración y Políticas Públicas, Instituto Universitario Ortega y Gasset, y Departamento de Derecho Público y Ciencia Política y de la Administración, Universidad Rey Juan Carlos I, Spain) and Álvaro V. Ramírez-Alujas (Grupo de Investigación en Gobierno, Administración y Políticas Públicas, Instituto Universitario Ortega y Gasset), titled "Los modelos de gobierno electrónico y sus fases de desarrollo: un análisis desde la teoría política" ("Electronic Government Models and their Development Phases: An Analysis based on Political Theory"). In this article the authors offer a vision of e-government from a Political Theory perspective, specifically, the plurality of values theory, which underscores the weaknesses of progressive/evolutionary models (Villoria and Ramírez-Alujas, 2013). These authors focus on analyzing, in line with other theoretical and politological works, the different ways in which public administrations are using ICT to reinforce their legitimacy via processes and results and, more importantly, the limitations of these dynamics from a theoretical standpoint. In other words, the article demonstrates that e-government initiatives and policies are founded on political reference models and values, even if they are not always explicit (for example, deliberative democracy compared to aggregative-majority democracy), in such a way that they reflect on the possibilities offered by ICT to facilitate the coexistence or harmonization of these values and models. The key idea is that progressive/evolutionary models seldom take into account this plurality of values, thereby limiting the ability of e-government projects to fulfill some of their proposed outcomes, insofar as many of the objectives being pursued are contradictory, and even incompatible with one another (econ-

omy/efficiency compared to equality/inclusion or participation/representation). To sum up, from this overview the article infers that e-government initiatives will, to a greater extent, focus on one of the mentioned fields of reference, instead of assuming that it is possible to integrate them all, albeit in an evolutionary way, and depend on the predominant beliefs and political values in play. Their success will depend on the opportunities that the social, economic and political structure offered at each time.

The next paper was co-authored by Dr. Marco Antonio Lara Martínez (Centro de Estudios para el Desarrollo Municipal y Políticas Públicas, Universidad Autónoma de Chiapas, Mexico), Dr. Vicente Pina Martínez (Departamento de Contabilidad y Finanzas, Universidad de Zaragoza, Spain) and Dr. Lourdes Torres (Departamento de Contabilidad y Finanzas, Universidad de Zaragoza, Spain), "El gobierno electrónico y la rendición de cuentas en la administración regional y estatal" ("Electronic Government and Accountability in Regional and State Administrations"). The article presents research on the web portals of regional governments in Australia, Canada, Spain, the United States, and Mexico, with the purpose of measuring the level of development of e-government (according to four dimensions: accountability, political dialogue, citizen dialogue, and web accessibility), as well as external factors that influence them (Lara *et al.*, 2013). It also singles out for analysis the dimension of transparency of public finances on web portals. From the different statistical methods used, the authors extract conclusions related to the regional administrative levels that were analyzed comparatively. One idea in particular stands out, which is that this group of public administrations is also trying to take advantage of the opportunities that information technologies provide for modernizing their action, although it does point to certain differences between the countries studied that would be worth taking into account in the future.

Next in this special issue is an article by Manuel Gerardo Chávez (Universidad de la Sierra Sur, Mexico) and Dr. Patricia S. Sánchez (Instituto Politécnico Nacional, CIIDIR, Unidad de Oaxaca, Mexico), and is

titled "Las tecnologías de la información y comunicación (TIC) como recurso común: coordinación, competencia y brecha digital en ocho municipios de Oaxaca" ("Information and Communication Technologies (ICT) as a Common Resource: Coordination, Competition and the Digital Divide in Eight Municipalities of Oaxaca"). The article reviews the theoretical approach behind Game Theory within the proposed metatheoretical Institutional Analysis and Development Framework (IAD), and its application to the problems of the "new commons" or "information commons", which includes the problems of overexploitation, partialization, the lack of cooperation, and contamination of common digital resources (Chávez and Sánchez, 2013). By analyzing municipal decisions on investment in telecommunications infrastructure within the eight municipalities looked at in this study, the authors put forward a series of conclusions about policies of digital connectivity in the local Mexican context. In particular, it highlights the high dependency on large telecommunications providers, taking into account the highly dispersed demand in municipalities. In addition, considering the theoretical model used, it suggests the need for greater coordination of municipalities as a strategy for improving investment in telecommunications, as well as promoting operator investments in rural settings. All of these findings are intimately entwined with the digital divide, whose effects may be mitigated by better decisions at the municipal level.

Also included is a paper written by Dr. Luna-Reyes (Universidad de las Américas, Puebla, México), "Trust and Collaboration in Inter-organizational Information Technology Projects in the Public Sector." His research looks into the main mechanisms for developing confidence within the process of inter-administrative collaboration that involve technology-based innovations, as well as their impacts on the collaboration process and its results (Luna-Reyes, 2013). To achieve this, the author tackles collaboration theory as it applies to the context of public organizations, taking into account acknowledgment of the existence of gaps in understanding of such processes in the most relevant contributions in the literature. The work expands its analytical potential by using

an experimental methodology based on dynamic simulation applied to the case of the Homeless Information Management System in the United States. From there the author extracts conclusions that broaden the scope of collaboration theory and, above all, tries to understand how confidence develops through collaboration on a project where several agencies are involved, in addition to addressing other key dimensions, such as the perception of risk or formation of expectations, as well as the duration of projects.

Another of the articles is by Dr. Gabriel Purón-Cid (División de Administración Pública, Centro de Investigación y Docencia Económicas, Mexico), titled "The Dimensions of Knowledge in E-government Adoption: A Confirmatory Factor Analysis." In this paper the author highlights the importance of knowledge as a critical factor for explaining the adoption of e-government. In particular, it presents research based on a questionnaire sent to public officials in federal and state governments about the budget reforms and information systems implemented in Mexico. This instrument is used to contrast five dimensions of knowledge in the field of e-government reforms: professional knowledge, knowledge of information systems, knowledge of the budget, knowledge of formal administration, and prior experience (Purón-Cid, 2013). The results of the quantitative analyses not only confirm the influence of the dimensions of knowledge mentioned on the proper implementation of e-government initiatives, but also test the validity of the questions used to measure them. In this way, the paper underscores the complexity of budgetary reform projects based on technological innovations. At the same time, the article puts forward a series of practical points related to the adoption of e-government, above all, in relation to the need to understand its complexity, the wide variety of tools for improvement, and the different dimensions of knowledge that must be handled appropriately if proper implementation is to be achieved.

The paper by Dr. Ramon Bouzas-Lorenzo (Universidad de Santiago de Compostela) and Dr. Xosé María Mahou (Universidad de Vigo, Spain) is called "El estudio de la funcionalidad de los portales guberna-

mentales: una propuesta metodológica desde la e-salud" ("An Study of Functionality of Government Portals: A Methodological Proposal from an e-Health Perspective"). The work analyzes the web portals of regional Spanish administrations in the area of health, taking into account their importance for accessing resources and public services. In particular, the study focuses on the possibilities for accessing content on health web portals, considering the presence of certain indicators in several dimensions (accessibility, technical usability, information, and communication), and presents the results of a simulated user test in order to complete the dimension of communication (Bouzas-Lorenzo and Mahou, 2013). In addition to comparing the different levels of development of the health web portals analyzed, it also highlights the distribution of public policy content, such as health, in different official web pages. In so doing, the article goes on to demonstrate the difficulties citizens still face when trying to access information and public services electronically.

The last paper, by Dr. Naci Karkin (Department of Political Science and Public Administration, Pamukkale Üniversitesi, Turkey), is titled "Web 2.0 Tools for Public Participation through Government Websites." It presents the potential of social media in public administrations as one of the most recent phenomenon in the evolution of e-government. The article offers a theoretical vision of Web 2.0 as an engine for achieving more participative public services, as well as for public administrations to attain a more sophisticated Internet presence. In addition, it offers an empirical study that looks at the level of presence of Web 2.0 tools within government portals of the Turkish federal government. From here it goes on to discuss the results and ventures some interesting conclusions about this emerging field of research about e-government (Norkin, 2013).

Finally, this special issue is wrapped up by three reviews of leading books recently published in the field of international e-government. The texts presented here include: *Enacting Electronic Government Success: An Integrative Approach of Government-wide Websites, Organization-*

al Capabilities, and Institutions by J. Ramón Gil-García, New York: Springer, 2012, reviewed by Dr. Rodrigo Sandoval-Almazán (professor-researcher at the Universidad Autónoma del Estado de México); *Social Media in the Public Sector: A Guide to Participation, Collaboration, and Transparency in the Networked World* by Ines Mergel, San Francisco: Jossey-Bass, 2012, reviewed by Francisco Rojas-Martín (doctoral candidate at the Universidad Autónoma de Madrid and Visiting Researcher at Royal Holloway, University of London); finally, *Public Administration and Information Technology* by Christopher Reddick, London: Jones & Bartlet, 2012, reviewed by Dr. Gabriela Quintanilla (postdoctoral researcher at the Centro de Investigación y Docencia Económicas, CIDE). Each of these contributions reveals the strength of the studies about e-government, so much so that they effectively combine the rigorous nature of their content with reflections aimed at facilitating the exchange of knowledge between teaching contexts and management practice.

In summary, the works included in this special issue make absolutely clear that research about e-government is robust, and must not be neglected. In this sense, the conclusions reached in each of the works further strengthen a field of research that has grown continuously over the last decade, and has been characterized by theoretical eclecticism, diverse methodologies, interdisciplinary coexistence, and even a healthy level of criticism and exposure to professional practice. At the same time, the works presented here also demonstrate that e-government is becoming more and more important to the innovation of public policies and government management, above all but not exclusively, in Spanish-speaking countries where the potential for change is still high. In particular, the opportunities that e-government offers for improving the relationship with citizens are becoming more noticeable, much like the organizational and institutional transformations as a result of interaction with ICT that are occurring in an increasing number of administrative contexts. However, there is still much to be done to ensure that the adoption and use of ICT by public administrations is properly planned and implemented successfully. Tied to this is the fact that re-

search about e-government is in its adolescence, and as with every such stage, is surrounded by a level of dynamism that is sometimes excessive and uncontrolled. Entry into adulthood does not imply the loss of freshness or dynamism, but instead greater certainty and conviction about the route to follow. With this in mind, a more consolidated agenda would guide future research within this field. Collaboration with this collective effort is the intention of the final section of this article.

THE FUTURE OF ELECTRONIC GOVERNMENT

This last section proposes an agenda for the main areas related to the evolution of e-government for the next ten years. Taking the limitations of prospective practice as suggested above into account, we take a brief look at the topics that we believe public decision makers and academics should pay closer attention to for the immediate future of e-government, with special attention to Latin America. In particular, the seven topics listed and discussed below include: *1)* digital inclusion as a permanent strategy for achieving access to the benefits of e-government for the less advantaged; *2)* social networks for more perceptive and better connected public administrations; *3)* open government and administrative transparency for public administrations with more focus on accountability; *4)* exchange of information, interoperability and cloud computing for a more distributed and seamless public management; *5)* big data and policy modeling or the growing power of data analysis and computing in the public sector; *6)* intelligent cities and rediscovery of local in the digital age; and *7)* mobile government for more dynamic and flexible societies. We offer some general ideas on each of these seven topics related to the future development of the public sector, and list some points for researchers to take into account in their analysis of e-government.

1) Digital inclusion. One of the unresolved topics related to e-government refers to people who do not use the Internet or, for those that do, do not use it to interact with public administrations. The digital divide

has been a traditional concern of e-government, especially in emerging countries (Mariscal *et al.,* 2011). It has been emphasized repeatedly that this divide is not only related to connectivity, but also to effective use, which is why it is important to distinguish between those who lack the resources or ability to access e-government and those who do not use the resources available to them to achieve access (Gil-García and Helbig, 2006; Ferro *et al*., 2011; Ferro *et al*., 2008). In fact, recent studies in this area indicate that even in countries with higher levels of development of access to the Internet and e-government, disparities in the type of use or access channels continue to be factors to be taken into account when trying to understand digital inclusion (Reddick and Turner, 2012). One of the areas to consider in terms of the future of e-government involves ensuring that those who are unable, or still have no desire, to access the Internet and/or interact with public administrations digitally are able or encouraged to do so much more intensively, through the promotion of policies that appropriately guide each of these special needs groups.

Research into digital inclusion still has plenty of room to develop over the next few years, especially in emerging countries. On the other hand, it will be important to keep pace with the evolution of this phenomenon during the next few years in a global context, where access to the Internet around mid-2012 already stood at 2.5 billion people around the world. In addition, another area of interest in this field will involve the promotion of comparative studies that can supply evidence for the different results of policies on accessibility and digital inclusion in different contexts. In particular, research interests about the accessibility of e-government may focus on how public administrations are developing or failing to develop initiatives that facilitate interaction with citizens, as well as identifying factors that hinder or facilitate online public services. Coupled with this, we need to consider that the development of e-government in a country may not only become a strategic factor related to the formulation of policies to improve digital literacy, but also necessary content to encourage citizens to interact with govern-

ment authorities and, along with it, improve the quality of democracy, public policies, and management.

2) Social media and Government 2.0. Online tools and networks are available to the public sector to create a series of instruments that could be called Web 2.0, such as Facebook, Twitter, YouTube, blogs, LinkedIn, etc. The adoption, use, and spread of these types of tools within public administrations imply new challenges and opportunities (Bertot *et al.*, 2012; Criado and Rojas-Martín, 2012b; Chun and Luna-Reyes, 2012; Picazo-Vela, *et al.*, 2012). The potential for transformation of social networks in the public sector is linked to some of the main properties for improving connection with the outside. At the same time, extending their use within public organizations may mean room for internal innovation. While it seems that not all social networks have the same level of interest to public administrations, there is no doubt that they comprise a new sphere of activity that is enjoying growing interest among the politicians and public officers in charge.

From a research point of view, the avenues for future investigation are broad. On the one hand, the peculiarities of the process behind the spread of social networks compared to earlier types of technology need to be understood. On the other, the analysis of social networks has a high potential for the application of novel data analysis techniques. In this sense, it is not just about falling back on traditional analysis of social networks, which now have a growing capacity for improved visualization, but also on the side of knowledge about the content of the communication, which has opened up a new discipline related to the analysis of feelings or emotions (Sobkowicz *et al.,* 2012). Lastly, social networks in the public sector must keep different approaches in mind depending on the public policy areas, as sectors have been detected, such as health (Andersen *et al.*, 2012) or natural disasters (Yildiz, 2012) that have resulted in much more intensive and differentiated use. This differentiation is linked to certain risks and challenges that will be necessary to characterize in the future.

3) Open government and administrative transparency. The need for analyzing the development of open government is clearly related to the consolidation of Web 2.0 within public administrations, as well as the new philosophy for openness, participation, and collaboration (Fierro and Gil-García, 2012). Administrative transparency or access to public information is an underlying current that has been present in public administrations for many decades. It supposes that public administrations use a range of information as the raw material for operation, such as the wide variety of information on people, and the different areas of government activity (performance of public schools, success rates of a wide variety of surgical operations, the allocation of expanses and income in public budgets, etc.). As a result, there are those who advocate that merely making this information available to citizens will have a positive effect in terms of the transparency and accountability of public administrations (Jaeger and Bertot, 2010; Lee and Kwak, 2012; Sandoval and Gil-García, 2011). Moreover, these advocates also propose that this data access will have consequences on the internal operation of public administrations; for example, cost reductions and greater effectiveness, reducing the workload on public employees, and facilitating communication between agencies and organizations.

From this perspective, an analysis will need to be carried out of the cases related to open data that have multiplied over the last few years at different administrative levels. Moreover, the release of data by governments and public administrations (much in the same way described above) gives rise to different experiences in which citizens play a key role (some of the more well-known examples are found on web portals like http://www.wheredidmytaxgo.co.uk/ or http://flyontime.us/). As a result, it is important to know whether public administrations will facilitate transparency, participation, and collaboration in the future by consolidating the principles of operation associated with open government (Lathrop and Ruma, 2010). In particular, it will have to be analyzed whether more openness on the part of public administrations to direct and constant public scrutiny as a result of the actions they adopt will

actually make them more accessible to individuals who desire interaction with them, encourage collaboration between other actors by widening their receptiveness to new demands, proposals and ideas from their surroundings, or whether, collectively, they will improve the accountability of public administrations.

4*) Information sharing, interoperability and cloud computing.* One of the areas where public administrations have been focusing a great deal of effort to improve their actions is related to the exchange of information, interoperability, and, more recently, cloud computing. Interoperability in the public sector has taken on greater relevance due to the need to better satisfy the needs and expectations of citizens and, as a result, develop more complex technological projects. The above is directly related to the potential increase in collaboration between two or more government units or agencies to exchange data or information (Criado, 2009c; Criado, 2012b; Gascó, 2012; Pardo *et al.*, 2012), all within multilevel government systems inhabited by government administrations that must collaborate to provide certain services. This collaboration could be linked to cloud computing, a term that refers to technologies and concepts aimed at providing efficiency and transparency to the processing of electronic data, as well as the agility and flexibility required to introduce and execute shared "on demand" technological infrastructures (Chong *et al.*, 2012). In this way, cloud computing attempts to furnish public administrations with a type of distributed technological management based on the possibility of sharing processing capacity and services, as well as software applications, with other public administrations.

Analysis proposals related to the exchange of information, interoperability, and cloud computing may vary widely. In any of these cases, one fruitful line of work will consist of determining the facilitating/inhibiting factors for projects related to the exchange of information, data, and technological resources between public administrations (Gil-García *et al.,* 2007; Luna-Reyes *et al.,* 2007). In addition to this, another im-

portant challenge lies in the integration of reference frameworks for social sciences, such as the intergovernmental relations approach, which involves putting more weight on political and organizational variables used in models for analyzing exchange of information and inter-administrative interactions. There is no doubt that the study of e-government from an inter-administrative perspective will continue to be one of the largest growth fields because of the importance of the projects currently underway, and the need to find evidence that nurtures future government activity related to initiatives whose intention is to overcome classic distribution of competences by using technology in administrative processes.

5*) Big data and policy modeling*. Although public administrations have shown much interest in quantitative data analysis over the last few years (data mining or customer relationship management (CRM) systems), the difference that big data brings is its potential for measuring and, therefore, managing initiatives much more precisely. This approach underlines the need for better predictions and more intelligent decisions, reducing reliance on instinct and intuition. This research is underpinned by at least three unique aspects related to analysis of traditional data (McAfee and Brynjolfsson, 2012): volume, speed and variety. The purpose of big data analysis is to generate intelligence from the data and translate it into improvements in processes to create value in organizations. Complementarily, the term policy modeling denotes the combination of modeling and simulation techniques used to analyze public policy and public decisions in collaborative environments (Purón-Cid, *et al.*, 2012; Ferro and Gil-García, 2011). It is the outcome of fostering conversation and debate among participants in public policy and management processes so that ICT, data, etc., support individuals and communities to design policies and make decisions, resolve problems, and evaluate their consequences (Purón-Cid and Gil-García, 2012). Not only does this type of work contribute to the analysis of an initiative, but it also aids governance of the collective decision-making process.

In the near future, big data and policy modeling have the opportunity to become growing areas of interest in the study of e-government. To begin with, it will be necessary to look into the extent to which it is true that the enormous amount of data available to public administrations, combined with processing and computing tools and the human intelligence required to analyze it, will permit public administrators to adopt decisions based on better foundations. In addition, the analysis of policy modeling aims to improve our knowledge of the pillars on which future public policy will be built. This will require integrating the study of policy phases, coalitions promoting actors, sources of data, and technological applications, as well as different governance models. Lastly, it will also be crucial to identify the new role of public administrators in the process of innovation of public policies that use increasingly more sophisticated analytical tools and involve ever diminishing margins for human decision-making, at least from a technical point of view.

6) Smart cities and local e-government. Interest in what has been called smart cities has grown exponentially in recent years. In fact, the concept smart city is tied to the use of the latest (intelligent) technologies to build and integrate the critical infrastructure and services of a city (Gil-García and Aldama-Alda, 2013). This term denotes the efforts to achieve the benefits derived from the use of technology in such aspects as quality of the environment, mobility, energy savings, and public health (Gil-García and Aldama-Alda, 2013). The future of the debate surrounding smart cities is linked to the need to explore new ways of governing societies that are becoming more and more urbanized in a way that uses technology in the hope of facilitating and improving quality of life. Nevertheless, this does not mean that the local public sector will, in its own right, cease to be an object of interest to e-government, as has traditionally been the case. It is precisely for this reason that the needs of local government and administrations in terms of management technology will become even more important in contexts where cities will be the reference for future collective coexistence.

Research into smart cities must tackle different paths if it is to consolidate in the future. On the one hand, much work still lies ahead in terms of the need to identify the factors that facilitate the projects and initiatives of smart cities in different contexts. Models like those suggested by Chourabi *et al.* (2012) include explanatory factors, such as organization, public policy, governance, the natural environment, communities, the economy, and infrastructure together with technology, to characterize the relationships and influences between them and smart the city initiatives themselves. Accordingly, interest in local administrations will remain valid within studies about e-government, taking into account the peculiarities of these types of organizations. In fact, these specific components are related to the size of the organization, the autonomy of management and finance, the type of public policies, and the city model to be developed. In any event, local e-government, as well as studies about smart cities, will also continue to form part of the core concerns of academics interested in the interactions between technologies and public administrations around the globe.

7) Mobile government. Mobility is another of contemporary society's needs, so much so that this topic has become yet another reference of the progress of e-government in different contexts. Mobile government or m-government proposes an alternative channel for providing services to citizens. To put it simply, Rossel *et al.* (2006) believe that it may become a complement of e-government, insofar as its perspective focuses on providing added value services based on flexibility within contexts or processes where flexibility is important to certain user communities. In addition, m-government may even be expanded to the point where it is considered to be a trend of current and future information societies, centered on providing people with greater flexibility in all their day-to-day activities, including those related to government action, in a variety of public policy sectors (Ntaliani *et al.*, 2008). More recently, the growing availability of mobile devices among the people has led public administrations to pay more attention to this new reality

through applications and services specifically designed for the sole purpose of interaction.

There is still a lot of room in the future for studies about m-government to address certain questions of interest. On the one hand, the current availability of mobile technologies shows no signs of slowing down; on the contrary, the number of devices offered by the market has not stopped growing (Trimi and Sheng, 2008). On the other, it is predicted that tools linked to Web 2.0 and mobile apps will trigger significant growth in m-government in the future. Consequently, different governments are making apps available to citizens on their web portals, as well as mobile apps to carry out different activities and resolve a wide variety of problems (Sandoval-Almazán *et al.,* 2012). As a result, future research in this field will focus on developing knowledge about the scope of these types of mobile tools within the public sector, particularly in relation to availability and level of use by citizens, as well as their impact on government activity. Knowledge will also need to be compiled on those sectors of public policy that receive the most added value from these types of initiatives for the actors involved.

To round off the article, it is worth underlining that collaborative innovation must form the core of all sides of future public administrations. In a context of global crisis, such as the present, public administrations require innovative solutions that do not involve loosening the purse strings, but at the same time generate maximum returns in terms of legitimacy and social acceptance, in addition to unleashing innovation in the services provided to citizens. While the ideas expressed here in terms of interoperability, digital social networks, and open government, etc., are not a panacea for resolving everything, at least they introduce the seeds of collaboration, participation, transparency, accountability, and, more importantly, collaborative or "connective" innovation (Subirats, 2011). The key idea is to identify how the Internet and ICT, above all those linked to Web 2.0, facilitate the creation of value within public administrations, guiding them toward constant innovation, in which the involvement of people from both inside and outside the organization is decisive.

Perhaps such ideas can be taken further, possibly even as far as what could be labeled as the Smart State, which gives rise to the possibility of developing a new generation of smart governments and smart administrations. In other words, public administrations that use information technologies in sophisticated ways to interconnect and integrate information, processes, institutions, and physical infrastructure to better serve their communities (Gil-García, 2012b: 274), which are ranged in concentric circles both inside and outside organizations (Bekkers, 2012). Thus, the range of sensors, virtualizations, geographical information technologies, social network applications and other components may eventually operate as a type of brain for perfecting public policy processes and management capabilities, while at the same time improving the participation of social actors and the physical infrastructure, as well as the machinery and equipment this infrastructure uses (Gil-García, 2012b). These factors may just generate that new form of electronic government, a smart State.

All this does not detract from maintaining that the future of e-government is open, much in the same way as any other socio-political phenomenon. It will be necessary to keep asking difficult questions about the future of e-government, ones that are difficult to answer *a priori* (Yildiz, 2012): how can studies about e-government be better connected and based on research in Public Policy and Management? How can studies about e-government be multidisciplinary and more comparative? How can performance and results of e-government be measured and evaluated? How can models and research theories about e-government that are well supported and more useable be produced? There is no doubt that consolidating such a young discipline of knowledge requires addressing these questions, as well as others that may be introduced to the academic and professional debate, in the best way possible. None of that will be possible, however, without understanding the complexity first suggested as a rationale behind e-government and without, of course, having to face the challenges that this phenomenon poses to those that engage in its study, something that this article has sought to facilitate and discuss. GPP

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