

ELECTRONIC ADMINISTRATION STYLES AND THEIR DETERMINANTS. EVIDENCE FROM SPANISH LOCAL GOVERNMENTS

José-Valeriano FRÍAS-ACEITUNO
Isabel-María GARCÍA-SÁNCHEZ
Luis RODRÍGUEZ-DOMÍNGUEZ

José-Valeriano FRÍAS-ACEITUNO (corresponding author)
Associate Professor, Department of Accounting and Finance,
Faculty of Business Studies, University of Granada, Granada,
Spain

Tel.: 0034-958-243.707, ext. 0142

E-mail: jfrias@ugr.es

Isabel-María GARCÍA-SÁNCHEZ

Associate Professor, Department of Business Administration,
Faculty of Economy and Business, University of Salamanca,
Salamanca, Spain

Tel.: 0034-923-294.500, ext. 3133

E-mail: lajefa@usal.es

Luis RODRÍGUEZ-DOMÍNGUEZ

Associate Professor, Department of Business Administration,
Faculty of Economy and Business, University of Salamanca,
Salamanca, Spain

Tel.: 0034-923-294.500, ext. 3133

E-mail: lrodomin@usal.es

Abstract

This paper analyzes the factors underlying the development of e-government, as an overall process, as well as of each of the three stages identified in the prior literature (e-government, e-governance and e-democracy).

The analysis has focused on 102 Spanish municipalities, and it consists in a content analysis of their web pages, based on an information index, in order to develop a dependency model.

The results obtained indicate that Spanish municipalities show high information transparency regarding economic, environmental and social matters, allowing the undertaking of administrative proceedings online and actively promoting the participation of interest groups in strategic, sustainable and managerial issues.

Our findings stress the importance of the municipality's size and the ruling party's political ideology of a deeper commitment with the development of e-government.

Keywords: e-government, e-governance, e-democracy, digital administration, Spanish municipalities, local governments.

1. Introduction

The implementation of electronic administrations aims at simplifying and improving the relationships and transactions between public organizations and their users and citizens (García-Sánchez *et al.*, 2011). In their evolution three stages can be identified: e-government, e-governance and e-democracy (Riley, 2001). Mossberger, Tolbert and Stansbury (2003) call the last two stages the entrepreneurial approach and the participatory approach, respectively.

According to Tolbert and Mossberger (2006, p. 357), the first approach is orientated to providing 'a flexible and convenient interface with government customers who can access government around the clock and experience 'one-stop shopping' for information and services', and the second approach 'allows citizens to become more knowledgeable about government and political issues, and the interactivity of the medium allows for new forms of communication with elected officials and between citizens – through chat rooms, Listservs, e-mail, and bulletin board systems'.

These three electronic administration stages generate significant cost reductions, derived from the use of new and more efficient technologies (Kim, 2007; Tolbert *et al.*, 2008), the rationalization of processes (Torres *et al.*, 2005), and finally an improvement in image (Gallego-Álvarez *et al.*, 2010). As Siau and Long (2006) argue, digital government will provide governments with an effective and efficient channel to facilitate their internal administrations, and will improve their external services, thereby increasing transparency and generating a higher degree of trust.

Furthermore, a digital administration would eliminate the time and space barriers citizens experience in their relations with public administrations, and it will be viewed as an improved service for citizens, instead of as a heavy bureaucracy. Moreover, it allows citizens to participate in democratic institutions and political processes (Justice *et al.*, 2006; Siau and Long, 2006), thereby perceiving governments as being accessible, transparent, responsible, effective and participative (Tolbert and Mossberger, 2006). Consequently, it could lead to an increase in citizens' trust and a perception of speed in governments' response to their needs.

Several studies have analyzed how far digital administration has developed (West, 2001, 2004; Pérez *et al.*, 2005; Torres *et al.*, 2005; Torres *et al.*, 2006; Christou and Simpson, 2009), while others have focused on format and volume, the quality of the budgetary and financial information disclosed (Laswad *et al.*, 2005; Cárcaba García and García García, 2008), and factors associated with the degree of development of e-government (Siau and Long, 2006; Kim, 2007; Tolbert *et al.*, 2008; Gandía and Archidona, 2008; Pina *et al.*, 2010).

These studies face a common limitation: they do not allow us to observe different digital public government styles and the determinants of their overall development, given that they focus on information disclosure features and their formats, ignoring the concept that e-government must be understood as more than a simple tool for reporting public activities (Rodríguez-Domínguez *et al.*, 2011). Moreover, the latest papers only focus on e-governance and e-democracy without considering the previous stages.

Also, the theoretical frameworks provide different perspectives. Whereas the reinforcement theory and the socio-technical theories underline the role played by the managers' worldviews of organizational change and the factors external to the organization (in this case, the government), the technological models (e.g., technology acceptance model) usually predict individual user adoption (Coursey and Norris, 2008) and hold that the behavior adoption on behalf of the potential users will also depend on image, output quality and perceived ease of use, among others, combining both social influence processes and cognitive instrumental processes (Davis, 1989; Venkatesh and Davis, 2000). These latter models stress the importance of usability as regards the delivery of e-government services (Wang *et al.*, 2005), as well as the relevance of adopting a citizen centric approach (Misra, 2006), which can lead to higher perceived usefulness (Jaeger and Matteson, 2009), for example, by attempting to anticipate the needs of web visitors.

Given that the technology used in the development of e-government is rather similar among the municipalities analyzed in our study, we have not strictly focused on technological factors, whose study is more required when analyzing non homogeneous contexts. In contrast to previous studies, this paper focuses especially on political factors and institutional capacities, since most earlier works stress the relevance of these factors to the stages of e-government development, and that the lack of these resources involves significant barriers in the implementation of electronic administration (Coursey and Norris, 2008; Tolbert *et al.*, 2008). This study considers the three typologies of electronic administration in order to identify different groups of digital government development, and to determine the explanatory factors of the overall situation of public administration websites, as well as of the three stages independently.

Hence, 102 of Spain's largest local governments have been selected. The choice of municipalities of the same geographic area as our study population allows us to perform a more homogeneous comparative analysis. It also allows us to detect whether the determinants of electronic administration styles are the same with respect to the results obtained by a worldwide comparative study (Gallego-Álvarez *et al.*, 2010), and whether they have in common factors such as those evidenced for the initial e-government stages. Also, we have opted for local administrations, given that the most important interactions between citizens and government happen at local level (Sandoval-Almazan and Gil-García, 2012), and local governments are assuming a greater and more interactive role for citizens' well-being (Eger, 1997).

Our results emphasize the importance of the municipality's size and the governing party's political ideology in going further in its commitment to the development of e-government. However, the variables of economic and social development, as well as political stability, strength, and political rivalry are not determinants in the advance towards higher levels of e-government.

This study is structured as follows. In Section 2, the main determinants of digital government development are established according to the previous literature. Section 3 describes the analysis methods, by specifying the population, variables and

statistical techniques employed. Section 4 comprises the results of the analysis and the discussion of the results, whereas the most relevant conclusions of this study are summarized in the final section.

2. Electronic administration development and its determinants

There are certain factors that can encourage or hinder the development of e-government. Among them, three groups can be differentiated: internal features of the public body, political factors and municipal context.

2.1. Internal features of the public body

According to previous studies, certain features of public bodies, such as their size or their institutional capacity, may influence the implementation of e-government practices.

2.1.1. Size of the public body

Large governments are more likely to adopt e-government, given that they operate under greater pressure to find alternative ways to provide public services. Moreover, they will exhibit incentives to manage the practical challenges and high costs of communicating effectively with citizens and public agencies (Moon and Norris, 2005; Justice *et al.*, 2006). Also, these large municipalities show a higher political visibility; in this sense, Frost and Seamer (2002) emphasize the role played by political visibility as a driver for implementing new reforms and achieving organizational legitimacy.

Along this line, Gallego-Álvarez *et al.* (2010) and Navarro *et al.* (2011) show that the increase in population size may influence the improvement of the local administration's online presence. Weare *et al.* (1999) and Musso *et al.* (2000) find that larger cities tend to create a website more frequently than their smaller counterparts, and are more likely to offer public services online (West, 2004).

Nevertheless, previous literature has not reached conclusive evidence regarding this influence. While Ingram (1984), Ingram and DeJong (1987) and Laswad *et al.* (2005) do not find a statistically significant association, Evans and Patton (1987), Moon (2002), Serrano-Cinca *et al.* (2009), and Gallego-Álvarez *et al.* (2010) obtain evidence for a direct relationship.

Based on the previous arguments, we posit the following hypothesis:

H1: There is a positive relationship between the size of the public body and the development of e-government in local administrations.

2.1.2. Institutional capacity

Any innovation or reform in the public sector is closely linked to the level of government resources available, particularly the economic and financial support.

Concerning disclosure, Alt *et al.* (2006) find that the results derived from fiscal policy may influence politicians' incentives to increase the transparency level. The town councils with more funds in their budgets are in a better position to improve their information systems, and can use more resources to extend their offer of public services.

For instance, Ingram and Dejong (1987), Evans and Patton (1987), and Laswad *et al.* (2005) find a positive relationship in different countries. In this sense, Pina *et al.* (2010), Gandía and Archidona (2008), and Tolbert *et al.* (2008) do not detect a statistically significant association between budgetary incomes or spending per capita and the likelihood of developing digital government, although Gallego-Álvarez *et al.* (2010), by means of a worldwide municipal analysis, find that this factor is very important for the transactional and participatory development of electronic administrations.

Therefore, we proceed to test the following hypothesis:

H2: Institutional capacity positively influences the development of e-government in local administrations.

2.2. Political factors

The factors linked to the different political ideologies, and political rivalry and stability may affect the implementation of innovations, such as the development of e-government practices. More specifically, the current study will focus on ideology, stability, and political strength and rivalry.

2.2.1. Political ideology

The governing party's ideology may influence sustainable development and digital government; given that different ideologies usually propose different city styles (Prado-Lorenzo *et al.*, 2012). Therefore, it seems necessary to analyze whether the political tendency of the governing party can affect e-government, its use and development, positively or negatively.

Ni and Bretschneider (2007) suggest that governments with a right-wing ideology tend to carry out programs or activities of a notably economic nature, such as those associated with the development of the market, control of inflation, and the introduction of reforms in the public sector (budget discipline, privatizations etc.). In contrast, those with other ideologies tend to focus on social policies such as the development of state pensions, health care etc.

As regards information transparency and presence on the web, politicians may vary the extent of transparency in order to achieve their own objectives (Alt *et al.*, 2006). Ferejohn (1999) holds that politicians who wish to enhance the size of the public sector must increase the disclosure of information in order to receive more resources and obtain the voters' trust. Therefore, given that left-wing governments tend to argue in favor of a stronger public sector, they will be prone to implement higher levels of transparency, compared to conservatives.

Nevertheless, the results obtained are not sufficiently conclusive. Concerning information transparency, while Guillamón *et al.* (2011) show that the municipalities governed by left-wing mayors are more transparent than those governed by conservatives, Navarro *et al.* (2010) find that the political tendency in the governing party does not explain the development of sustainability reporting by the public sector.

Given the mixed previous evidence, we proceed to test the following hypothesis:

H3: There is a negative relationship between a conservative political ideology in the governing party and the development of e-government in local administrations.

2.2.2. Political stability and strength

In relation to the electoral support that the ruling party obtained in the last election, it is necessary to consider that a greater or lesser level of political stability can lead to the advancement of or a halt in the activities related to e-government. In this line, the implementation of these practices tends to require having the proper support to choose to assign resources.

Another related issue has to do with the political strength. Roubini and Sachs (1989a, 1989b) argue that coalition governments may experience some kind of weakening due to internal conflicts, and they may be less effective in undertaking budgetary reforms that may affect electronic government. In cases of less political strength, due to the lack of sufficient electoral support, digital governments are not likely to become a priority for political parties. Prado-Lorenzo and García-Sánchez (2009) and Prado-Lorenzo *et al.* (2012) underscore the need for strong political leadership to carry out those reforms successfully.

Therefore, we establish two hypotheses:

H4: Political stability positively influences the development of e-government in local administrations.

H5: Political strength positively influences the development of e-government in local administrations.

2.2.3. Political rivalry

Party composition, ideology and stability may not be able to reflect the complex political environment surrounding decision making as regards the reforms derived from e-government. As the political competition increases, a favorable context for reforms could be created, given that it leads to a stricter monitoring of the public management.

According to Navarro *et al.* (2011), governments with less political rivalry would receive less pressure from opposing political parties to increase their presence on the Internet and to undertake reforms. In the Spanish context, they find a positive influence of political rivalry on the online presence of the public administration at a regional level. However, the results are not conclusive enough. On the one hand, Cárcaba García and García García (2008), Gandía and Archidona (2008), and Tolbert *et al.* (2008) underscore the positive influence of political rivalry on the use of digital government as a transparency mechanism. On the other hand, Laswad *et al.* (2005) conclude that it is not a statistically significant factor for the local administrations in New Zealand.

Therefore, we test the following hypothesis:

H6: There is a positive relationship between political rivalry and the development of e-government in local administrations.

2.3. Municipal context

The economic and social context in which the local administration operates may influence the presence of the public administration on the Internet. Among these factors, we can stress both the level of economic development reached by the municipality, and its degree of sustainability and quality of life.

2.3.1. Level of economic development

Some authors (e.g., Hameed, 2005; Piotrowski and Van Ryzin, 2007) have shown that the economic level is positively related to information transparency in public administrations, especially in financial and fiscal matters, and to a higher presence on the Internet. Several variables are behind this positive relationship, such as educational level (Tolbert *et al.*, 2008), the services provided, and the employment rate (Navarro *et al.*, 2011).

For instance, Navarro *et al.* (2011) argue that municipalities with lower economic development and a higher unemployment rate will display more social needs and, consequently, there will be a greater pressure on governments to be more transparent.

However, these municipalities can be at disadvantage regarding the development of e-government, due to the insufficiency of financial and human resources (Prado-Lorenzo *et al.*, 2012).

Therefore, considering the divergent previous evidence, we posit the following hypothesis:

H7: There is a negative relationship between the level of economic development (unemployment) and the development of e-government in local administrations.

2.3.2. Level of sustainability and social development

One of the approaches most used to determine a municipality's level of sustainability is its quality of life (Glaser, 1991; Williams *et al.*, 2008), measured by the maintaining of a stable, diverse and appropriately skilled population. Hence, quality of life and sustainability are inter-connected (Prado-Lorenzo *et al.*, 2012), and provide a full picture of well-being (Thomas and Evans, 2010).

Moreover, Howley *et al.* (2009) have detected that the level of citizens' satisfaction is higher in relation to several factors, such as environmental quality, absence of noise, services provided and facilities available. The level of satisfaction and the quality of life mainly depend on the volume and quality of the services provided by the public administration, which can be offered through e-government more effectively and efficiently.

Consequently, we posit this hypothesis:

H8: The level of sustainability in the municipality positively influences the development of e-government in local administrations.

3. Methodology

3.1. Population and sample

In order to achieve the established objectives, we have chosen Spanish local governments as our population target. The choice of the local sphere in a specific country allows us to obtain a higher volume of data, which is also more homogeneous, compared to an analysis of municipalities from different countries (García-Sánchez *et al.*, 2011).

Furthermore, the high number of Spanish municipalities and their disparity as regards size required us to establish some criteria for selecting the sample, population size being the most appropriate (Navarro *et al.*, 2010). We therefore selected the largest municipalities, according to the definition contained in article 121 of Act 7/1985 for the Regulation of Local Municipalities, modified by Act 57/2003, incorporating measures to modernize local government. These municipalities have a population of over 250,000 inhabitants or are capitals of provinces. They have to promote local sustainability, and to implement interactive technologies that encourage citizen participation and information transparency. Furthermore, the same law considers municipalities with over 75,000 inhabitants as large population if they show specific economic, social, historical or cultural circumstances.

Following these criteria, and according to the latest statistics on the population of Spanish municipalities (Instituto Nacional de Estadística, 2010), the final sample comprises 102 municipalities.

According to the most recent statistics concerning the usefulness of the Internet for administrative purposes (Instituto Nacional de Estadística, 2013), most of the Spanish citizens typically use Internet to contact or to interact with public administrations without coping with any problem (57.6%), while those who have faced problems have pointed out that the information provided is not sufficient, clear or updated enough (28.1%). The activities undertaken vary from tax payments and declarations, applications for social services and subsidies, enrolment in higher education institutions and property registration. Many citizens are totally satisfied with the ease to find information (79.6% of the users), the usefulness of the information provided (85.3%) and the ease of websites use (79.1%). Consequently, they are not just increasingly using the web platforms provided by different levels of government, but they are mostly satisfied with the online relationship with the public administration. Therefore, they are becoming advanced users of the Internet services concerning the different levels of e-government.

3.2. Dependent variable

According to García-Sánchez *et al.* (2011), e-government is the first stage of electronic administration, and involves a net presence of the public administration on the Internet. The second stage, e-governance, would lead to online services provision. In the final stage, the electronic administration will provide comprehensive citizen-participation: e-democracy.

The informative index was devised after analyzing some studies on the disclosure of online information in the public sphere (e.g. Rodríguez-Domínguez *et al.*, 2009; Gallego-Álvarez *et al.*, 2010), citizen participation in sustainability matters, and overall government.

The result of this process is a survey made up of 75 items grouped into three sections: (a) e-government (46 items); (b) e-governance (17 items); and (c) e-democracy (12 items). Table 1 reflects the content of each block.

Table 1: Information index

(A) E-GOVERNMENT
General information
Municipality's Strategic Planning or Local Agenda 21 Planning
Political composition of the elected positions on the Town Council
Information about the different boards and their functions
Basic information about decentralized bodies
<i>Economic, environmental and social information</i>
Surplus or deficit per inhabitant
Tax autonomy
Tax revenues per inhabitant
Public spending per inhabitant
Public investment per inhabitant
Average period of payment to providers and debtors
Average period of collection
Amount of municipality's public debt
Historical trend of the municipality's public debt
Debt ratio per inhabitant
Efficiency and efficacy indicators
Annual reports of the Town Council (balance sheet, income statement, budgetary cash report, notes)
Municipality's budget
Claims to the budget
Modifications in the budget approved by the Council
Interim reports about the budget
Budgets of the decentralized organizations
External auditor reports
Spending on and investments in the environment
Environmental impact of municipal products and services
Promotion of efficient products and services as regards energy consumption or based on renewable energies
Effect of the environmental practices on energy consumption
Direct consumption of energy derived from primary sources
Consumption of intermediate energy
Activities pursuing energy saving
Sources of water collection, and volume of water collected
Percentage of water recycled and re-used in the municipality
Information about spilling and waste waters in the municipality
Updated information about air and noise pollution in different areas of the municipality
Spending on social programs
Public announcement of aid and subsidies
Aid and subsidies for NGOs, neighborhood associations, cultural institutions etc.
Number of requests, claims etc. solved by silence procedure
List and amounts paid to the most important minor providers of the Town Council

List and amounts paid to the most important investment providers of the Town Council
List and monetary amounts of the projects and building works financed by the central state
Monetary import of the projects and building works already paid by the central state
Firms contracted to undertake the projects and building works financed by the central state
Good Governance or Ethics Code of the Town Council
Public declaration of properties and activities on behalf of Town Council's members
Salaries of the Mayor and other Council members
Political positions in municipal management and the salaries involved
(B) E-GOVERNANCE
Administrative paperwork, proceedings, licenses online
Online tracking of the processing of administration procedures and incidences
Municipal services provided and information about their monitoring
Taxes
Problems and incidences in municipal services
Public employment demand of the Town Council
List of jobs in the Town Council
List of jobs in the decentralized organizations
Information about staff selection processes
Composition and convening of hiring boards
Investments put out to tender: official announcements
Investments put out to tender: decisions and projects presented
Agendas from the day before municipal plenary sessions
Minutes of the Town Council meetings
Agreements of the Town Council meetings
Agreements of the governing boards
Municipal regulation
(C) E-DEMOCRACY
Help button (demos etc.)
Web map / Table of contents
Internal search engine
Staff directory
Newsletters
Norms about citizen participation
Local boards for promoting citizen participation
Composition and workings of district boards
Channels for citizens' participation regarding strategic issues
Mechanisms for suggestions and citizen participation in drawing up local budgets
Discussion fora on the local website
Suggestions and complaints box

The information contained in this index was obtained through a content analysis of the town councils' websites during May and June 2011. Content analysis is one of the principal techniques used to study the information provided online, and it is based on checking the presence/absence of a set of sections on the website, typically using binary values (1: presence of the information sought; 0: absence of the information sought). We subsequently aggregated them without considering a potential weighting of the items, in order to avoid the arbitrariness inherent to the use of weighted indexes.

3.3. Independent variables

The variables proposed to test the hypotheses are explained in Table 2. The information necessary to create the proposed variables was obtained from the websites of the Spanish Ministry of Interior, equivalent to the US Justice Department, the Spanish Ministry of Economics, and the Spanish Statistics Office.

Table 2: Independent variables

Variable	Definition	Hypothesis	Expected sign
<i>Internal features of the public body</i>			
SIZE	Size of the public body, measured by the number of inhabitants in the municipality	H1	+
BUDGET	Institutional capacity represented by the budgetary spending per inhabitant	H2	+
<i>Political factors</i>			
CONSERV	Binary variable that takes the value 1 if the political tendency of governing party is conservative, and 0 otherwise	H3	-
DFAVOTES	Numerical variable that proxies for the popularity of the party in office using the difference in percentage of votes with respect to the second most-voted party.	H4	+
STRENGTH	Numerical variable that reflects the local government's level of political strength. To represent this strength, according to García-Sánchez <i>et al.</i> (2011a), we use a Herfindahl index which ranges between 0 (maximum fragmentation) and 1 (maximum strength). Maximum fragmentation implies the existence of one town councilor from each party, whereas maximum strength would mean that all the councilors belong to the same political party.	H5	+
PARTIES	Political rivalry measured by the number of political parties taking part in general elections	H6	+
<i>Municipal context</i>			
ECONOMIC LEVEL	Numerical variable that reflects the level of local economic development measured by the municipality's unemployment rate	H7	-
SOCIAL LEVEL	Numerical variable representing the level of local sustainability measured by the municipality's score in the MERCO ranking of quality of life (http://www.merco.es)	H8	+

3.4. Model of explanatory analysis

In order to detect the factors behind the development of digital government in municipalities, we used dependency models. Hence, from the variables selected to test the hypotheses proposed in Section 2, we have defined the following model (1), in which the level of development in digital government in Spanish local administrations is determined by the institutional features and the municipalities' policies, as well as by certain factors from the municipal context.

Digital-government = *f* (*Internal features of the public body*, *Political factors*, *Municipal context*) (1)

Model (1) can be empirically estimated through model (2):

$$\text{Digital-government}_i = \beta_0 + \sum_{i=1}^2 \delta_i IF_i + \sum_{i=1}^4 \Omega_i PF_i + \sum_{i=1}^2 \rho MC_i + \varepsilon (2)$$

where, *IF* is the set of variables reflecting the internal features of the public body;
PF represents the political factors; and
MC contains the variables linked to the municipal context.

Model (2) has been checked empirically through multiple linear regressions. The dependent variable is defined from the overall index of development (global development) of the digital administration, as well as the different levels of development in each typology: e-government, e-governance, and e-democracy.

4. Results of the analysis

4.1. Descriptive analysis

Table 3 synthesizes the descriptive statistics for the whole set, and for each typology of development in the electronic public administration. As it can be observed, the Spanish municipalities' websites display 44 items on average (59% out of the items analyzed), with a dispersion of 13 items, leading to an interval of 31 to 57 items.

As for the level of development of e-government in the municipality (46 items), the mean information issued is 54.53% of the items considered (approximately 25), within an interval of 17 to 33 items. This interval comprises 37 to 72% of the items included in this group.

The average level of development concerning e-governance topics comprises the 64.70% of the items studied (11 out of 17 items), with a variability of 4 items. Regarding the items considered under the label of e-democracy, the Spanish municipalities exhibit 8 of the 12 items (67%), ranging from 5 to 11 items.

Table 3: Descriptive statistics

	Minimum	Maximum	Mean	Standard Deviation
GLOBAL	18.01	65.04	44.1941	12.92265
E-GOVERNMENT	9.00	39.01	25.0657	7.99048
E-GOVERNANCE	4.01	17.01	11.0371	3.83634
E-DEMOCRACY	1.01	12.02	8.0913	2.81904

4.2. Explanatory analysis

Table 4 displays the descriptive statistics for the explanatory variables in model (2).

Table 4: Descriptive statistics

	Mean	Standard Deviation
SIZE	214734.6569	363867.08509
BUDGET	1100.2958	260.93811
CONSERV	0.3964	0.22884
DFAVOTES	0.3338	0.08174
STRENGTH	0.5036	0.08242
PARTIES	9.3247	3.95847
ECONOMIC LEVEL	7.9701	2.03140
SOCIAL LEVEL	39.6494	22.88344

Table 5 contains the correlations among the variables proposed. CONSERV shows the highest correlation with the dependent variable (-0.257), and it is negative. Also, amongst the independent variables, the highest correlations are reached for SIZE and SOCIAL LEVEL (-0.399), and CONSERV and DFAVOTES (0.385). However, there are no high correlations among the variables proposed that could lead to multicollinearity problems.

Table 5: Correlations

	GLOBAL	SIZE	BUDGET	CONSERV	DFAVOTES	STRENGTH	PARTIES	ECONOMIC LEVEL
SIZE	0.187							
BUDGET	-0.105	-0.038						
CONSERV	-0.257*	0.077	-0.048					
DFAVOTES	-0.047	-0.069	-0.187	0.385**				
STRENGTH	-0.154	0.056	-0.040	0.329**	-0.061			
PARTIES	0.126	0.187	0.020	-0.062	-0.291*	-0.015		
ECONOMIC LEVEL	-0.093	-0.107	-0.054	-0.040	0.098	0.234*	0.056	
SOCIAL LEVEL	-0.117	-0.399**	0.080	-0.150	-0.063	-0.036	-0.324**	0.298**

** Correlation significant at 0.01; * Correlation significant at 0.05

The results derived from estimating the explanatory models are reflected in Table 6. The explanatory power of these models (R^2) ranges from 9% to 25% for different confidence levels. More specifically, the models with lower predictive capacity (not significant from the statistical perspective) are those explaining the development of e-democracy. In contrast, the model of the overall information index has an explanatory capacity of 22%, followed by the model devoted to explaining the economic, social and environmental information overall (25%). The model addressing the development of e-governance has a predictive capacity of 13%, for a confidence level of 90%.

Table 6: Factors explaining the development of electronic administration

Dependent variable	GLOBAL			E-government			E-governance			E-democracy		
	Beta	t	Sig.	Beta	t	Sig.	Beta	t	Sig.	Beta	t	Sig.
(Intercept)		4.03	0.00		4.27	0.00		2.74	0.01		2.53	0.01
SIZE	0.41	2.57	0.01	0.41	2.65	0.01	0.32	1.92	0.06	0.27	1.55	0.13
BUDGET	-0.13	-1.16	0.25	-0.16	-1.45	0.15	-0.09	-0.76	0.45	-0.03	-0.22	0.83
CONSERV	-0.30	-2.27	0.03	-0.33	-2.59	0.01	-0.24	-1.70	0.09	-0.11	-0.77	0.45
DFAVOTES	-0.02	-0.16	0.87	-0.05	-0.34	0.73	0.05	0.37	0.71	-0.04	-0.28	0.78
STRENGTH	-0.13	-1.05	0.30	-0.14	-1.20	0.24	-0.07	-0.55	0.59	-0.09	-0.66	0.51
PARTIES	-0.14	-0.88	0.38	-0.19	-1.21	0.23	-0.08	-0.45	0.66	-0.01	-0.04	0.97
ECONOMIC LEVEL	-0.03	-0.25	0.80	-0.01	-0.4	0.96	-0.07	-0.47	0.63	-0.05	-0.33	0.73
SOCIAL LEVEL	-0.07	-0.52	0.60	0.04	0.03	0.97	-0.08	-0.57	0.56	-0.21	-1.55	0.12
	R²	0.22		R²	0.25		R²	0.13		R²	0.09	
	F	2.95	(0.01)	F	3.50	(0.00)	F	1.57	(0.10)	F	1.03	(0.41)

The statistically significant values are stressed in bold.

SIZE, size of the local administration.
BUDGET, institutional capacity.
CONSERV, the governing party in the municipality has a conservative ideology.
DFAVOTES, popularity of the party in power.
STRENGTH, councilors belonging to the same political party.
PARTIES, political rivalry. *Strength*, electoral strength of the governing party.
ECONOMIC LEVEL, the municipality's unemployment rate.
SOCIAL LEVEL, municipality's score in the MERCO ranking of quality of life.

As for the model explaining the global development, all the variables have a negative effect, except for the size of the public body, which positively affects the development of the local government's presence on the Internet.

In regard to the models explaining the overall information index, e-government and e-governance, two out of the eight explanatory variables turn out to be statistically significant: *SIZE* and *CONSERV*. On the other hand, none of the variables proposed seem to be relevant in explaining the level of development in participatory digital government (e-democracy). Therefore, our findings provide evidence in favor of the hypotheses H1 and H3.

The variable *SIZE* shows a positive effect for a confidence level of 99% in the two first models of analysis, and for a confidence level of 90% in the model explaining e-governance; however its effect is not significant enough in the model explaining the development of e-democracy. The size of the public body – or, more specifically, the population – has been taken as a measure of the level of complexity of the public administration and the government, which can be considered to be one of the internal factors underlying the activities of the public manager (Cárcaba García and García García, 2008). Population can be taken as an indicator of the overall level of resources, as well as the degree of professionalization and specialization of the civil servants. Thus, the most populated countries will tend to have larger organizations, and greater levels of financial and human resources.

Likewise, the binary variable *CONSERV*, which identifies a conservative ideology in the governing party, has a negative effect for a level of confidence of 95%. This result is in line with the positive influence of the Socialist Party observed in Spain by Cárcaba García and García García (2008), although Gallego-Álvarez *et al.* (2010) found a null impact in the worldwide comparison of local digital administration development. In this study we obtained a negative impact of conservative ideologies on e-government and e-governance development in the case of Spanish local administrations. These results suggest that right-wing ideologies try to undertake management reforms different from those relating to electronic issues.

In relation to the other institutional capacity variables, the results show that although digital government requires building of a technical and administrative infrastructure that will permit its development, these resources are not strongly joined to the budget of the public body.

Regarding other political factors, several authors hold that a high degree of political rivalry can create a favorable environment for technological reforms (Tolbert *et al.*, 2008), given that there may be a continuous monitoring of public management

which may benefit from the use of new technologies. However, previous literature has shown mixed results concerning this factor. On the one hand, Cárcaba García and García García (2008), Gandía and Archidona (2008), and Tolbert *et al.* (2008) highlight the positive influence of political rivalry on the use of digital government. On the other hand, Laswad *et al.* (2005), Gallego-Álvarez *et al.* (2010), as well as this paper conclude that it is not a statistically significant factor. The findings obtained for stability and strength may indicate that the development of e-government is probably beyond the main debate of the political parties; it has arisen as a way of simplifying the operational aspects of the daily public administration, more than a topic that can lead to debate among the political parties.

5. Conclusions

In the current context of reforms in the public administration, in the search for greater effectiveness and efficiency, the development of electronic government stands out in particular. It involves a set of initiatives focused on the presence of public administrations on the Internet, and these range from the disclosure of information to new ways of relationships among citizens, politicians and public managers, providing services online, for instance. In this regard, the previous literature usually differentiates three stages in the development of e-government: e-government, e-governance, and e-democracy.

Many previous studies have essentially focused on analyzing how far digital administration has developed, the format and volume of the financial and budgetary information revealed, and the factors linked to e-government. However, these studies do not allow us to observe different styles of digital government, especially in the local sphere, as well as the drivers behind the overall development of e-government.

Therefore, in this analysis, we have sought to define different stages of development in digital government, and determine the explanatory factors behind the overall situation of the presence of public administration on the Internet and in each of the stages previously mentioned. The factors analyzed are based on institutional features, political factors, and municipal context.

The analysis has focused on 102 Spanish local governments, through a content analysis of their web pages. In a first step, we designed an information index from a list made up of 75 items grouped in three sections, each of which corresponds to a stage in the development of e-government described by previous literature. Subsequently, we performed a descriptive analysis and a regression model with the aim of identifying the influence of different factors on the development of e-government.

The descriptive analysis evidences that the Spanish municipalities' websites contain 44 items, 59% of the items analyzed in the overall index. By differentiating each stage of development, it is apparent that Spanish municipalities show 54.3% of the items in the index for the first stage, 64.7% of the items in the e-governance index, and 67% of the items in the e-democracy index. These findings reveal the growing importance of e-government practices in Spanish municipalities, which show advanced levels in the development of e-government.

Likewise, the regression analysis stresses the importance of the municipality's size and the governing party's political ideology in going further in its commitment to the development of e-government. The size of the municipality is related to political visibility, which leads it to undertake improvements in public management to achieve a high degree of social legitimacy, and to the availability of financial and human resources. Moreover, it is associated with the level of complexity of the public service, which may be one of the main incentives to undertake practices of digital government. Also, it is detected that the political parties with left-wing ideologies tend to use e-government more intensely, whereas the conservative parties are likely to undertake management reforms different from those linked to electronic issues. Our final results underscore that the variables of economic and social development, as well as political stability, strength and political rivalry are not determinants in the advance towards higher levels of e-government.

This study exhibits some limitations which may provide some lines for future research. The study of the impact of technological and some individual-level factors behind the adoption of e-government is beyond the aims of our work, given the similarity and homogeneity in the technology used by the municipalities analyzed, and the lack of specific statistics about the use of the Internet at the local government level. However, extending the study to other contexts would require the analysis of these factors, such as the usability, output quality etc. Along this line, it would be interesting to analyze differences in service delivery mediated by citizens' individual variations, which have been analyzed in e-commerce practices. Thus, taking into account the different ways in which individuals react would provide interesting findings, by studying the influence of specific factors, such as gender, age, cognitive styles or previous experiences.

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