

ARE SPANISH LOCAL GOVERNMENTS PREPARING FOR DIGITAL ERA GOVERNANCE? A STAKEHOLDERS´ PERSPECTIVE

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Abstract:

According to the principles of the Digital Era Governance (DEG) current, establishing a network of relationships with public sector stakeholders (i.e. public employees, public managers and users of public services) will aid in producing the necessary changes to overcome conflictive values, rules, behaviors and frameworks in public service provision. The management of this network is thus essential for the performance of public service provision processes, since the diversity of values, needs, attitudes and competence levels of said stakeholders will affect the outcome of e-government strategies. In this paper, we want to know which municipalities are perceived to have developed better e-government relationships with their stakeholders than others, by comparing the level of interaction. Also, we question if the level of success in the development of these relationships is reflected in common practices that may relate to good practices revealed by the literature. By means of fuzzy ordering techniques applied to a sample of Spanish municipalities, and the definition of an ideal provided by experts, our results show that those municipalities that take care about relations and interactions with their stakeholders are successful e-government-wise, while not-so-successful ones have to improve some practices to provide a better public service.

Keywords: digital era governance, e-government, Spain, fuzzy numbers, network management

1. INTRODUCTION AND LITERATURE REVIEW

During the last 30 years, the development of the digital society has motivated public sector organizations (PSOs) into becoming digital themselves, in an attempt to conform to the needs and wants of the public they serve, by developing e-government strategies. PSOs used to turn an eye towards the private sector, and relied in its experience of rapidly adapting to changing environments. This phenomenon is called New Public Management, being in fashion in both academia and public strategy formulation processes for several decades (de Vries, 2010). However, as Osborne et al (2014) have pointed out, NPM has not been as effective as expected, and at the basis for this failure is the fact that public services are systems and should be managed as such, with the focus on the word “public” and a relational perspective instead of a transactional one like NPM proposes. This led to a scientific crisis that resulted in the evolution from NPM to Digital Era Governance (DEG) (Dunleavy et al., 2005), which passes by establishing a network of relationships with all stakeholders that helps transform internal efficiency into co-production of public services (Osborne et al., 2010, 2013; Alford, 2016). Indeed, in the new economy, information flows as a dialogue by interacting clients and public organizations, and relations can be more intense, significant and valuable, as supported by the social system theory (Burrell and Morgan, 1979) that establishes a holistic view of the organization (all parts of a system are related to each other). As a consequence, the diversity of values, objectives and principles of the different actors in the public service provision process has to be taken into account (Holden, Norris, and Fletcher, 2003; Scott, Golden and Hughes, 2004).

The apparition of ICT and internet –based technologies have changed the way PSOs relate to their stakeholders, becoming more holistic and re-integrating services (Margetts, 2009). The use of IT when accessing public services is more dependent on personal empowerment, which implies competence and experience, allowing for control of the communication. For this empowerment to come into being, it is necessary to ensure accessibility, means of participation and the ability of supervise government decisions (Amichai-Hamburger et al., 2008).

Stakeholders’ needs and attitudes will affect the outcome of any e-government policy design and implementation. Their conflicting interests and many different processes make PSOs struggle against the complexity of service co-design (Bell and Nusir, 2017) and process integration (Alford, 2016) so much that that the competence level of e-government stakeholders is one of the factors influencing e-governance performance (Suri and Sushil, 2012). The relationships between the actors that participate in the e-government public service provision (Joia, 2004), and the main practices that may affect their success are the following (for a more comprehensive list of practices, see Saghed-Tehrani, 2010):

- *G2G, or government-to-government*, refers to the implementation of inter-organizational systems (IOs) to support collaboration between different PSOs to complete the delivery of a public service, especially when the issues are complex enough to require several sources of information and resources (Fan et al., 2014). Compatible technology is essential for the successful management of the interorganizational and technical aspects in public service provision (Gil-Garcia and Sayogo, 2016) so that digital e-governance value is created at the intersection of service exchange: integration of operations takes over interoperability (Scholl et al., 2012).
- *G2E, or government-to-employees*, deals with the provision of public services by means of cross-department collaboration and internal networking. Public servants are thus considered internal customers as well as part of the operational structure of the PSO. Research on e-government success has been internally focused on employees (Gable et al, 2008).
- *G2C, or government-to-citizens*, considers citizens as the clients of PSOs. Indeed, they comprise the most numerous group and the most visible one, especially taking into account their role as providers of financial resource (through taxes) and ultimate customers, legitimizing their role in the creation and determination of public value (Scott et al., 2016).
- *G2B, or government –to- business*, refers to the commercial and collaborative relationships established between firms and PSOs. When dealing with e-government procedures, businesses benefit from having a comprehensive understanding of the regulatory changes and realizing the profits of dealing in online settings with PSOs; however, this type of stakeholder has received insufficient attention from researchers despite its importance for economic development (Reddick and Roy, 2013).

Local governments have their particularities have their own challenges in regards to e-government deployment (Cotterill and King, 2007; D’Agostino, 2013), and in their information sharing processes, since local information sharing leads to more productivity, improve operational performance, policy-

making and provide better services to citizens (Bigdeli et al, 2013). Local governments in Spain have been slowly introducing themselves into the digital economy since the early 2000's. However, the advent of the global recession put a dampening in the achievement of this goal, and still today many local governments are taking their first steps towards becoming virtually available (Claver et al., 2014). It needs to be questioned, therefore, if Spanish local governments have prepared themselves for the development better relationships with the stakeholders, considering that public sector networks comprise both external (G2C and G2B) and internal clients (G2E, G2G), and if there are any practices or circumstances that might be a common denominator for success.

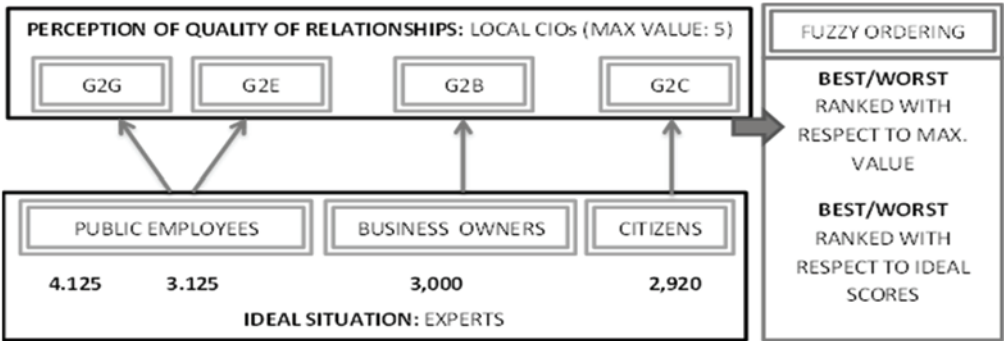
This research seeks to explore which municipalities are perceived to have developed better relationships with their stakeholders than others, in regards to e-government implementation, by comparing the level of interaction. A second research question is if the level of success in the development of these relationships is reflected in common practices that may relate to good practices revealed by the literature. The overall aim is to find out if there are particular behaviors or practices that can lead a municipality towards a better relationship with its stakeholders, and therefore to the implementation of successful e-government strategies.

2. METHODOLOGY

Data about relationships and interactions was collected between 2013 and the first months of 2014 from Chief Information Officers (CIOs) in Spanish Municipalities, as a way to incorporate the perspective of practitioners in the measurement of public value benefits, being the CIOs those public managers with a wider perspective on the implementation of local e-government strategies and of the informational structures of the municipality (Daniel and Ward, 2006; Norris, Fletcher and Holden, 2001). Two waves of questionnaires were sent to the CIOs of the largest 1000 Spanish Municipalities, out of which 241 answers were obtained, but only 116 were valid for this research (response rate: 11,6%; std. error: 8.73). The survey included a total of 24 items about stakeholder relationships in four scales: G2E (8 items), G2G (4 items), G2B (4 items), and G2C (4 items). The answers were provided by a single person per organization, which might make the results as biased. This is why we deal with fuzzy models to correct this fact (Canós et al., 2014). In addition a Harman's single factor test was carried out to rule out the possibility of common method bias.

For this research, fuzzy ordering techniques are applied, employing SPSS© 19 and Microsoft Excel© for calculations. Fuzzy Set Theory substitutes traditional sets, in which an element can belong or not, by membership functions (Zadeh, 1965). The main feature of this theory is that the statements relating to the facts are not or true or false exclusively, but true and false in some levels (Kaufmann and Gil Aluja, 1987). We use these ordering techniques because they include in their formalism uncertainty and subjectivity, so the final result is more fitted to reality. This methodology is illustrated in figure 1.

Figure 1: Research methodology



Source: Own.

3. RESULTS

Considering that we want to know about relationship and interaction between Municipalities and their stakeholders (employees, public organizations, private companies and citizens). Our purpose is to order Municipalities to identify the ones that relate good practices with good results (relationships and interactions), in two ways.

3.1. Closeness to success without an ideal to compare

We compare the answers from Municipal CIOs with the maximum value of the scale. The average score per scale in the final ranking for each Municipality measures the distance of each of the means score of the various scales to the maximum value, which has been given a value of 5 (Füller et al., 2012), where R is the total number of items (types of relations) and b is the valuation of each item for each of the municipalities. Then, municipalities are ordered from lowest to highest results since what is being measured is the maximum distance (the closer to the maximum is the best):

$$\frac{1}{R} \sum_{i=1}^R (1 - b_{ci}^j)$$

The top 10% results are shown in Table 1. In order to preserve the anonymity of the respondents, a code number has been assigned to the municipalities. It should be noticed that the values for municipalities are distances to the maximum, but figures cannot be interpreted *per se*. It can be seen that the best municipalities developing relationships with stakeholders and promoting interactions have very similar scores, particularly the very top ones. Looking at the individual perceived values for the different relationships, it can be seen that the highest values are given to G2G and G2E flows, emphasizing the importance of interoperability and internal clients in municipal networks; whereas G2C, and, markedly, G2B flows display the lower values, meaning that external have the least successful relationships in the network. This should be a question for further reflection.

Table 1. Top results: 10% best municipalities (ordering without an ideal).

Top 10%	Score	G2E	G2G	G2B	G2C
Municipality # 82	0,55	3,75	5,00	3,50	5,00
Municipality # 142	0,6	3,75	4,75	4,50	4,00
Municipality # 203	0,6	4,50	5,00	3,50	4,00
Municipality # 220	0,625	4,13	5,00	3,25	4,50
Municipality # 188	0,75	3,75	5,00	3,50	4,00
Municipality # 229	0,75	4,75	5,00	3,00	3,50
Municipality # 107	0,775	4,13	4,75	3,75	3,50
Municipality # 72	0,8	4,50	5,00	3,25	3,25
Municipality # 219	0,8	4,50	5,00	3,00	3,50
Municipality # 132	0,825	4,13	4,75	3,00	4,00
Municipality # 90	0,85	4,25	4,50	3,50	3,50
Municipality # 131	0,9	4,25	4,50	3,25	3,50
Mean		4,20	4,85	3,42	3,85

Source: own.

On the other hand, Table 2 presents the Municipalities whose score is farthest to the maximum: those municipalities ranked as the ones purporting the worst relations and interactions with their stakeholders. In this case, the study of the individual values for each flow indicates that there are interesting differences between the stakeholders, interoperability being still the most attended to, whereas public employees are the least considered. Public managers should reflect on the reasons for this mismanagement of their network and design an improvement action plan.

Table 2. Worst 10% municipalities (ordering without an ideal).

Last 10%	Score	G2E	G2G	G2B	G2C
Municipality # 183	2,3	3,00	3,50	2,00	2,00
Municipality # 109	2,325	2,13	2,00	3,25	3,00
Municipality # 158	2,325	2,63	3,25	3,25	3,25
Municipality # 228	2,45	1,75	5,00	2,50	2,50
Municipality # 130	2,475	2,13	3,50	3,00	3,00
Municipality # 211	2,475	3,38	2,75	2,50	3,00
Municipality # 61	2,55	3,75	3,00	2,00	2,50
Municipality # 161	2,725	2,88	2,75	2,75	2,00
Municipality # 176	2,75	1,75	2,00	3,00	3,50
Municipality # 108	2,775	1,88	3,50	2,75	2,00
Municipality #116	2,925	1,88	2,25	2,25	3,00
Municipality # 146	2,95	3,75	2,00	3,00	1,50
Mean		2,57	2,96	2,69	2,60

Source: own.

In an attempt to reveal if the order of the municipalities has any common antecedents, a series of correlation tests were carried out between the municipalities' scores (without an ideal) and several extrinsic factors (population and region), and intrinsic factors (PI stands for "Perceived importance of the Information society in the strategic municipal agenda" and QS means "Perceived improvement in the quality of the public service provision", both items valued from 1 to 5). According to the results in table 3, the population of the municipality does not have a significant effect over its position in the ranking. Considering that population is a direct source of income for public administrations, both in terms of taxes and of budget allocation from central and regional government, it would indicate that likely hard resources might not be of importance for those municipalities that want to have a fruitful relationship with their stakeholders. The same thing happens with the region, although our preliminary findings led us to think otherwise. However, intrinsic aspects like the political support for information society strategies and the perceived effect over the quality of the service provide are positively correlated to the score of the municipality, which might suggest that those municipalities that are successful in their relationships with their stakeholders are also aware of the strategic importance of the DEG and have experimented a better outcome in their provision of e-services.

Table 3: Correlations between the score of the municipality and intrinsic/extrinsic factors

Factor	Test	Stat	p-value
Population	Difference of means	0,025	0,875
PI	t-test	12,565	0,000
QS	t-test	23,616	0,000
Region	Anova	0,641	0,835

Source: own.

3.2. Comparing with an ideal

In this case we do not use the maximum to compare Municipalities, but an ideal defined by experts. To calculate these ideal values, a number of questions evaluating the relationships raised were posed to a several experts (four questions and four experts per stakeholder), to be answered using a Likert scale (1-5, for comparability issues) and a qualitative scale. Some of the experts provided complementary comments that were quite useful for understanding the research findings.

The ideal results are, for each type of stakeholder, as follows: G2E=3,125; G2G=4,125; G2B=3; G2C=2,92. An exact value of 5 is not considered ideal for any of the groups of experts, taking into

consideration aspects such as feasibility, acceptability, political value and cost, which they expressed in the data gathering interviews. It is also interesting to notice that, similarly to what was revealed in tables 1 and 2, the interoperational flow seems to take precedence over the others in terms of value. However, the experts from the business field hint at their having a larger presence in the public network management than what was perceived by the CIOs; and the only item disregarded as important was the need for citizens to be qualified to use e-government applications for them to be fully satisfied with the e-service, in opposition to what the literature stated.

According to the next expression (Canós and Liern, 2004), the similarity of each Municipality with the ideal is measured using an aggregation index:

$$\mu_{\bar{I}}(P_j) = \frac{\sum_{i=1}^n \mu_{\bar{I}}^{x_i}(P_j)}{n}, \text{ where } \mu_{\bar{I}}^{x_i}(\bar{P}) = \frac{\text{long}([b_{x_i}^1, b_{x_i}^2] \cap [a_{x_i}^1, a_{x_i}^2])}{\text{long}([b_{x_i}^1, b_{x_i}^2] \cup [a_{x_i}^1, a_{x_i}^2])}$$

Municipalities with higher results are closer to the ideal, while Municipalities with lower figures are far from the ideal. Any scores that surpass the ideal are given a maximum score (5).

Table 4. Top 10% municipalities (order based on closeness to an ideal score).

Top 10%	Score	G2E	G2G	G2B	G2C
Ideal score		3,125	4,125	3	2,92
Municipality # 82	5,00	0,625	0,875	0,5	2,08
Municipality # 142	5,00	0,625	0,625	1,5	1,08
Municipality # 206	5,00	1,375	0,875	0,5	1,08
Municipality # 220	5,00	1,005	0,875	0,25	1,58
Municipality # 188	5,00	0,625	0,875	0,5	1,08
Municipality # 229	5,00	1,625	0,875	0	0,58
Municipality # 107	5,00	1,005	0,625	0,75	0,58
Municipality # 72	5,00	1,375	0,875	0,25	0,33
Municipality # 219	5,00	1,375	0,875	0	0,58
Municipality # 132	5,00	1,005	0,625	0	1,08
Municipality # 90	5,00	1,125	0,375	0,5	0,58
Municipality # 131	5,00	1,125	0,375	0,25	0,58

Source: own.

The first percentile's closest scores are shown in Table 4. Columns G2E to G2C show the difference from the municipality's values for that flow with the ideal. Not only all the municipalities in table 3, but a total of 26,72% of the municipalities (31) score the maximum, therefore being perfectly fitted with the ideal. For the sake of comparability, we have chosen the 10% that corresponds with the absolute best 10%, since all of them have the same closeness to the ideal. Therefore, if a municipality tries its best, it can be assumed that its stakeholders would be happy with the quality of their relationships. The reason for such a long "perfect" list could be that, although the answers could be biased because the respondents are interested in the well going of relations with their own field and the development of good practices in that regard, interactions in one flow will be better valued than in others, but different policies can complement themselves to fit the ideal in different municipalities (obviously, municipalities do not follow the same policies because they are autonomous).

Finally, Table 5 shows the bottom of the ranking. Even in the last positions, municipalities score a high closeness index, possibly because of the previous explained reasons. It is noticeable that two thirds of the municipalities in the list are also on table 2, which matches the findings of table 3. It is also outstanding the fact that most of the differences here are negative, while in table 4 they were all positive. The negative figures show the aspects in which these municipalities are lacking, which are mainly the G2C and G2B flows, in order to meet their stakeholders' requirements and expectations. The managers

of these municipalities should think why they do not fit the ideal and implement improvement policies in these targeted areas.

Table 5. Worst 10% results (order based on closeness to an ideal score).

Top 10%	Score	G2B	G2C	G2E	G2G
Ideal score		3,125	4,125	3	2,92
Municipality # 77	4,36	-0,125	-1,125	1,38	-1,17
Municipality # 204	4,34	-1,125	-0,625	1	-0,42
Municipality # 223	4,34	-0,875	-2,125	1	0,08
Municipality # 183	4,33	-0,375	-2,125	-0,12	-0,17
Municipality # 140	4,30	-1,125	-2,125	0	0,58
Municipality # 161	4,30	-1,625	-1,125	-0,12	0,33
Municipality # 108	4,24	-0,125	-1,125	1	-1,92
Municipality # 38	4,22	-0,375	-2,125	-1,12	0,58
Municipality # 109	4,22	0,125	-1,125	-0,87	-0,92
Municipality # 176	4,13	-0,875	-1,125	-1,12	-0,67
Municipality # 146	4,11	-0,125	-2,625	0,75	-0,92
Municipality # 116	4,03	-0,125	-0,625	-1,25	-0,92

Source: own.

4. CONCLUSIONS, LIMITATIONS AND FUTURE LINES OF RESEARCH

Fuzzy models have been used successfully in different scientific fields (engineering, finance, human resources, etc.). In this paper, we use fuzzy techniques to establish a ranking in municipalities according to the quality of their relationships with stakeholders and their level of interaction, both in an absolute manner and in comparison to an ideal score defined by experts.

Our findings expose suggestive evidence for the critical role of good governance in overcoming the networking challenges and realizing transparency and integration to achieve successful e-government strategies. All in all, the best managed flow is that of interoperability, which makes sense since it means to start at one's backyard first. On the other hand, citizens should be required to learn to use these e-government applications, being the PSO the one making an effort to make their e-services accessible to everyone instead. Those municipalities that take care about relations and interaction with stakeholders seem to concentrate on both the internal stakeholders, while relations with public employees are less valued for the ones with the lowest scores. This suggests that listening and opening to public employees could be key for the development of a successful e-government strategy. The ones that have to improve some practices or policies to give a better service to different groups are also in need of developing a strategic mind set in regards to the information society, and revise their public service provision processes, since they are perceived as of less quality, maybe because of the lack of input and feedback from their stakeholders. In addition, when looking at the ideals set by the experts, it is better to overestimate than underestimate, since all of the best network managers are fitting the ideal situations. Those that show poorer scores are also among the municipalities that still have work to do to achieve the ideal, especially in terms of transparency and openness to external stakeholders. Public managers should consider this when formulating their e-government relational strategy.

Our results are of interest not only for Spanish PSOs, but also for other countries where the need for communication, cooperation and transparency are strategic requirements. However, these results are mostly nation-dependent, which underlines the importance of conducting cross-cultural or cross-national research. Finally, the narrow number of experts consulted could be considered as a limitation, although the technique does not call for a large number of people to construct the ideal.

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