IDENTIFYING MOTIVATION OF THE LOCAL GOVERNMENTS TO IMPROVE THE SUSTAINABILITY TRANSPARENCY*

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Abstract

This paper examines the sustainability transparency of governments, i.e., the disclosure of information on the sustainability of their actions. To do so, we identify contributory factors to the online disclosure of environmental, social, economic and general information by local governments in Nordic countries. Linear regression analysis was used to identify factors influencing the online dissemination of government information on sustainability; a factor analysis, as a precursor to linear regression, led us to reduce 14 explanatory variables to four factors: financial risk, demography, professional qualifications and local government resources.

The results obtained show that local financial priorities have a greater impact on the sustainability-related content of governmental websites than does concern for the needs of the population. Furthermore, an organization's disclosure of its financial risks, together with greater awareness of stakeholders' demands, could promote transparency in the field of environmental, social and economic sustainability, while local demographic characteristics could foster the publication of information on environmental sustainability.

Keywords: environmental, development, sustainability, local government, transparency, explanatory factors.

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* **Acknowledgments:** This study was carried out with the assistance of a research project funded by the Regional Government of Andalusia (Ref. P11-SEJ-7700) and that of two projects funded by the National Research Plan, Nos. ECO2010-17463-ECON and ECO2010-20522-ECON.

1. Introduction

The sustainability of governmental actions is a current issue of great concern in research into the online communication between governments and citizens. Various international organizations (European Union, 2011; USAID, 2008) have recommended that governments should inform citizens about the sustainability of their actions in environmental, social and economic areas. One of the most recent statements made in this respect was by the IFAC (2013b) in its recommendations to the G20 leaders concerning the promotion of accountability and sustainability through the adoption of international standards and integrated reporting. Furthermore, there is growing interest among stakeholders regarding the sustainability of public services, together with greater concern among public entities to enhance public confidence in them, by publishing details of their sustainability commitments (IFAC, 2013a).

Most previous studies have focused on analyzing the role of government websites as tools for information disclosure (Gandía and Archidona, 2008), especially financial information (Cárcaba García and García-García, 2010; Gallego-Álvarez *et al.*, 2010). In contrast, insufficient attention has been paid to the dissemination of information on governmental commitments to sustainability and, particularly, to the factors that may enhance such commitments by local governments. Indeed, the lack of empirical research in this area means that much remains to be examined concerning the dissemination of information on the sustainability of government policies (Guillamón *et al.*, 2011). Based on the international pronouncements (IFAC, 2013b) and previous academic studies (Dumay *et al.*, 2010; Guthrie *et al.*, 2010), we study the question of sustainability transparency, defined as the online publication by local governments of information regarding the sustainability of their actions, for the general awareness of the stakeholders.

The aim of this paper is to contribute to our understanding of the factors that may favor greater transparency in local governments' actions with respect to sustainability. To do so, we analyze the information provided on the websites of local governments in Nordic countries, performing a statistical analysis of its relation with 14 variables, divided into socio-demographic and economic-financial variables. Specifically, we tested whether these local governments publish on their websites the indicators recommended by major international guidelines for sustainability reports (social, economic and environmental). In this analysis, we calculated transparency indices, which were taken as the dependent variables for our study. In this study, governments that disclose more information about sustainability are considered more transparent, and those publishing less information in this respect, less transparent.

This article is divided into five sections, including the introduction. The next section presents theoretical arguments about the use of web pages and online communication to disclose information on government sustainability. This section provides the conceptual framework for our empirical study. In the third section, we explain the rationale for our sample of local governments and for the choice of variables, and

defend the appropriateness of the statistical tool employed. The fourth section then discusses and analyses the empirical results obtained. The fifth and final section is dedicated to presenting the conclusions drawn from these results.

2. The use of websites and online communication concerning governmental sustainability

Bertot *et al.* (2010) and Pina *et al.* (2010) observed that e-government and the use of websites enable citizens to take a more active role in public affairs, through greater transparency, as they can be informed about the activities of public bodies and their contribution to social and economic development, a key aspect of governmental sustainability.

This interest in the communication of sustainability information has led to the publication of international guidelines for the disclosure by public bodies of their commitments on sustainability. The main guidelines have been developed by AccountAbility (2008) and the UNGC (2009), but the most significant is the document published by the Global Reporting Initiative (GRI, 2006, 2013), and specifically for public administrations, the 'Supplement for Public Agencies' (GRI, 2010).

According to Guthrie and Farneti (2008) and Mussari and Monfardini (2010), few empirical or theoretical investigations have been conducted into governmental practices regarding sustainability reporting by public organizations and how it can be managed. Various theoretical bases may be proposed to justify the implementation of sustainability-promoting practices, but they are generally addressed in terms of Legitimacy Theory (LT) (Marcuccio and Steccolini, 2009) or of Stakeholder Theory (ST) (Deegan and Unerman, 2006). LT observes the actions taken by managers, usually through information disclosure, aimed at changing perceptions of government in order to increase the legitimacy of its actions and existence. According to ST, the long-term existence of an organization needs the support and approval of its stakeholders (Liu and Ambumozhi, 2009). According to LT, poor performance by an entity may oblige it to disclose more information, in order to explain these results (Marcuccio and Steccolini, 2009). Under ST, different groups of stakeholders and their demands may have an impact on a local government's behavior, pressuring it to provide information.

Previous research has shown that LT and ST may provide an appropriate theoretical framework to explain the behavior of governments in relation to transparency, as an essential element of accountability. Deckmyn (2002) considers transparency a starting point in building public understanding, participation and involvement. From a cultural perspective, Curtin and Meijer (2006) believe that the relationship between transparency and legitimacy should be considered, due to the changing environment, in order to ensure success, survival and resources. Accordingly, and taking into account the aims of this paper, we believe the selection of LT and ST may be useful, first, as a conceptual basis on which to select possible explanatory variables, and second, to empirically test their usefulness for explaining the level of transparency by governments.

In local governments, high levels of debt and deficit often result in financial crisis. In such a situation, to maintain or restore legitimacy, or in response to the demands and needs of stakeholders, governments could become more transparent about the sustainability of their actions, as suggested by Marcuccio and Steccolini (2009) on the basis of LT and ST. Therefore, it is interesting and timely to study whether certain factors could favor governments' interest in disclosing information about the sustainability of their actions (Marcuccio and Steccolini, 2009; Navarro *et al.*, 2010).

However, these two theories are not without criticism. In their empirical study Campbell *et al.* (2003) demonstrated the limitations of the traditional theories supporting information disclosure, due to the diverse perceptions of those responsible and the variety of channels of communication available for the disclosure of information. Campbell *et al.* (2003) and Deegan (2002) concur that although LT may explain, in part, the motivations for disclosing information about sustainability, it does not fully account for the performance of organizations in this area. Moreover, Curtin and Meijer (2006) highlighted several weaknesses: few citizens have access to information and those who do, face an excess of it. Putting too much information in websites may even have an adverse effect, encouraging policymakers to maintain strict procedures and avoid innovative solutions or raising stakeholders' hopes.

Stakeholder theory, too, has been called into question as a theoretical framework justifying the disclosure of sustainability information because, as shown by Elsakit and Worthington (2012), many studies have demonstrated the existence of a gap between the levels of information disclosed by organizations and its usefulness to stakeholders.

To conclude this section, we define the scope attributed to the term 'sustainability transparency' in the context of this empirical study. In accordance with international pronouncements (CIPFA, 2007; European Conference on Sustainable Cities and Towns, 2004; European Union, 2011; IFAC, 2013a, 2013b; USAID, 2008) and previous academic studies (Dumay *et al.*, 2010; Guthrie and Farneti, 2008; Guthrie *et al.*, 2010), sustainability transparency is viewed as the online disclosure of information concerning the sustainability of the actions of local governments, in order to keep stakeholders well informed.

3. Empirical study of local governments in Nordic countries

The aim of this research is to study information dissemination with respect to sustainability in the field of local government, identifying explanatory factors for levels of disclosure regarding economic, social, environmental and governance issues. The empirical analysis carried out to achieve this goal is based on the following assumptions, based on previous research, which may be viewed as the pre-study hypotheses. On the one hand, that governments are motivated to legitimize their actions before citizens; secondly, that local governments enjoy greater proximity to citizens and address a larger number and a greater diversity of stakeholders; thirdly, that there are initiatives to standardize the content of information on sustainability; and finally, that

local government websites constitute an important instrument for communicating with stakeholders.

3.1. Sample selection

We analyzed the websites of the 16 most populous local governments in Denmark, Finland, Sweden and Norway (4 cities per country). The municipalities studied are sufficiently homogeneous as to ensure the representativeness of their joint analysis, for several reasons. First, they all present a comparable degree of awareness of sustainable development and an interest in the use of e-government. In fact, all of them except Odense and Uppsala have signed the Aalborg Charter (European Conference on Sustainable Cities and Towns, 2004). Second, the countries in which these local governments are located were analyzed because they make special efforts to promote corporate social responsibility (Neamțu, 2012), and to incorporate diverse aspects of sustainability in their regulations. Third, another similarity among the local governments selected is that the Nordic countries have been influenced both by the style of public administration of southern Europe and by that of the Anglo-American countries. Two outstanding features of these Nordic countries are the role played by stakeholders in the promotion of public policies, as evidenced by their label 'corporatist state' and their more pragmatic view of public management reforms (Navarro and Rodríguez, 2011).

The sixteen cities selected are those with the highest population in each of the four countries. A larger sample size would have enriched the results, but the necessary data for statistical analysis are not available for other cities. Nevertheless, the cities studied, apart from reflecting the variety present in these countries, represent over 25% of their total population.

The size of our sample (16 local governments) was considered sufficient for us to obtain robust, consistent results in support of the conclusions drawn, for three reasons. First, as corroborated by many specialists in statistical analysis (Gnanadesikan, 1997; Hardle and Simar, 2012; Koch, 2013), in the case of samples similar to ours (a limited number of municipalities that are large in terms of the population size used in previous studies), factor analysis is a reliable tool for establishing correlations among the quantity of variables like that used in this study because this approach is sufficiently powerful to reflect the latent variables in the population. Second, as shown in section four, the two models obtained are in fact statistically significant, with R^2 values of 0.572 for model 1 and 0.743 for model 2. Third, the same methodology has been used in previous researches for similar samples of local governments, obtaining comparable results (Warner and Hebdon, 2001).

Likewise, according to Cárcaba García and García-García (2010), Gallego-Álvarez *et al.* (2010), and Pina *et al.* (2010), municipalities with large populations are the most appropriate for the purposes of our research, because they have more resources with which to develop technological initiatives and their policymakers are often more receptive to communicating with stakeholders via the Internet and to promoting e-government.

3.2. Research methodology

Linear regression analysis was used to identify factors influencing the online dissemination of government information on sustainability. This tool is widely used to explain the influence of certain variables; see, for example, previous studies on information disclosure such as Gallego-Álvarez *et al.* (2010), Gandía and Archidona (2008), García-Sánchez *et al.* (2013), and Liu and Ambumozhi (2009), who have used this same methodology to identify the explanatory factors that could determine online levels of disclosure by different types of public agencies.

However, the sample size available and the number of variables considered led us to develop factor analysis as a precursor to linear regression analysis. Factor analysis is generally accepted by specialists in the field as an appropriate statistical method for sample sizes similar to that used in this.

3.2.1. Explanatory variables

Based on LT, ST and the arguments set out in Section 2, as well as on previous studies of factors that may influence information disclosure (Marcuccio and Steccolini, 2009), we selected fourteen variables that could favor the disclosure of sustainability information, grouped into two categories: eight socio-demographic and six economic-financial variables.

Beginning with the socio-demographic variables, and in accordance with the postulates of ST, we find that population size is one of the most commonly used variables in studies of information disclosure (Debreceny *et al.*, 2002; González *et al.*, 2011). For Guillamón *et al.* (2011), population size has a significant positive impact on transparency: firstly, because larger municipalities manage larger budgets and are subjected to greater pressure; and secondly, because they require technical and human resources that are beyond the reach of smaller municipalities.

Taking these considerations into account, we selected as potential explanatory factors eight variables related to the socio-demographic characteristics of the population:

- Total resident population, as an indicator of municipal size, in the assumption that larger cities will have greater information needs.
- (2) Population density: if population size is a key factor in information disclosure, then areas with a higher population density will make greater demands for information.
- (3) Proportion of dependent population (aged less than 20 years or over 65 years). This group has specific demands for information on sustainability, and we assume that the larger the total population, the larger the number of dependents.
- (4) Unemployment rate.
- (5) Percentage of immigrant population. This group has specific needs for information on sustainability, and we wish to determine whether the existence of a larger or smaller immigrant population is relevant to information disclosure.
- (6) Number of students in higher education. According to González *et al.* (2011), one of the factors to be taken into account in measuring the quality of life in a

municipality is the education level of its inhabitants. In previous studies (Benito *et al.*, 2010) this factor has been shown to be determinant in municipal efficiency.

- (7) Proportion of homes with access to internet, as an indicator of the population's greater or lesser capacity to access the information disclosed on the Internet. Few previous studies (Pina *et al.*, 2010) have addressed the relationship between information disclosure and Internet access.
- (8) Proportion of jobs in the provision of ICT services, we believe that the existence of a higher proportion of skilled professionals in technology-related industries could improve the availability and quality of the information provided online, as well as enhance access to this information and facilitate its updating.

With respect to economic-financial variables, LT and the findings of previous studies justify the selection of six variables of this type. Alt, Lassen and Shanna (2006) included municipal deficit as an explanatory factor of fiscal transparency, considering that a rising level of deficit tends to be inversely related with transparency. Conversely, a high degree of fiscal transparency is associated with lower levels of deficit (Guillamón *et al.*, 2011). To measure the deficit, we used two variables:

- (9) Municipal debt per capita (Benito *et al.*, 2010), and
- (10) The deficit of the municipal budget (Caba-Pérez *et al.*, 2008; Guillamón *et al.*, 2011).

Other variables that could be explanatory factors of governmental information transparency on sustainability are related to revenue structures. In this respect, Piotrowski and Van Ryzin (2007) concluded that income is positively related to fiscal transparency. Thus, two new variables were included:

- (11) Proportion of local taxes to municipal revenue. According to Guillamón *et al.* (2011), municipalities with higher taxes issue more financial information and are more transparent.
- (12) Financial autonomy – in this paper, financial autonomy is defined as the municipality's ability to generate revenue, apart from that received from other public administrations. Authors such as Guillamón *et al.* (2011) argue that municipalities which receive larger transfers publish more financial information and are more transparent.

Finally, Guillamón *et al.* (2011) find evidence of a link between levels of transparency and levels of municipal spending; for this reason, we have included two variables that allow us to test this relation:

- (13) Municipal spending per capita, and
- (14) Proportion of municipal employees in health and education.

The values of the fourteen variables were obtained from the Eurostat Urban Audit database. Other variables used in previous studies are not included here due to the non-availability of data for local governments in Urban Audit for these cities.

3.2.2. Dependent variables

The dependent variable used is the level of disclosure on sustainability in local government websites, measured using a questionnaire consisting of 75 items and divided into four blocks (Annex I). The structure and content of the questionnaire are based on the G3 recommendations of the Global Reporting Initiative (GRI, 2006) complemented with the revised version of the sector supplement for public agencies (GRI, 2010). We also included an additional item inquiring whether the local government published a sustainability report. Currently, the most widely used guide on the disclosure of sustainability information is issued by the GRI, and its relevance in the field of local government is highlighted in the recently published sustainability reports on Dublin and Warsaw. GRI is considered the leading guide in the field of sustainability reporting, as reflected in the content of the rules published by the governments of the Nordic countries sampled.

Agreeing to authors such as Crognale (2009) and Dumay *et al.* (2010), the GRI model has had the greatest impact to date, and it is regarded internationally as a standard information guide to the sustainability of public bodies. Some studies have used questionnaires based on the GRI guide, similar to that employed in this work (García-Sánchez *et al.*, 2013; Navarro *et al.*, 2010; Navarro *et al.*, 2014), which facilitates the comparison of results. Accordingly, the GRI guide is used in the present study as a basis for drafting the GRI questionnaire, excluding the items that are specific to private companies and do not apply to local governments, and including other appropriate items that are relevant to local administration, such as borrowing capacity. In this respect, we followed the recommendations and criteria of bodies such as the Audit Commission (2007) and AccountAbility (2008).

In our questionnaire (75 items), the information blocks are structured to reflect the different dimensions of government sustainability, as follows: Block 1 – general information on sustainability (28 items), Block 2 – economic information (24 items), Block 3 – social information (10 items), and Block 4 – environmental information (13 items).

To score the results, a dichotomous variable was defined, taking the value 1 if the information for the item in question is published on the website and 0 otherwise or if it is not easily accessible. One of the most widely used techniques for studying the information issued by public and private entities is that of content analysis, which awards a score of 1 if the information is disclosed and 0 otherwise. This technique provides a numerical indicator of the amount of information issued in medium in question, and has been applied in many previous studies (Gallego-Álvarez *et al.*, 2011; Navarro *et al.*, 2014).

Therefore, the dependent variables are the index for the cities in each of the four questionnaire sections (general, economic, social and environmental information), obtained by summing the values (1 or 0) obtained for each item (Annex I). We also derived a total index of the information disclosed, by awarding an equal weight (25%) to each information block, taking into consideration the lack of consensus about factor weighting in the composition of such indices (Avshalom Madhala and Shavit, 2008).

3.3. Statistical methods

The empirical results obtained were subjected to multiple linear regression analysis. In this study, there are five dependent variables, corresponding to the index of each of the four questionnaire blocks (general, economic, social and environmental information) plus the total index of information disclosure. The explanatory variables are the factors represented by the 14 independent variables together with a dichotomous variable indicating whether governments have published a sustainability report (1) or not (0).

In addition, the ratio between the number of explanatory variables and the number of cities, as well as the possible existence of correlations between the explanatory variables, led us to conduct a factor analysis as a precursor to linear regression analysis. This allowed us, on the one hand, to reduce the 14 explanatory variables to a smaller number of independent variables or factors and, on the other, to avoid or correct the possible multicollinearity among variables, as the new factors derived are linear combinations of the original variables and are independent of each other. This methodology was applied under conditions similar to those used in the study by Rencher and Christesen (2012), or more specifically to local governments by Warner and Hebdon (2001). To determine the suitability of applying factor analysis, we performed the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity. The results of the latter showed that factor analysis could be performed. As discussed above, the use of this method is appropriate for sample sizes and numbers of variables such as those used in the present study, allowing us to obtain reliable and robust results.

4. Results of the empirical study

4.1. Levels of disclosure

First, it is noteworthy that only three of the local governments analyzed (Helsinki, Trondheim and Turku) present formal sustainability reports. In none of the countries in the sample it is obligatory for public bodies to develop sustainability reporting, as it is also the case in the rest of Europe. However, the fact that no sustainability report is published does not necessarily mean that information is not divulged in this area; thus, a general level of disclosure of 47.5% of the questionnaire items was identified (Annex I).

In relation to the GRI guidelines, the level of disclosure could be classed as 'medium'. For the questionnaire items as a whole, the highest level of disclosure concerned general information (54.5%), followed by environmental and social information (51.9% and 43.8% respectively). Economic issues are less widely reported (38.5%).

4.2. Factors obtained

The results of the factor solution and the variable loads for the clustering of the variables into four factors are shown in Table 1. This clustering, for each of the four factors, was carried out taking into account the weight of the factor loadings. Each

variable was included in the factor in which its weight was greatest. 82.5% of the total variance is accounted for by the four factors.

After analyzing the variables grouped according to factor analysis, we interpreted the content and significance of the resulting four factors:

- Factor 1: Financial risk. This factor is associated with inadequate resources and includes variables 6, 9, 10 and 14, since its evolution can influence the finance capability/needs of local government to meet its commitments and thus the viability of its projects. Less tax revenue and less autonomy (-0.8929 and -0.685) are associated with a greater risk of financial failure. Regarding the budget deficit, the positive parameter (+0.921) should be interpreted taking into account that all of these local governments present budget deficits, and so the higher the deficit, the greater the financial risk. In addition, the more households have access to Internet, the greater the technological investment needed and thus the greater the risk of financial insufficiency (+0.803).
- Factor 2: Demography. This factor includes the population characteristics reflected in variables 1, 3 and 11. This group reflects the possible impact of population size and density on the information needs of stakeholders, and thus could also be affected by ICT jobs (+0.938, +0.812 and +0.853).
- Factor 3: Professional qualifications. This factor includes unemployment rates and the level of immigrant population (+0.936 and +0.722), which could be proxies for lower educational levels in the population. The number of university students has a negative sign in this factor, corresponding to higher professional qualifications (-0.732), and this, too, could affect the information needs of stakeholders.
- Factor 4: Local government resources. This factor is representative of a local government's capacity to deliver services to its citizens. It includes, on the one hand, municipal spending and the percentage of public employees in the areas of health and education (+0.644 and +0.624), which may reflect the ability to provide services. On the other hand, this factor reflects municipal debt and the proportion of dependent population (-0.608 and -0.640), which could both have a negative impact on the ability to provide services.

In summary, factors 2 and 3 would be more closely associated with ST, since they include issues strongly related to demands presented by the population, and both factors could reveal whether there is interest among local governments in providing more information, in response to the demands of one of the principal stakeholders (the local inhabitants). On the other hand, factors 1 and 4 are more closely related to LT, as they include financial issues relevant to the survival of the organization. Information on these questions reveals the use made by the government of public resources, and is thus an indicator of governmental effectiveness and efficiency, which if positive would strengthen the government's legitimacy in the opinion of its stakeholders.

Table 1: Matrix of rotated factors

Variable	Component			
	Factor 1	Factor 2	Factor 3	Factor 4
1. Total resident population	-.120	**.938**	.168	-.115
2. Population density	.062	**.812**	.162	.337
3. Proportion of dependent population to active population	-.122	-.628	.033	**-.640**
4. Unemployment rate	.099	.028	**.936**	.046
5. Proportion of immigrants to municipal population	.092	.591	**.722**	.082
6. Number of students in higher education	-.424	-.116	**-.732**	.447
7. Proportion of homes with access to the Internet	**.803**	.099	.296	.068
8. Proportion of jobs in the provision of ICT services	-.246	**.853**	.002	-.137
9. Municipal debt per capita	.110	.010	.106	**-.608**
10. The municipal budget deficit	**.921**	-.050	.193	.105
11. Proportion of local taxes to municipal revenue	**-.829**	.228	.363	.068
12. Financial autonomy	**-.685**	.390	-.369	.156
13. Municipal spending per capita	.604	.390	.144	**.644**
14. Proportion of municipal employees: health and education	.484	-.389	.233	**.624**

4.3. Regression models

This statistical analysis produced two regression models, as shown in Table 2, one for the total index (sum of the four individual indices of the questionnaire sections) and one for the index of environmental information. We did not find any linear relationship between the explanatory variables nor, with respect to the individual sections, between the levels of disclosure of general, economic and social information blocks.

Table 2: Linear regression

Independent variables	Model 1 Dependent variable: Total index	Model 2 Dependent variable: Environmental information
(Constant)	**0.440** (0.000)	**0.474** (0.000)
Factor 1: Financial risk	**0.058** (0.026)	**0.131** (0.002)
Factor 2: Demographics	0.033 (0.163)	**0.095** (0.015)
Factor 3: Professional qualifications	-0.004 (0.880)	-0.029 (0.438)
Factor 4: Local administration resources	-0.045 (0.078)	**-0.098** (0.015)
Sustainability report	**0.170** (0.021)	**0.244** (0.024)
Other statistics		
F-Statistic	5.016 (0.015)	9.657 (0.001)
Adjusted R^2	0.572	0.743

Models 1 and 2 show that the publication of a sustainability report is positively associated, in general, with a greater volume of information disclosure regarding the sustainability of government policies. Therefore, although Larrinaga and Pérez (2008) concluded that the absence of such a report does not mean that sustainability information is not disclosed, our results corroborate the view that the fact of preparing and publishing reports can contribute to a higher level of governmental sustainability information being disclosed. Nevertheless, as explained in section 2, a low level of information disclosure does not necessarily imply the absence of internal actions by governments to improve the sustainability of the organization.

Factor 1 (financial risk) is positively related to both the overall volume of information published (model 1, +0.058) and to the dissemination of information on environmental sustainability (model 2, +0.131). On the other hand, factor 2 (demographics) has a positive association with the disclosure of environmental information (model 2, +0.095), although it produces no significant effects on the overall volume of information published (+0.033). With respect to factor 3 (professional qualifications), we found no statistical evidence of a relationship with any of the variables explained. In contrast, as shown in model 2, factor 4 (local government resources) presents an inverse association with the level of disclosure of environmental sustainability information (-0.098).

Thus, the postulates of LT appear to influence more managers' behavior with respect to transparency rather than those of ST, since the most influential variables (financial risks and resources) are associated with the survival of the local government, and not with the demands of stakeholders in terms of their demographic characteristics, despite their influence on environmental sustainability.

However, these results could also be interesting to assess the criticisms addressed in previous studies concerning the explanatory power of LT and ST as a theoretical framework. In the case of LT, the absence of a specific association between factors 1 and 4, on the one hand, and the disclosure of social and economic information, on the other, could be due to different perceptions within government regarding the accountability approach, or differences in the availability of communication channels within local government, which would corroborate the criticisms of Campbell *et al.* (2003) and Deegan (2002). As regards ST, the absence of a statistical relationship between factor 3 and the disclosure of information on sustainability (environmental, social, economic and generic) could contribute to the debate on the criticisms of authors such as Elsakit and Worthington (2012). Moreover, the absence of a specific association between factor 2 and the disclosure of economic and social information also supports criticisms of the usefulness of ST to explain the behavior of local governments in relation to information transparency on sustainability.

In any case, the overall volume of government sustainability reporting increases when governments publish their commitments to sustainability via sustainability report, and also when their accounts reflect the presence of greater financial risks. These results contrast with the conclusions of some previous studies on financial transparency in local government (Alt *et al.*, 2006; Guillamón *et al.*, 2011), according to which high deficits are associated with less transparency.

According to our results, however, the higher the level of resources (factor 4) the less information is published on environmental sustainability. However, and in the same line as Gallego-Álvarez *et al.* (2011), our results show that population size and density (demographic characteristics) can favor information transparency regarding environmental sustainability.

In addition, corroborating Alt *et al.* (2006), our results suggest that high levels of government debt can adversely affect the disclosure of environmental information.

We obtained no statistical evidence of any influence of the number of students in higher education on the dissemination of information on sustainability, although Benito *et al.* (2010) and González *et al.* (2011) have reported this variable to have a positive impact on information transparency. Likewise, our results do not support the hypothesis that spending per capita favors the publication of general, economic or social information; Guillamón *et al.* (2011), on the other hand, concluded that this variable did have a positive influence on transparency.

5. Conclusions

Our empirical results show that the majority of the local governments analyzed do not publish sustainability reports online referring to the organization as a whole. However, we have obtained empirical evidence that the publication of these reports, by itself, is associated with managers being more motivated to publish information on sustainability. Similarly, their websites contribute to the transparency of information on sustainability, albeit only moderately, as their content is just half of the level recommended in the GRI guidelines, and the information disseminated is scattered among different departments, with no pattern of coordination.

From a political standpoint, these results suggest that local governments could improve sustainability transparency by coordinating the efforts of their heads of departments. Accordingly, it could be useful to organize joint work sessions aimed at developing sustainability information to be published in a single Sustainability Reporting document, in an endeavor in which all responsible in the government team would motivate each other and become involved through active, properly planned participation.

Overall, our results show that local governments' interest in the transparency of sustainability reporting is greater for generic and environmental issues than for economic and social questions. To properly interpret our findings, it should be taken into account that the level of information disclosure on governmental transparency may not coincide with the efforts actually made by the organization. Indeed, our results show that the efforts made in the internal policies do not always involve a greater commitment to transparency. This finding reveals an opportunity to improve the level of sustainability information provided, by means of internal staff communication campaigns to raise awareness and motivation about the benefits of sustainability transparency from the standpoint of the future viability of the services provided.

Although economic information is the type that is least often disclosed, online transparency on sustainability is favored more by the economic and financial characteristics (factor 1) faced by governments than by the socio-demographic characteristics of their population (factor 2). In accordance with LT, our empirical results show that the existence of financial risks in local governments can motivate them to increase transparency on sustainability, while demographic characteristics could contribute to their disclosing more information on environmental sustainability.

From a political standpoint, our findings indicate that all these financial risk variables could be emphasized by governments to motivate managers toward greater

transparency in their reporting of sustainability policies, by establishing communication channels within the organization to identify financial risks that could negatively impact on the institution. Moreover, policymakers' concern for the financial viability of the municipality tends to outweigh their concern for the needs of the population as regards online transparency on the sustainability of public policies. We found no empirical evidence to support the specific influence of financial risks or of government resources on the disclosure of economic and social information.

However, demographic variables (factor 2) were positively associated with greater online information transparency on environmental sustainability, and so, according to ST, this factor could favor this transparency. Politically, these findings suggest that transparency on environmental sustainability would be more easily achieved by large municipalities with a high population density. This transparency would also be favored by government policies to encourage the use of the Internet or through the creation of formal and informal networks of collaboration, especially those focusing on the most vulnerable populations, favoring their communication, participation and ability to relate to social actors. Nevertheless, demographic variables are less readily controlled by local governments and, therefore, their usefulness as an instrument for promoting transparency is more limited than that of financial variables. Indeed, our results do not corroborate the existence of a relationship between demographic variables and generic, economic or social sustainability.

We found no empirical evidence of the influence of professional qualifications on the disclosure of any type of sustainability information. This fact, together with the scant influence of the demographic variables, suggests that local governments could improve their level of sustainability transparency by paying special attention to the information demands of stakeholders within society.

In the same line, we found no evidence of a positive effect of the government resources (factor 4) on the overall level of online information disclosure on sustainability. Indeed, our results show that the shortage of resources in local government could enhance the disclosure of information on environmental sustainability. Moreover, greater municipal debt per capita and a higher proportion of the dependent population may also result in less online transparency of environmental sustainability reporting. In consequence, the efforts of local governments to reduce debt per capita, as well as other positive effects, could improve transparency on environmental sustainability, although we found no evidence of any impact of such measures on transparency regarding economic sustainability. However, the results obtained do lead us to believe that the larger the dependent population, the more local governments should focus their communication policies on the services available, the assistance that can be obtained, the resources available, from institutions or otherwise, and on promoting a greater understanding of networks for citizens' collaboration.

Taking into account ST principles, policymakers could stimulate the interest of managers in this question through initiatives aimed at meeting the demands of stakeholders according to their specific characteristics (young people, pensioners, students,

the unemployed, immigrants, etc.), and making use of opinion surveys, analyses of complaints and suggestions presented, and meetings with associations to encourage participation by the public.

In summary, from the standpoint of political implications, we have identified certain actions and instruments that local governments could employ to raise levels of disclosure of sustainability information, such as the coordinated development of a Sustainability Report compiling information regarding the organization as a whole. Moreover, internal communication campaigns should be carried out to provide general information about financial risks, and staff training programs should be provided regarding the specific information requirements of certain population groups.

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Annex I

Information	Total	%
BLOCK 1: GENERAL INFORMATION ABOUT SUSTAINABILITY	244	54.5
1. Strategy and Analysis	28	29.2
1. Is a statement made by the Head of Government on the importance of sustainability for the LG and its strategy?	8	50.0
2. Does this statement set out priorities, strategies and key factors for the short-medium term?	6	37.5
3. Does this statement address long-term trends relevant to priorities concerning sustainability?	5	31.3
4. Does this statement include events, achievements and failures during the period in question?	3	18.8
5. Does this statement include goals-oriented performance perspectives?	2	12.5
6. Does this statement include challenges and targets for the coming year and the forthcoming 3-5 years?	4	25.0
2. Organization Profile	84	65.6
7. Does the RG own trademarks?	12	75.0
8. Are different areas clearly defined?	16	100.0
9. Do RG officials have area-defined responsibilities?	16	100.0
10. Is the situation of the regional seat of government stated?	14	87.5
11. Is a statement made of the number of countries in which significant activities are carried out?	9	56.3
12. Is the number of employees stated?	12	75.0
13. Have significant changes taken place in the RG structure or size?	3	18.8
14. Has the RG been awarded prizes or other recognition during the period in question?	2	12.5
3. Information Parameters	82	85.4
15. Is a statement made of the period corresponding to the information supplied?	13	81.3
16. Is the date of publication of this information stated?	13	81.3
17. Is the presentation frequency of this information stated?	16	100.0
18. Is there a liaison person for questions concerning the information supplied?	14	87.5
19. Does the information supplied include dates of specific interest for suppliers and users?	15	93.8
20. Is priority assigned to the aspects addressed in the information supplied?	11	68.8
4. Government Undertakings and Stakeholder Participation	50	39.1
21. Is there a given person or government body responsible for defining organization strategy?	14	87.5
22. Does the chief official hold any other public or private post?	1	6.3
23. Do there exist works' committees or workers' representatives?	10	62.5
24. Are the stakeholders included in the information supplied?	15	93.8
25. Does the information presented include the Government's programme?	5	31.3
26. Is a statement made of the Government's programme commitments that have been fulfilled?	2	12.5
27. Does the governing party have an absolute majority?	3	18.8
28. Are stakeholder selection and identification criteria included in the information supplied?	0	0.0
BLOCK 2: ECONOMIC INFORMATION ABOUT SUSTAINABILITY	148	38.5
5. Economic Indicators	-	-
29. Is an expenditure forecast/beneficiary population published?	3	18.8
30. Is a revenue forecast/beneficiary population published?	2	12.5
31. Are revenues transferred from other public administrations/total revenues published?	6	37.5
32. Is the level of fiscal pressure published?	10	62.5
33. Is gross expenditure, detailed by type of payment, published?	14	87.5
34. Is gross expenditure, detailed by financial classification, published?	11	68.8
35. Is capital expenditure, detailed by financial classification, published?	6	37.5
36. Is the cost of service provision published?	10	62.5
37. Is the mean payment period stated?	0	0.0
38. Is a statement made of current calls for tenders for the supply of goods or services?	0	0.0
39. Is the profile of contracting companies published?	6	37.5
40. Is a statement made of future calls for tenders?	0	0.0

Information	Total	%
41. Is the policy on internal promotion published?	1	6.3
42. Are staff training facilities published?	2	12.5
43. Is the Government's capacity for legal indebtedness made public?	11	68.8
44. Is a statement made of future financial risk?	0	0.0
45. Is a statement made of public assets and insured goods?	0	0.0
46. Is an audit report published?	11	68.8
47. Are data given on subsidies received?	5	31.3
48. Are the annual accounts published?	14	87.5
49. Is a report published on the accounts policy implemented?	14	87.5
50. Is a report published on the expenditure forecast?	6	37.5
51. Does the latter include medium-term perspectives?	4	25.0
52. Are the following key economic assumptions and forecast made public: GDP growth, employment, unemployment, inflation and rates of interest?	12	75.0
BLOCK 3: SOCIAL INFORMATION ABOUT SUSTAINABILITY	70	43.8
6. Social Indicators	-	-
53. Is the offer of services made public?	14	87.5
54. Is a statement made on expenditure incurred in the area of social issues?	9	56.3
55. Is a subsidies announcement made for business activities?	10	62.5
56. Is a statement made on pensions obligations to employees?	13	81.3
57. Are grants offers to neighbourhood associations made public?	2	12.5
58. Are offers of public employment made public?	8	50.0
59. Are grants offers to NGOs made public?	2	12.5
60. Are indicators of effectiveness and efficiency published?	11	68.8
61. Is information given on initial wage (when staff are hired)/local minimum wage?	1	6.3
62. Is information given on expenditure on local suppliers/total expenditure?	0	0.0
BLOCK 4: ENVIRONMENTAL INFORMATION ABOUT SUSTAINABILITY	108	51.9
7. Environmental Indicators	-	-
63. Is information published on the initiatives taken to alleviate the environmental impact of products and services?	13	81.3
64. Is the degree of reduction of the above impact stated?	10	62.5
65. Is a statement made of the direct consumption of energy obtained from primary sources?	6	37.5
66. Is a statement made of the consumption of intermediate energy?	6	37.5
67. Is a statement made of the actions taken to increase savings via conservation or increased efficiency?	13	81.3
68. Is information published on initiatives taken to promote products and services that are energy efficient or based on the use of renewable energies?	12	75.0
69. Is information published on reductions in energy consumption as a result of the above initiatives?	5	31.3
70. Is information published on the initiatives taken to reduce indirect energy consumption?	10	62.5
71. Is information published on reductions achieved by the above initiatives?	3	18.8
72. Is information published on the different sources of water supply employed, and the volume obtained from each source?	8	50.0
73. Is information published on the percentage and total volume of water that is recycled and reused in the community?	5	31.3
74. Is information published on the disposal of waste water by the community?	7	43.8
75. Is information published on the total and type of expenditure on environmental investment?	10	62.5
	570	47.5