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Promoting Online Transparency to Help Achieve the Sustainable Development Goals: An Empirical Study of Local Governments in Latin America

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Abstract: Although transparency on the sustainability of public services is an issue of urgent interest to both governments and academics, previous research in this area has mainly focused on developed European countries, and has paid insufficient attention to areas that are still developing, such as many Latin American countries. The aim of this study is to identify factors that promote transparency on sustainability by local governments in Latin America, in the view that greater transparency will help them meet the goals of the 2030 Agenda for Sustainable Development. Therefore, using content analysis and following the GRI guidelines, we analyze the economic, social and environmental information published on the websites of 200 large local governments in 18 Latin American countries. In addition, using linear regression and calculating the corresponding Spearman coefficients, we analyze the influence of idiosyncratic and systemic variables on the volume of information disclosed. Our findings show that certain factors—population size, education level, unemployment, the quality of legislation and political corruption—affect transparency on sustainability. The conclusions drawn from this analysis enable us to identify useful measures for enhancing transparency on sustainability, including the reform of transparency laws and the analysis and disclosure of citizens' information demands.

Keywords: sustainability information; transparency; sustainable development objectives; local governments; Latin American countries



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1. Introduction

In recent years, public administration reforms, sometimes termed Post-New Public Management, have been implemented to restore confidence in governments, by increasing the efficiency of service provision and improving the relationship with citizens [1,2]. In this process, as noted by Thussu [3] and Alcaraz et al. [4], information and communication technologies (ICTs) provide an important means of transforming management and increasing transparency, thereby enhancing communication between citizens and public officials. These reforms, together with the impact of the economic recession that began in 2008, have heightened public demand for information and strengthened concerns for sustainability. At the same time, there has been a significant change in society's views on development [5–8]. Worldwide, interest in the sustainability of public services is now acute due to the difficult socioeconomic situation caused by the present COVID-19 pandemic.

The International Monetary Fund (IMF) [9], United Nations (UN) [10] and the Economic Commission for Latin America and the Caribbean (CEPAL, or ECLAC in English) [11], among many international organizations, have recognized the need for government agencies to improve their sustainable development practices, and transparency is an essential element of this question. The 2030 Agenda [12], through the Sustainable Development Goals (SDGs), calls for global action in this area. Specifically, SDG 11, *Sustainable Cities and Communities*, highlights the need for local governments to provide basic services for citizens without compromising the future, while meeting other goals such as SDG 8, *Decent work and economic growth*, and SDG 12, *Responsible Consumption and Production*.

In recent years, international organizations too have emphasized the need for public administrations to inform citizens about the management of sustainability in government actions [11,13–18], and have recommended that traditional government information, often focused on purely economic aspects, be supplemented with other reports on social and environmental issues [19–21]. Furthermore, the timeliness and interest of conducting further research into public agencies' disclosure of information on sustainable development is underlined both by public demand in this respect and by the conclusions of previous research [22,23], so transparency on economic, social and environmental aspects of public sector entities will contribute to the development of actions towards economic development objectives.

Although some studies have been conducted of the online disclosure of information on public sector sustainability, at different levels of government [4,24–29], in nearly every case the focus has been on developed OECD countries, mainly in Europe. Nevertheless, analysis of other geographic areas is also necessary, to reflect the global diversity of cultural contexts, legal frameworks and socioeconomic circumstances. All of these factors impact on public management, including that of the sustainability of public services [2,5,7,30–32].

This perceived research gap is addressed in the present study, in which we analyse the disclosure of information on sustainability, with specific reference to the situation in Latin American countries, in the understanding that improving public sector transparency will facilitate achieving the SDGs. The CEPAL-ECLAC has established its own strategy for the area and has held various meetings to review the progress made and the limitations encountered in working to implement the SDGs. CEPAL has also taken steps to promote the wider disclosure of information on sustainability [11,33]. In response, some countries in the region have adopted new regulations expanding access to public information [34]. As a majority of citizens are now making use of ICTs as a means of obtaining government information [35], we believe an analysis of the disclosure of online information on sustainability, with respect to the countries of Latin America, is both timely and of great interest [31,33,36,37].

In view of these considerations, our main study goal is to identify the factors that favor transparency on sustainability among local governments in Latin America, in line with the SDGs. To do so, we study the economic, social and environmental information published on the websites of 200 large local governments (LGs) in 18 Latin American countries. Analysis of the data obtained shows that certain factors—population size, education level and unemployment—influence transparency on sustainability and heighten the possible effect in this regard of some systemic variables, notably the quality of legislation and the degree of political corruption in the country. On the basis of these findings, we propose measures expected to promote the disclosure of information on sustainability by Latin American local governments.

2. Prior Research on Local Government Transparency on Sustainability, in Latin America and Elsewhere

Following its own prior initiative [10], the United Nations established the SDGs, according to the framework agreed upon in the 2030 Agenda [10,38] and the Paris Declaration [39], incorporating concerns for economic growth, social development and environmental impact. The SDGs, therefore, balance the three essential dimensions (economic, social and environmental) of sustainable development [40], providing a valuable roadmap to guide policy-making at the global level [33].

Reflecting growing demands by stakeholders for information, various international organizations have called on governments to publish information on their actions in the field of sustainability [9–11,13,41]. In response to these pressures, many government agencies now include references to social and environmental questions in their annual reports [2,4,31,42,43]. In this sense, sustainability, as defined by IFAC [17], combines the economic, social and environmental perspective. In this paper we consider this broad concept, although, in previous studies, financial sustainability was mainly observed.

At the same time, the governmental disclosure of sustainability-related information has attracted considerable research interest. Thus, many papers have recently been presented on information disclosure by the public sector, and especially by local and regional governments in Europe [6,19,25,28,36,43–46].

However, although an increasing amount of research is being conducted in this area, most studies have addressed the private sector, while our understanding of sustainability (including social and environmental aspects) and information disclosure in the public sector remains at an initial stage of development [47,48]. Among the studies that have been conducted, many conclude that public agencies often disclose insufficient financial information and that citizens require more information in this respect, as part of a new approach that also includes social and environmental information [5,19,20,30]. Moreover, most such studies have focused on the activities of local governments, mainly with respect to a single context and in the same country. This research confirms that reforms carried out within public administrations are influenced by their cultural, political and legal context [2,5,7,17,30–32,49]. However, some researchers have performed comparative analyses of local governments in different countries, and have reported that the explanatory variables of transparency about governmental sustainability (where social and environmental aspects were included) may depend on the administrative culture prevailing in the country (Anglo-Saxon, Southern European or Continental) [2,35,43,50].

As indicated above, to date most studies of transparency on sustainability (including economic, social and environmental aspects) have focused on countries with developed economies, and very few have considered the circumstances of less developed countries [7,51]. Chief among these are the following: Frias-Aceituno et al. [52], who considered 101 municipalities in Colombia, Spain and Portugal; Frías et al. [53], who studied 25 municipalities in Spain and Portugal, together with others in Brazil, Colombia and Mexico; and León [31], who examined 105 municipalities in Chile, Colombia, Mexico and Peru. These studies show that the factors influencing government transparency may depend on the cultural, socioeconomic and political context in each country. Moreover, they highlight the need for further research to determine how local governments in developing countries, such as those of Latin America, might improve their information disclosure on sustainability within the framework of the 2030 Agenda and the SDGs.

From a theoretical perspective, previous researchers have justified the study of transparency and sustainability policies in the public sector by reference to Stakeholder Theory and/or Legitimacy Theory. The first of these suggests that public officials act in response to the demands and expectations of multiple stakeholders [54,55], while the second holds that public policies seek to be consistent with the prevailing values in civil society [56].

However, in less developed countries the major concern is often that of achieving significant economic growth, and in consequence less attention is paid to the environment [57]. In the case of developing countries, therefore, Institutional Theory [58,59] may better explain the public provision of information, particularly as concerns sustainability. Under the premises of institutional theory, organizations respond to external pressure and adopt structures and practices that are considered legitimate and socially acceptable by other organizations in their field [60]. Fundamentally, therefore, the fact that organizations tend to conform with predominant norms, traditions and social influences in their external environment results in their structures and practices being largely homogeneous. In consequence, public agencies may adopt policies for the disclosure of information on sustainability according to different types of isomorphism [61]. In accordance with this theory, Latin American governments will promote the online dissemination of information on sustainability, or not, according to the pressures and demands in this respect perceived from donors and international organizations [62–65].

Reflecting the above considerations, the members of CEPAL [34] have agreed to adopt a joint, active strategy to achieve the SDGs of the 2030 Agenda [12], a task in which the transparency and sustainability of local governments is a factor of major relevance to SDG 11, Sustainable Cities and Communities. CEPAL itself has acknowledged difficulty in

acquiring sufficient information to monitor progress towards the SDGs and has accepted that the situation among the countries of the region is very heterogeneous, with each country acting according to its own priorities [11].

Accordingly, before undertaking an analysis of transparency on sustainability in Latin America, we must consider its socioeconomic context [2,5,30,32]. In terms of demographics, 25% of the population in Latin America are aged between 5 and 29 years [37], a factor that is directly relevant to citizens' information demands.

Also significant is the significant deterioration that has taken place in recent years in indicators of perceived well-being. This malaise is driven by mistrust of politicians and growing dissatisfaction with public services, a condition that was aggravated by the financial crisis that began in 2008 [66], and has been made acute by the COVID-19 pandemic. As the pandemic is causing an economic crisis, it can be deduced that it will also cause dissatisfaction of citizens with the behavior of politicians (an issue that should be studied in the future). According to the *Latinobarómetro* report for 2017, over 75% of citizens have little or no trust in their government, more than 20 points worse than the corresponding value for 2006. But ICTs would have to enhance transparency on the sustainability of public services, and this would play a major role in increasing citizens' trust in their governments [25,46,67–69].

In this context, both the OECD [70] and previous research studies in this field [2,19,31,71] have observed that very few studies have been conducted of transparency policies in Latin America. These factors underline the timeliness and interest of research aimed at achieving a better understanding of the influence of countries' cultural and socio-economic contexts on their policies for transparency on government sustainability.

3. Sample Selection

In this paper, the study sample is composed of large local governments (LGs) in Latin America. Our focus on this level of government is justified as follows. Firstly, the question of sustainability in the actions of these LGs is of particular interest due to the large volume of resources managed and the diversity of services provided, impacting directly on day-to-day lives. At the same time, these authorities are in reasonable proximity to the population, which enables managers to understand the demands of citizens and other stakeholders [25,36,72,73].

Furthermore, precisely because of their dimensions, large LGs must address more complex situations than their smaller counterparts [36] and the considerable size of the municipal budget sharpens the interest of managers in informing voters of the uses to which tax revenues are put [74]. Also relevant is the global trend towards living in large cities [75]. This is particularly evident in Latin America, where 90% of the population now lives in towns or cities [34].

Another advantage of our focus on large municipalities is that it provides sufficient homogeneity with which to compare our results with those of previous research in this field, in European countries [2,4,36,49,50]. Finally, and as observed above, this study considers the case of LGs in Latin America because previous research has highlighted the need to study the question of transparency on sustainability in this geographic area in particular; and, furthermore, because of the documented interest in better understanding the impact of administrative culture on the disclosure of economic, social and environmental information [7,25,30,31,76].

In determining the sample selection, our aim was to include sufficient cities to be representative of the variety present in Latin America. Accordingly, we selected the 200 largest LGs and based our conclusions on their published data (whenever possible from the analysis of their web sites). Application of this criterion meant that our sample was composed of 200 LGs, each with over 340,000 inhabitants, from 20 countries. The selection according to the population size has meant that the sample has a significant number of municipalities in Brazil and Mexico. However, in our view, include 200 municipalities and 18 countries allows an approach to disclosure on sustainability in all the large local

governments in Latin America. Table 1 shows the number of LGs in each country, the total population living in LGs in each case and the national population. Despite the high specific weight of Brazil and Mexico, our sample is representative of all Latin American countries, for two reasons. First, the population of the LGs analyzed represents 33.30% of the total accumulated population of the countries (214,755/644,832). Second, without computing the population of the LGs analyzed in Brazil and Mexico, the population volume of the rest of countries in the sample represents 24.53% of the total population of the rest of the countries: $(214,755 - 76,397 - 63,769) / (644,832 - 212,216 - 128,649)$.

Table 1. Sample distribution.

Country	LGs (n)	LGs (%)	Population of All LGs Analysed (a)	Population of the Country (b)	a/b (%)
ARGENTINA	10	5.0%	8,397,575	45,195,777	18.5
BOLIVIA	5	2.5%	4,297,944	11,633,371	36.9
BRAZIL	77	38.5%	76,397,047	212,216,052	36.0
CHILE	3	1.5%	961,305	19,458,310	5.0
COLOMBIA	22	11.0%	23,413,726	50,372,424	46.5
COSTA RICA	0 **	0.0%	-	5,137,000	0.0%
CUBA	1	0.5%	472,255	11,193,470	4.2
ECUADOR	2	1.0%	3,910,304	17,474,570	22.4
EL SALVADOR	0 **	0.0%	-	6,704,121	0.0%
GUATEMALA	3	1.5%	2,053,843	17,263,239	11.9
HAITI	1 *	0.5%	987,310	11,325,861	9.0
HONDURAS	2	1.0%	1,961,696	9,301,587	21.1
MEXICO	47	23.5%	63,769,133	128,649,565	49.6
NICARAGUA	1	0.5%	937,489	7,317,798	12.8
PANAMA	1	0.5%	1,482,769	4,170,607	36.0
PARAGUAY	1	0.5%	524,190	7,252,672	7.2
PERU	8	4.0%	12,400,974	32,824,358	37.8
DOMINICAN REP.	4	2.0%	2,941,527	11,229,403	26.2
URUGUAY	1	0.5%	1,305,082	3,505,985	37.2
VENEZUELA	12	6.0%	9,528,828	32,606,000	29.2
TOTAL	200	100%	214,755,687	644,832,170	33.30%

* Not part of the final results since the website was not operational; ** The largest municipalities in these countries are not among the 200 largest LGs.

4. Methodology

4.1. Dependent Variable

The contribution of LGs to the development of sustainable local communities (SDG 11) requires an analysis of the performance of the local authorities themselves. Thus, the dissemination of information on sustainability (including economic, social and environmental sustainability [17]) is a relevant aspect to know what are the actions carried out by local entities. In our analysis, the level of information disclosure on sustainability is measured in accordance with the proposals of the Global Reporting Initiative (GRI), whose guidelines for the publication of government sustainability reports are widely accepted and have been accredited in numerous research papers [4,36,72,77–79].

Although other standards have also been published [80,81], the GRI recommendations are internationally accepted as a model for sustainability reports [46], and have been widely adopted by public administrations [82,83].

The approach taken in the present paper is in line with the G3 and G4 versions of the GRI, including the supplement for public sector agencies [18,84–86], which address the main dimensions of sustainability and are the most recent of these publications. Thus, following the GRI guidelines, we measure the volume of published information using 75 items, divided into four main blocks: general information (28 items), economic information (23 items), social information (10 items) and environmental information (13 items).

Our analysis is based on the information published on the official website(s) of each local authority. The introduction and expansion of e-government is one of the most important developments in public administration in recent decades. Crucially, the greatly expanded use of the internet in government-citizen communication has made it possible to increase government transparency and to reduce information asymmetries between public managers and the population they serve [87,88]. In view of these considerations, various studies have made use of the public information available online as a basis for measuring governmental transparency [69,89,90].

Online data are also widely used in analyses of information disclosure on public sustainability [4,25,28,52,91]. Focusing on Latin America, Sáez-Martín et al. [34] described how the countries in this region have amended their legislation in order to improve access to public information. In a related paper, Sandoval and Gil [35] observed that the majority of citizens now use ICTs as a source of information.

In our study, the online provision of public information is quantified by means of content analysis [92,93]. This technique is widely used for assessing the disclosure of financial and sustainability-related information [2,27,36,47,52,94–96]. The municipal websites were observed on several occasions between 2018 and 2020. The disclosure of information of the 75 items of the GRI was observed. The verification of each item is dichotomous ('1' if the information is on the Web, '0' if the information does not appear on the Web). Therefore, the content analysis allows studying the disclosure of information, but does not allow analyzing either the quantity or the quality of the disclosure.

Content analysis, thus, enabled us to determine the information disclosed by each LG as a percentage of the total information stipulated in the GRI guidelines. In addition, we measured the level of information disclosure for each of the blocks considered: general, economic, social and environmental information. To obtain the necessary data, we determined the presence or otherwise on the corresponding website of each of the items considered, assigning a label of "Yes" or "No", accordingly. Then, for each LG, the percentage of information disclosed was calculated as the ratio between the sum of "Yes" items and the total number of items considered [69].

4.2. Explanatory Variables

Taking into account the conclusions of previous research and the theoretical framework presented in Section 2, we selected a series of variables that might influence the level of transparency on sustainability among LGs in Latin America. Two types of variables were selected; (a) idiosyncratic variables, which are specific and individual to each LG; (b) systematic ones, which refer to the socio-economic, cultural and legal context of the country.

In this analysis, the idiosyncratic variables are studied in accordance with Stakeholder Theory, since the larger the population and the greater the variety of needs presented, due to the specific circumstances of this population, the greater the demands made and the broader the diversity of their expectations. The systemic variables, however, are approached in accordance with the perspectives of Institutional Theory, which reveal whether the context influences policymakers' interest in disclosing information on sustainability.

The idiosyncratic variables analysed (i.e., those specific to the municipality) are population size, dependent population, immigrant population, population density, education level and unemployment (see Table 2). Regarding the first of these, levels of information disclosure on population size tend to be higher in larger municipalities [67,97]. In published information on sustainability (both on financial sustainability and on social and environmental sustainability), the influence of population density is commonly cited, and a significant positive relationship between these two factors has been reported in several papers [25,28,36,76].

Following prior research practice, our analysis also included the relative size of the dependent population as an explanatory factor, in the view that this population segment may present a greater demand for municipal services. For our purposes, the dependent

population is defined as persons aged under 18 or over 65 years. Previous studies have reported that this variable is significantly associated with the disclosure of information on sustainability [2,24,36].

Table 2. Study variables analysed, for each LG.

Independent Variables	Concept	Source	Calculation Formula	Expected Sign
Population size (Ps)	Population size according to latest data	Statistical information for the country and for the LG	Inhabitants (n)	Positive
Dependent population (Pa)	LG population aged < 18 or >65 years	Statistical information for the country and for the LG	Persons aged < 18 + Persons aged > 65/Ps	Positive
Immigrant population (Ip)	Immigrants as a proportion of total LG population	Statistical information for the country and for the LG	Ip/Ps	Positive
Population density (Pd)	Population density	Statistical information for the country and for the LG	Ps/LG area (km ²)	Positive
Education (E)	Population with a university degree	Statistical information for the country and for the LG	Population with university degree (n)/Ps	Positive
Unemployment (U)	Rate of unemployment	Statistical information for the country and for the LG	Unemployed population (n)/Active population (n)	Positive/Negative

Source: The statistical data were obtained from different official websites between 2019 and 2020.

In studies conducted in Europe, the relative size of the immigrant population is usually included in the analysis. Although this variable is not commonly present in studies of the disclosure of financial information, Ortiz-Rodríguez et al. [36], in their study of the disclosure of information on sustainability (analysed in the three aspects: economic, social and environmental), observed a significant relationship in this respect in Anglo-Saxon LGs, and also among southern European LGs as regards the publication of environmental information. In the context of Latin America, this variable would have different connotations, but nevertheless the existence of a sizeable immigrant population might reflect a greater need for municipal services, both in quantity and in quality. Therefore, our analysis addresses the possibility that when there is a relatively large immigrant population, this could be associated with a greater demand for information on sustainability issues.

The education background of the population may be defined in various ways [24,25,36]. In the present case, we consider the proportion of the population with a university degree, taking the view that higher levels of academic achievement may be related to a greater demand for information on sustainability. Finally, we include the unemployment rate as a variable that may influence the disclosure of financial information [91] and which has also been mentioned in specific studies concerning the provision of information on sustainability [36,50]. Overall, prior research work has detected relevant factors in European LGs, but has not considered the context of Latin America. For this reason, the present study takes a novel approach and the results obtained will be of interest in comparing different socioeconomic, cultural and legal circumstances.

With respect to systemic variables (those referring to the entire country), many studies have considered the relation between changes in government information systems and the national context, i.e., the influence of the country's history, culture, economic situation and legal system [98]. Clearly, when institutional reforms are implemented they are based on prevailing cultural values [49,99,100], and so with respect to information disclosure on sustainability, it is no surprise that studies have recorded differences between countries according to their administrative cultures and cultural contexts [4,36,101].

In line with previous research in this field, according to which the effect of macro variables should be taken into consideration [2,4], our analysis includes the following variables related to the country as a whole (Table 3): human development index, age of the transparency law, quality of the transparency law, index of corruption, gross domestic product and the level of convergence with International Financial Information Standards for Public Entities (IPSAS). The values of these variables were obtained from the data published by the United Nations [102], Transparency International [103], the Inter-American Development Bank [104] and the Centre for Law and Democracy [13].

Table 3. Contextual variables, by country.

Country	HDI	ALT	QLT	IC	GDP (PPP)	IPSAS
ARGENTINA	0.830	2004	92	45	918,572	ND
BOLIVIA	0.703	2005	70	31	89,352	ND
BRAZIL	0.761	2011	108	35	3,370,620	0.59
CHILE	0.847	2008	94	67	481,760	0.67
COLOMBIA	0.761	1985	102	37	748,575	0.84
CUBA	0.778	ND	ND	60	ND	ND
ECUADOR	0.758	2004	74	38	205,457	0.21
GUATEMALA	0.651	2008	92	26	145,249	0.17
HONDURAS	0.623	2006	84	26	49,010	0.21
MEXICO	0.767	2002	136	29	2,575,206	ND
NICARAGUA	0.651	2007	111	22	35,757	0.2
PANAMA	0.795	2002	100	36	111,432	0.22
PARAGUAY	0.724	2014	62	28	95011	0.11
PERU	0.761	2003	93	36	457,480	0.82
DOMINICAN REP.	0.745	2004	59	28	188,320	0.23
URUGUAY	0.808	2008	92	71	81,573	0.13
VENEZUELA	0.726	ND	ND	16	320,138	0.27

Source: United Nations, Transparency International, the Inter-American Development Bank and the Centre for Law and Democracy. HDI: Human Development Index; ALT: Age of the transparency law; QLT: Quality of the transparency law; IC: Index of corruption; GDP: Gross domestic product; PPP: Purchasing power parity; IPSAS: International Financial Information Standards for Public Entities; ND: Not determined.

As indicated above, according to institutional theory organisations respond to the context in which they operate. Accordingly, we examine the relationship between the corresponding variables and the level of disclosure of information on sustainability by LGs in Latin America. Particularly relevant in this respect are the age and quality of laws on transparency and the degree of corruption in the country. In addition, the degree of convergence with the IPSAS provides a measure of the isomorphism that may be present. The implementation of IPSAS could response to external pressure (this is one of the requirements of some international organizations to provide financial aid). In any case, IPSAS entails greater transparency in the field of public sector financial information, but can also facilitate greater disclosure of non-financial information.

4.3. Statistical Method

Having observed the level of information disclosure on sustainability by each LG considered, and having obtained the main descriptive statistics applicable, we then analysed the effect of each of the study variables on this question, using two types of statistical analysis. In the case of the systemic variables, referring to the country as a whole (so all the municipalities of the same country present the same value) (Table 3), Spearman's rank correlation coefficient [105] was calculated to determine the possible influence on the average level of information disclosure in each of the countries where LGs were included in the study.

We have chosen the Spearman coefficient because in line with the statistical literature [105], it is the most appropriate method for the sample size (18 countries). On the

other hand, the size of the sample at the level of individual LGs (200 LGs) allows the use of another method, such as multiple regression analysis [106]. In addition, the results of applying this method have been interpreted taking into account the postulates of three theories (Stakeholders, Legitimacy and Institutional), which justifies the analysis from the cause-effect relationships between dependent variables and independent variables.

Regarding the LG-specific (systemic) variables, multiple linear regression analysis was performed to evaluate their influence on the disclosure of information on sustainability. This robust method for determining relationships between variables [106] has been used in previous studies of sustainability disclosure [2,36]. In the present case, the dependent variable was taken to be the percentage of information disclosure on sustainability as measured by the number of GRI items published on the LG website, while the independent variables are those listed in Table 2. As a preliminary step, we confirmed compliance with the conditions of the model (normality of the errors, homoscedasticity, independence of the errors and independence of the variables).

5. Results Analysis

5.1. Descriptive Analysis

The data obtained show that the LGs considered disclose on average 60% of the items recommended in the GRI guidelines (see Table 4). A high volume of economic information is provided (75% of GRI recommendations), but not of environmental information (less than 25%). Regarding general information about the LGs and information of a social nature, these local authorities LGs publish approximately 60% of the items recommended.

Table 4. Information disclosure by blocks, for the entire sample (% of GRI recommended content).

Total information disclosure	60%
Block I: General information	63%
Block II: Economic information	75%
Block III: Social information	61%
Block IV: Environmental information	23%

In the case of social information, taking the LGs as a whole, the items of the GRI with the greatest disclosure were: the offer of services, spending on local suppliers and the call for subsidies. In the fourth block, on environmental information, the disclosure of initiatives to mitigate environmental impacts stands out.

These levels are somewhat higher than those obtained previously for LGs in Europe, where the average level barely reached 50% [36,76], except for environmental information, in which case the amount of information disclosed was twice that observed for the Latin American LGs in our sample. In comparison with the findings reported by Frias et al. [53], who considered LGs in Brazil, Colombia, Mexico, Spain and Portugal, our results reflect a somewhat higher level of disclosure, especially that of economic information, although similarly low levels of disclosure of environmental information were observed in both cases.

Information disclosure varied considerably by country (see Table 5), although it should be noted that our study sample consisted of the 200 largest LGs in the study area, regardless of country.

As Brazil and Mexico are the countries in the sample with the highest number of LGs analyzed, we comment on their specific results. In Brazil, the highest level of transparency corresponds to economic information, followed, at the same level, by social information and economic information. Dissemination of environmental information comes last. On the other hand, in Mexico, although transparency on economic information has the highest value, the second place is occupied only by generic information and, more than 6 points away, is social information. As in Brazil, in Mexico also the last place corresponds to environmental information.

Table 5. Information disclosure by country (% of GRI recommended content).

Country	Total	Block I	Block II	Block III	Block IV
ARGENTINA	61%	67%	70%	82%	17%
BOLIVIA	54%	59%	70%	36%	29%
BRAZIL	61%	62%	83%	63%	18%
CHILE	73%	70%	93%	87%	33%
COLOMBIA	73%	74%	93%	74%	34%
CUBA	8%	21%	0%	0%	0%
ECUADOR	49%	54%	31%	55%	69%
GUATEMALA	80%	80%	88%	73%	72%
HONDURAS	42%	45%	50%	50%	15%
MEXICO	59%	62%	74%	56%	27%
NICARAGUA	5%	11%	0%	10%	0%
PANAMA	49%	61%	58%	50%	8%
PARAGUAY	55%	54%	75%	50%	23%
PERU	58%	73%	58%	51%	29%
DOMINICAN REP.	52%	50%	73%	58%	12%
URUGUAY	88%	82%	96%	70%	100%
VENEZUELA	33%	53%	26%	33%	4%

5.2. Statistical Analysis

In this study, the relationship between the level of information disclosure on sustainability and the systemic (country-level) variables was tested using Spearman's coefficient. In general, the results obtained reflect a statistically non-significant coefficient in any of these variables. In fact, for a significance level of $p < 0.05$, none of the variables was significantly associated with the level of information disclosure.

However, although the coefficient is statistically non-significant, the age of the transparency law are varying in opposite direction to the disclosure of sustainability information; thus, the countries with more up-to-date transparency laws were also those where the LGs considered presented higher levels of information disclosure on sustainability. The corruption index also presented an opposite direction, such that the countries with lower levels of corruption were among those with the highest levels of information disclosure.

In addition to the above, a multiple linear regression analysis was conducted. For this purpose, the dependent population (P_a) was eliminated from consideration, given its high degree of correlation with the total population (P_s) of the LG (Table 6). This exclusion is strictly necessary to guarantee the robustness and consistency of our results. Furthermore, it could be understood that the effect of the dependent population volume is implicitly incorporated in the value of the total population variable, given the high degree of correlation between the two variables.

In our study model, the dependent variable was the percentage of information disclosure on sustainability (with respect to total disclosure, i.e., the sum of the four information blocks), while the independent (explanatory) variables were total population, immigrant population, population density, education and unemployment.

The backward step method was used to determine our model of multiple linear regression (Table 7). The results obtained showed that two variables, education (E) and unemployment (U), presented a statistically significant relationship ($p = 0.001$). Similar results were obtained by the forward step method (Table 8), although in this case another variable, total population (P_s), was also significantly related ($p = 0.05$). In all three cases, the relationship was positive, that is, an increase in the value of the independent variables was associated with a corresponding increase in the percentage of information disclosure.

Table 6. Correlation—Pearson matrix (all variables).

Dependent Variable	Population Size (Ps)	Population Age < 18 and >65 (Pa)	Immigrant Population (Ip)	Population Density (Pd)	Education (E)	Unemployment (U)
Dependent variable	1					
Population size (Ps)	0.029835	1				
Population age < 18 and >65 (Pa)	0.021548	0.965606 *	1			
Immigrant population (Ip)	−0.09903	0.025428	0.057238	1		
Population density (Pd)	0.015771	0.189063 *	0.193606 *	0.197447 *	1	
Education (E)	0.009346	0.038233	0.05677	0.142368 *	0.270833 *	1
Unemployment (U)	0.047415	−0.06303	−0.02459	−0.05126	−0.04869	−0.325310 *

* Significant at $p < 0.05$. N = 200.

Table 7. Regression model I ($p < 0.01$).

N = 200	R = 0.90594542 R ² = 0.82073710 Adjusted R ² = 0.81892636 F (2.198) = 453.26					
	b	Std. Err. of b	b	Std. Err. of b	t (198)	p-Value
Education (E)	0.373069	0.038841	1.594647	0.166023	9.605	0
Unemployment (U)	0.622697	0.038841	4.524553	0.282222	16.03192	0

Table 8. Regression model II ($p < 0.05$).

N = 200	R = 0.90862652 R ² = 0.82560215 Adjusted R ² = 0.82294634 F (3.197) = 310.87					
	b	Std. Err. of b	b	Std. Err. of b	t (197)	p-Value
Population size (Ps)	0.078251	0.03338	0	0	2.34426	0.020061
Education (E)	0.353417	0.039312	1.510645	0.168034	8.9901	0
Unemployment (U)	0.603088	0.039308	4.382069	0.285613	15.34267	0

For clarification purposes, the coefficient *b* determines the degree of relationship between the observed variables. While the test statistic *t*, allows to accept or reject the null hypothesis, showing the non-existence in this case of a linear relationship for the first case, and the opposite for the second.

The three variables that may exert a significant influence on the disclosure of information on sustainability all present a positive coefficient (i.e., they are directly related to the volume of information disclosure). As shown in Table 2, this outcome was as expected in the case of total population and education. However, opinions are divided in other areas. Thus, in a previous study concerning the disclosure of financial information, Homsy and Warner [107] recorded a positive sign between this variable and unemployment, while Guillamón et al., [91] recorded a negative one. In the case of the relation between unemployment and the disclosure of information on sustainability, this relation has been presented as positive or negative depending on the cultural context [76].

Comparison of our findings with results for LGs in Europe [36,76] shows they are in broad agreement; thus, a positive relationship has been observed between population size in southern European LGs [36] and also in European LGs as a whole [76], a category that includes those with Anglo-Saxon and Nordic administrative traditions.

The results for the Education variable are also consistent in Europe and Latin America; in both cases, there is a positive relationship between this variable and the disclosure of information on sustainability. These empirical results support the view that a higher overall level of education is associated with a greater popular demand for information. This, in turn, may foster greater transparency by LG administrations.

Other studies have analysed the relation between unemployment and the disclosure of financial information by European LGs [91] and between unemployment and information disclosure on sustainability (in a partial study of southern European LGs), as regards economic, social and environmental information, but not general information or 'All information' [36]. According to our own study results, there is a significant association between unemployment and the disclosure of information on sustainability, overall.

So, the alignment of our results with the findings of the studies on European LGs suggests that the cultural particularities of Latin American countries are not exerting a notable influence on the government's commitment to transparency on sustainability. In this sense, future research should incorporate more variables to test for differences in cultural effect.

No significant associations were recorded for the other study variables considered, which contrasts with the conclusions of previous research, which had led us to expect relationships with the level of disclosure of information on sustainability. For example, both the size of the immigrant population and the population density have been considered

significant in this respect [2,36], but this was not the case for the Latin American LGs in our sample.

In short, our results show that the influence of idiosyncratic variables of each LG individually considered is much greater than the effect of systemic variables. In any case, although the results of this paper provide new knowledge, it is necessary to continue evaluating others variables to develop future research, such as per capita income, fiscal pressure, financial autonomy, the unemployment rate disaggregated by activity sectors, the political sign of the party in the government or the gender of the mayor and councilors.

Although further research is undoubtedly necessary, the results obtained thus far indicate that the degree of information disclosure in this context is directly related to the needs of various stakeholders. This is our understanding of the significant association observed between information disclosure and total population, unemployment and education (especially the latter two). Therefore, in accordance with Stakeholder Theory, the LGs in our study sample disclose information on sustainability in response to the information demands presented by different interest groups. Moreover, although our results are not conclusive, they strongly suggest that appropriate legislation on transparency gives rise to institutional changes such as the greater publication of information on sustainability. This conclusion is in line with the tenets of Institutional Theory. Finally, the relationship observed between the index of corruption and the disclosure of sustainability information would be in line with the postulates of Legitimacy Theory.

6. Conclusions

Despite the recommendations of international organizations and the proposals arising from previous research on the need to consider how greater transparency on sustainability might be achieved, insufficient attention has been paid to the question of the online disclosure of information by Latin American LGs, notwithstanding the special nature of this socioeconomic and cultural context and its weight in the world economy.

In the present study, we analyze the publication of information on the websites of 200 large local governments, in 20 Latin American countries, in order to measure their level of transparency on sustainability and to identify factors that influence this information disclosure, aimed at achieving the SDGs detailed in the 2030 Agenda.

The results obtained show that these LGs publish only 60%, on average, of the information recommended in the GRI guidelines. The highest level of transparency provided concerns information of an economic nature, followed by general and social information and, at a much lower level, environmental information. Therefore, there remains much room for improvement among these Latin American LGs in terms of their transparency on sustainability, especially in terms of environmental sustainability.

At the aggregate level, the highest levels of transparency on sustainability were recorded in Uruguay, Chile, Colombia and Guatemala, while Nicaragua and Venezuela presented the lowest levels. However, this ranking was not consistent among the four types of information analyzed (general, economic, social and environmental), which indicates that, in the absence of a common policy for Latin America, a LG's commitment to transparency on sustainability may depend on the one hand on its cultural and socioeconomic environment and, on the other, on the interest in this regard of politicians and managers, in response to the special characteristics and the information demands of the population.

In Brazil, the highest level of transparency corresponds to economic information, followed, at the same level, by social information and economic information. Dissemination of environmental information comes last. On the other hand, in Mexico, although transparency on economic information has the highest value, the second place is occupied only by generic information and, more than 6 points away, is social information. As in Brazil, in Mexico also the last place corresponds to environmental information.

According to our statistical analysis, in Latin American LGs the existence of a larger total population is associated with greater transparency on the sustainability of public services. A similar direct relation was observed between education levels and transparency

on sustainability. These associations might arise from policymakers' attempts to meet the greater and more specific demands made by a larger, more highly educated population. These findings are in line with the conclusions of research conducted in European countries. Our results also show that the local level of unemployment is related to the volume of information provided on sustainability by these LGs.

At the country level, the results were not significant. However, trends could indicate that certain systemic variables, such as the modernization and updating of transparency laws, could promote disclosure on sustainability by these LGs. In the same sense, the countries with lower levels of corruption countries with lower levels of corruption would be more committed to transparency in economic, social and environmental sustainability.

In summary, considering the desirability of government actions to promote transparency on sustainability, our results highlight the following lines of action that may contribute in this respect, and thus help achieve the SDGs: (a) identify and respond to the information demands of local citizens, with special attention to the needs of disadvantaged groups such as the unemployed; (b) perform comparative analyses between the information demands of citizens with different levels of education, seeking synergies in the volume and type of information published; (c) reform legislation on transparency to reflect current information demands among the population.

In this same line, our findings incorporate implications that can help political decisions to improve the level of transparency on sustainability in Latin American local governments, such as the following. First, the nature and typology of the information on sustainability (general, economic, social and environmental) may condition the effectiveness of the measures to be adopted, so that the instruments for promoting transparency could be different depending on the sustainability type.

Second, our results suggest that it is interesting to analyze the reasons that cause greater attention from LGs for transparency on economic sustainability, in order to study possibilities of extrapolation to other types of sustainability, with special attention to the transparency on environmental sustainability.

Third, to reform transparency laws, it may be interesting to adopt common and coordinated policies in several Latin American countries, but taking into account, in each country, the usefulness of specific mechanisms to encourage the population's interest in knowing the level transparency on sustainability.

Finally, our results have two limitations. First, it is necessary to expand the number of explanatory variables, incorporating the study of new idiosyncratic factors. Second, the results of the Spearman coefficient must be interpreted, together, with the postulates of three theories (Stakeholders Theory, Legitimacy Theory and Institutional Theory) to observe cause-effect relationships between the explanatory variables and the level of transparency about sustainability.

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