



Determinants of sustainability information disclosure of local governments in Latin America

Jeimi Maribel León-Silva^a, Rosa María Dasí-González^b, Vicente Montesinos Julve^c

a) Department of Public Accounting, University EAFIT, Medellín, Colombia.

b), c) Department of Accounting, University of Valencia, Valencia-SPAIN.

^aCorresponding author.

E-mail address: jmleons@eafit.edu.co - jmaribel912@gmail.com

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ABSTRACT

This paper analyses the socioeconomic factors that influence the disclosure of sustainability information on 99 local government websites in 2018 in countries that make up the Pacific Alliance (PA) in Latin America, associated with internal and external demands that public entities have for accountability in social and environmental issues. We use as methodology a content analysis of the sustainability information disclosed by local entities on their websites and a regression of Ordinary Least Squares (OLS). This article shows empirical evidence that the size, budget capacity and the economic level of the municipality are factors associated with the sustainability disclosure on websites due to internal and external factors impacting the decisions and actions taken by the entities related to the sustainability and its disclosure. These results are important for academic and technical discussions in a region with specific characteristics different from most countries studied in previous literature on the subject.

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Determinantes de la divulgación de información sobre sostenibilidad en los gobiernos locales de Latinoamérica

RESUMEN

Este trabajo analiza los factores socioeconómicos que influyen en la divulgación de información sobre sostenibilidad en 99 sitios web de gobiernos locales en 2018 en países que conforman la Alianza del Pacífico (AP) en América Latina, y que están asociados con demandas internas y externas que tienen las entidades públicas para la rendición de cuentas en materia social y medioambiental. Se realizó un análisis de contenido de la información de sostenibilidad divulgada por las entidades locales en sus sitios web y una regresión de Mínimos Cuadrados Ordinarios (MCO). Este artículo muestra evidencia empírica de que el tamaño, la capacidad presupuestaria y el nivel económico del municipio son factores asociados con la divulgación de sostenibilidad en los sitios web, por factores internos y externos que inciden en las decisiones y acciones que toman las entidades asociadas con la sostenibilidad y su divulgación. Estos resultados son importantes para las discusiones académicas y técnicas en una región con características específicas, diferentes de la mayoría de los países estudiados en la literatura previa sobre el tema.

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1. Introduction

Since the end of the last century, awareness of social and environmental issues has been on the rise, due to the urgency of addressing the challenges posed by various initiatives associated with achieving Sustainable Development (SD), seeking the balance between economic development, the environment and society (United Nations [UN], 1987), based on different actions to achieve this purpose (UN, 2000, 2002, 2012, 2015). The most important initiative in this decade to promote efforts related to sustainability was the Agenda 2030 for SD (UN, 2015), approved by 193 countries, which established 17 objectives and 169 goals related to economic growth, environmental care, and social actions, and highlights the importance of local and national governments in fulfilling the SD. These initiatives and other relevant facts have increased the number of studies related with the disclosure of social and environmental information in organisations, mainly in the private sector (Hahn & Kühnen, 2013; Thomson, 2014).

In the case of public sector entities, there has been evidence of the low disclosure of information related to these aspects (García-Sánchez et al., 2013; Lodhia, 2014; Navarro et al., 2010) despite the importance of these entities in the economy from the local, regional and national perspective of the countries (Ball et al., 2014; Ball & Bebbington, 2008; Hossain, 2018) and the social pressures to incorporate sustainable practices and to ensure adequate accountability, also of the need to legitimise its actions and the use of public resources. However, while formal reports related to sustainability are not frequent, public entities are using other channels such as the internet, social networks and announcements, among others, to address these issues (Larrinaga-González & Pérez-Chamorro, 2008; Niemann & Hoppe, 2018), as a mechanism to meet demands of citizens and other entities interested in the responsible and transparent management of public resources (García-Sánchez et al., 2013).

Studies on the disclosure of sustainability information in local entities have been primarily raised from two approaches (Williams, 2015): the first one relates to the descriptive analysis of the level of information they disclose from the perspective of the Triple Bottom Line (TBL), which connects the economic performance of organisations to the social and environmental impact they produce on their activity (Elkington, 1998). The second approach analyses the explanatory factors of information disclosure, noting the demographic, social, economic, and political aspects that may influence the disclosure of sustainability information in public sector entities.

Regarding the study of public sector sustainability reporting in Latin America, contributions in the field of local governments are at a level of discrete development, noting few works in this region such as those of Frías-Aceituno et al. (2013) and Frías et al. (2013). For this reason, it is considered that there are possibilities for research on the topic of the disclosure of sustainability information in this region, considering its economic and geopolitical importance.

Thus, the objective of this paper is to analyse the socioeconomic factors that are associated with the disclosure of sustainability information on local government websites in Latin America, and specifically in the countries of the Pacific Alliance (PA). The PA is a political, economic, cooperative, and integrative initiative to drive more significant growth and competitiveness in Chile, Colombia, Mexico and Peru, countries with economic and political influence in the region.

For this study, we analyse 99 local governments that are

regional capitals of the PA countries, (with information available on the websites of local governments capital) due to the importance of these entities in demographic, economic and political terms. For data collection was performed, a content analysis of the information published by local entities on their official websites was carried out to determine the level of disclosure of sustainability information and subsequently analyse the impact of selected socioeconomic variables on the disclosure of sustainability information.

The results reveal that the local governments of the PA have low levels of disclosure, close to 40%, highlighting the general and economic categories, with the best scores, in contrast to the social and environmental aspects, which present lower scores, because of their voluntary nature in public entities. On the other hand, it is emphasised that size, economic level and budgeting capacity, affect the disclosure of sustainability information in the PA municipalities, showing that there are external factors that influence entities to disclose information related to sustainability aspects, to meet the demands of citizens, legitimising the management and proper use of public resources.

This work is present in five sections, in addition to this introduction; in the first one, we review the theoretical framework and literature review; we describe the socioeconomic factors and describe the hypotheses of the study; the third section, we explain the methodology of the study; in the fourth, we discuss the results and, finally, present the general conclusions and final comments.

2. Theoretical framework and Literature Review

Over the past two decades, the importance of producing information that exceeds traditional financial aspects aimed primarily at shareholders or capital markets, in the case of the private sector and control bodies for the public sector, due to the expansion of users demanding this information in the organisations (Freeman, 1984). Therefore, since the end of the nineties of the past century, with the Global Reporting Initiative (GRI), the disclosure of economic, social and environmental information of organisations, known as Sustainability Reporting (Rosati & Faria, 2019), has reached considerable development. These reports are considered a tool to communicate more than just the economic and financial performance of organisations, including new contents related to economic, social and environmental accounting issues. Thus companies have developed a new reporting framework to meet the expectations of all stakeholders (Borga et al., 2009).

External pressures on public entities have led to a trend in favour of the disclosure of financial and non-financial information from the "Accountability" point of view because the lack of transparency and presentation of information from entities in an understandable and useful format for assessing the fiscal responsibility of cities generates dissatisfaction with the government (Yusuf et al., 2017). For this reason, entities seek to ensure access to information to different users.

The generation of information on social and environmental issues by public sector entities is considered a mechanism to enrich traditional accounting reports, improve external communication, efficiency and legitimisation of public sector in crises (Marcuccio & Steccolini, 2005). This current of opinion is the result of the interaction between the different interest groups (García-Sánchez et al., 2013). It is leading to organisations trying to provide information beyond that required in strictly financial matters, to have a management tool and to assume social and environmental re-

sponsibility, expanding the qualitative information reported on sustainability issues (Dumay et al., 2010).

Despite the importance of non-financial information provided by public entities, the disclosure of formal reports on sustainability by governmental entities is low compared to the private sector, according to published information in the Global Reporting Initiative (GRI) website. However, as Larrinaga-González & Pérez-Chamorro (2008); Joseph et al. (2014) and Niemann & Hoppe (2018) point out, public entities disclose information associated with this topic using mechanisms other than reports under the GRI criteria, such as the websites of the entities, social networks and announcements, among others (Idemudia, 2014).

The last two decades have not only stimulated interest in the study of information disclosed by organisations on social and environmental subjects but also in delving into the reasons or factors that motivate the generation and spreading of this type of information. From a theoretical standpoint, the studies have been based on the Legitimacy, Stakeholders and Institutional theories, due to the relationship of organisations with society (Buhr et al., 2014; Gallego-Álvarez & Quina-Custodio, 2016; Othman et al., 2017), as a mechanism to justify and explain their actions, meet the information needs of users or to respond to the external pressures or expectations of the organisation. Based on these fundamental theoretical contributions, this work considers the revolution that electronic government has brought to the spreading of information, intending to set and analyse the determinant factors of disclosure of relevant information on sustainability.

The Institutional Theory assumes that public and private organisations arise in highly institutionalised contexts and feel therefore obliged to incorporate practices and procedures generally imposed by public opinion and others essential stakeholders that are associated with reality and social status (Meyer & Rowan, 1977), to ensure their survival and legitimise their actions (Kostova et al., 2008). In this sense, Buhr et al. (2014) consider that one of the reasons for corporations to produce sustainability reports is to respond to the pressures, expectations and social changes, to contribute to public debate and the opinion formation by governments, NGOs, users and media.

As regards to the public sector, Frumkin & Galaskiewicz (2004) emphasise that public entities are more vulnerable to external pressures because of the nature of their resources, which require management to be more transparent, unlike private organisations, whose resources are mainly linked to a particular group of owners. They are also the primary providers of essential non-profit services and are subject to citizen demands (Benito López & Martínez Conesa, 2002; Gallego-Álvarez et al., 2010).

In the case of local governments, institutional pressures are considered to have influenced the way their information is disclosed. Also, these entities seek harmony with social values in their organisational management (Joseph & Taplin, 2012) and the introduction of various changes in mayors' management. It is highlighted, for example, the adoption of open government (e-disclosure) as a mechanism to meet the demands of the public for access to information (Guillamón et al., 2016), which helps entities to have institutional and political motivations to adopt reporting practices through mimetic isomorphism processes (Marcuccio & Steccolini, 2005; Greiling et al., 2015). In the local context, Joseph et al. (2014) and Othman et al. (2017) can be highlighted, when presenting analysis of Malaysia and New Zealand experiences on sustainability reporting according to In-

stitutional Theory. These and other studies emphasise how regulation and factors outside organisations impact on local entities disclosure of information.

Another theoretical approach to the study of information disclosure is related to the Legitimacy Theory. For Marcuccio & Steccolini (2009), legitimacy is considered a resource that the organisations need for survival. So, this perspective finds that public and private organisations disclose information related to their activities as a mechanism to legitimise their actions with Stakeholders (Deegan, 2002, 2014). From the public sector's point of view, Albalate (2013) and De Araujo & Tejedo-Romero (2016) emphasise that there is a relationship between the disclosure of information and transparency, insofar as access to public information allows citizens to know and follow up on the decisions made by the leaders, thus contributing to the legitimisation of actions and improving the politics perception. Therefore, the "Government institutions are increasingly concerned with the wider dissemination of information and the creation of new mechanisms to improve the quality of decision-making, promote greater transparency in the political process, and increase the legitimacy of decisions" (Da Cruz et al., 2016, p. 869)

Several authors have considered the theory of legitimacy to explain the level of sustainability information disclosure, to the extent that entities must also take actions to guarantee the legitimacy of their actions before different users (Cuadrado-Ballesteros et al., 2014; Frías-Aceituno et al., 2013; García-Sánchez et al., 2013; Lodhia et al., 2012; Navarro et al., 2010). Additionally, public entities are politically more visible and with a greater degree of public attention from citizens and control bodies and the disclosure of sustainability information. Thus, this information is considered a suitable mechanism to build, legitimise and maintain agreements with the population, highlighting the role played by politicians in decision-making in municipal management (Cuadrado-Ballesteros et al., 2014; García-Sánchez et al., 2013). This type of information contributes to better government and improves the reputation of the governments with the citizens, despite their financial problems (Giacomini et al., 2018).

3. Factors affecting sustainability information disclosure

For this work, we will analyse some socioeconomic determinants of the municipalities of the sample, which may affect the disclosure of sustainability information provided on the entities' websites, and those which have been analysed in other sustainability studies in public administrations in different areas and contexts (García-Sánchez et al., 2013; Cuadrado-Ballesteros et al., 2014; Joseph et al., 2014; Alcaraz-Quiles et al., 2015; Navarro-Galera et al., 2019). These determinants are the size, the dependent population, the economic level, internet access, and the budgetary capacity of the municipality.

3.1. Size of the municipality

In both the public and private sectors, the size of the organisation is one of the most widely used variables. It has been shown to have a positive effect on the adoption and extension of sustainability reports, assuming that larger entities cause more significant impact by being more visible and therefore under more pressure and scrutiny (Hahn & Kühnen, 2013). Several studies of local governments have considered that the size of the municipality has positively influenced on transparency (Guillamón et al., 2011; Albalate, 2013; De Araujo &

Tejedo-Romero, 2016), on sustainability disclosure (García-Sánchez et al., 2013; Alcaraz-Quiles et al., 2014; Cuadrado-Ballesteros et al., 2014; Alcaraz-Quiles et al., 2015; Nevado-Gil & Gallardo-Vázquez, 2016; Navarro-Galera et al., 2019), and on the disclosure of financial information (Pérez et al., 2008).

In the literature it has been concluded that the size of the municipality has a positive and statistically significant relationship in the disclosure of sustainability information (García-Sánchez et al., 2013; Cuadrado-Ballesteros et al., 2014; Joseph et al., 2014; Nevado-Gil & Gallardo-Vázquez, 2016) except the study of Alcaraz-Quiles et al., (2015), where the relationship is not statistically significant.

The following hypothesis is raised concerning this characteristic:

H1: There is a positive relationship between the size of the municipality's population and the disclosure of sustainability information

3.2. Dependent population

One of the essential missions of local governments is to ensure the quality of life of citizens, especially for people in conditions of vulnerability to physical, social or economic situations, such as children, teenagers and elders, who require more attention from the state and demand more services. The entity must guarantee the necessary attention and resources to such users in the municipality, and this makes possible to infer that cities with a larger share of dependent population (underage and older adults) will be willing to disclose more sustainability information to legitimise the actions they take for the care and protection of this population.

Nevado-Gil & Gallardo-Vázquez (2016) and Alcaraz-Quiles et al., (2015) consider a positive and statistically significant relationship between the number of inhabitants under the age of 19 and over 65 and the disclosure of sustainability information, in the municipalities of the local governments of Spain and Alentejo (Portugal) respectively, due to these populations' characteristics; mainly in the percentage of the senior population and the functions of local governments regarding these groups. For this characteristic, the following hypothesis is raised:

H2: There is a positive relationship between the ratio of the dependent population in the municipality and the disclosure of sustainability information

3.3. Level of economic development

The level of economic development of the municipality allows to know the economic characteristics of the entity in terms of it is the ability to provide well-being to the citizens, taking actions that improve their quality of life. Several authors have considered that the standard of living and economic status of the population are possible determinants of the transparency of local governments (Piotrowski & Ryzin, 2007).

The unemployment rate is considered as a proxy for assessing the economic development of a municipality or nation because the effect of this unemployment is associated with various sociodemographic characteristics, for evaluating public performance and policies (Albalade, 2013; De Araujo & Tejedo-Romero, 2016; Homsy & Warner, 2015). For example, González et al. (2011) emphasise that the unemployment rate affects the purchasing power and explains consumption, to measure the quality of life of Spanish municip-

alities. For his part, Sen (1997) establishes a relationship between unemployment and economic inequality, because this variable also affects other deprivations, including loss of income that can be offset by subsidies or other forms of aid, which involve public expenditure, besides, which may have further implications for well-being, freedom and other aspects of quality of life, such as health and longevity.

For the study of the relationship between disclosure of sustainability information and the economic development level of the municipality, as other authors in the literature, we have here used the unemployment rate (García-Sánchez et al., 2013; Cuadrado-Ballesteros et al., 2014; Alcaraz-Quiles et al., 2015; Navarro-Galera et al., 2019), as long as it is associated with the income level of the population. An increase in this rate could influence the disclosure of sustainability information by the municipality to show or conceal actions related to the quality of life of the inhabitants.

The relationship between the municipality economic level and the disclosure of sustainability information, there is no consensus in the literature on the effect of these variables. For Alcaraz-Quiles et al. (2015), this relationship is positive; on the contrary, for García-Sánchez et al. (2013) municipalities with high unemployment rates will have disadvantages to implement sustainability practices and their disclosure, and this approach coincides with that of Guillamón et al. (2011) in the analysis of the transparency in local governments in Spain. Finally, Nevado-Gil & Gallardo-Vázquez (2016) and Cuadrado-Ballesteros et al. (2014) consider that there is a relationship between the unemployment rate and the disclosure of information, but sufficient evidence is not available to define the effects.

The literature considers that there is a negative relationship because with a low level of economic development will have fewer incentives to disclose information related to social and environmental issues and the mayor's will concentrated on solving economic difficulties and the entities do not have sufficient human and financial resources to produce and disseminate this type of information (García-Sánchez et al., 2013). Under these considerations, we formulate the following hypothesis:

H3: There is a negative relationship between the level of economic development (measured in the unemployment rate) of the municipality and the disclosure of local government sustainability information.

3.4. Internet access

At the beginning of the 21st century, the incorporation of new technological developments for communication with interest groups in organisations was evident. In the public sector are using various communication tools to have more significant contact with the citizen in matters related to the civil service and the provision of services, which is an issue of interest in political agendas to improve public administration (Alcaide et al., 2017), through e-government, considered as a mechanism to transform government through the use of information technology (Pina et al., 2010a).

In this context, the internet has the potential to improve interactivity, transparency and openness of public sector entities and has become a mechanism of accountability (Bonsón et al., 2012). Also, has changed the relationship between citizens and governments (Mossberger et al., 2013); likewise, e-government is considered one of the most critical issues in recent years for political agendas that seek to transform public entities (Alcaide et al., 2017), due to the global trend to

incorporate information technologies into public administrations, as a measure of innovation to meet the citizen's current needs (Pina et al., 2010b).

In this way, the internet has thus become a mechanism for the disclosure of public information in various matters (Lodhia, 2014; Navarro-Galera et al., 2014). According to these approaches, it can be considered that the number of users with internet access in the municipality can generate more significant interaction and, to some extent, pressure local entities to disclose sustainability information, as it is one of the most widely used communication channels today (Navarro et al., 2010; Lodhia, 2014; Niemann & Hoppe, 2018). This situation raises the following hypothesis:

H4: *There is a positive relationship between the number of users with internet access and the disclosure of sustainability information by local governments.*

3.5. Budget capacity

The public budget is “a highly institutionalised instrument, which summarises the availability of resources for virtually every area, unit and program of the State” (Banco Interamericano de Desarrollo [BID], 2013, 31), which is a tool that applies to all governments, regardless of the level of development. Therefore, expenditure control is one of the most critical variables in the public sector to ensure the correct use of resources (BID, 2013).

Increased public spending and the tendency for citizens to surveilling government performance, has led to greater scrutiny of public expenditures, to verify the use and destination of resources, since citizens demand that the resources are available to meet their needs. On this matter, the disclosure of information on sustainability issues will explain the number of public resources invested in this type of activities. As the expenditure is high, the interest of the inhabitants to know the situation of the municipalities will also be more significant, forcing local entities to report to the citizens (Greiling et al., 2015).

About sustainability, budget capacity is measured by Benito López et al. (2003) and García-Sánchez et al. (2013) as the expenditure budget per capita, since the volume of the budget favours outreach practices. For this factor, we considered the following hypothesis:

H5: *There is a positive relationship between budget capacity and sustainability reporting in local government.*

4. Methodology

4.1. Population and sample

The local governments of the PA were selected, applying a population criterion. The Alliance represents the eighth economic and exporting power worldwide, and in Latin America and the Caribbean accounts for 38% of Gross Domestic Product, 50% of total trade, attracting 45% of foreign direct investment and concentrating a population of around 225 million people (<https://alianzapacifico.net/en/what-is-the-pacific-alliance/>). These characteristics highlight the importance of this Alliance, as well as the significant interest and scope of this research to analyse the public reporting of sustainability information in Latin America.

For this study, the sample included the local governments' regional capitals (Frías-Aceituno et al., 2013) because it reduces the disparity between municipalities and inhabitants

of each country and allows to link cities of all the regions, unlike samples that use municipalities with the highest number of inhabitants as a selection criterion (Guillamón et al., 2011; Albalade, 2013; García-Sánchez et al., 2013; Alcaraz-Quiles et al., 2015). In the case of the population of Latin America, are located mainly in urban areas (Organización de las Naciones Unidas [ONU], 2017) and leave important rural areas out of the sample.

The municipalities selected for the study were 105, and the information was obtained from the websites of 99 of them (except Valdivia in Chile; San Andrés in Colombia; La Paz, Tuxtla Gutiérrez, Chetumal in Mexico; and Huacho in Peru, as their information was not available on the websites of the local governments), a sample of 94.29% for this group, where the number of inhabitants of the local governments of the selection represents 32.79% of the total population of the PA. Table 1 present the description of the sample.

Table 1. Sample description

Country	Nº of sample capitals	Sample Percentage	% of sample by country	% of the population of PA
Chile	14	14.14%	93.33%	18.52%
Colombia	31	31.31%	96.88%	46.20%
México	29	29.29%	90.63%	22.78%
Peru	25	29.25%	96.15%	57.46%
Total	99	100%	94.29%	32.79%

4.2. Variables

4.2.1. Dependent variable: Disclosure index

To assess the level of disclosure of local government sustainability information on official websites, we developed an index that constitutes the dependent variable for the empirical model. To prepare the questionnaire, we took as references the guide for sustainability reports published by the GRI in the G4 version (Global Reporting Initiative [GRI], 2013a), considered to be the benchmark in sustainability reports (Lamprindi & Kubo, 2008; Farneti & Guthrie, 2009; Lodhia et al., 2012; Hahn & Kühnen, 2013;); the GRI supplement for public entities (GRI 2005); other related documents (GRI 2012; 2013b) and previous work related to this methodology (Frías-Aceituno et al., 2013; García-Sánchez et al., 2013; Joseph et al., 2014; Navarro-Galera et al., 2017). The result was a standard questionnaire of 85 items, divided into four blocks of information: general (27 items), economic (24 items), environment (18 items) and social performance (16 items). To guarantee the consistency of the instrument we performed the Cronbach's Alpha test, to measure the reliability of a measurement scale in the questionnaire and to obtain a Scale Reliability Coefficient of 0.8792, which guarantees the reliability of the instrument because it is higher than 0.8.

The gathering of information was carried out through a content analysis (Krippendorff, 2004), which is a widely used method for the study of the disclosure of sustainability information on the websites of organisations (Hossain, 2018), in the official websites of the municipalities during the period between April and July 2018, identifying the presence or absence of each of the items evaluated. A score of 1 is assigned for the existence of the information and 0 otherwise (Frías et al., 2013; García-Sánchez et al., 2013; Cuadrado-Ballesteros et al., 2014). The Total Disclosure Index (TDI) was obtained from the sum of all published items divided by the total items in the questionnaire, in order not to assign any arbitrary weight to a group of items. Besides, a subindex

was obtained for each of the information blocks defined in the questionnaire.

The dependent variable “Index” was determined by the percentage result whose value ranges from 0% (absence of information) to 100% (presence of all items consulted), both for the total disclosure index and the blocks of information. Table 2 presents a summary of the results obtained for the “Index” of the dependent variable. Among these results, it is highlighted that municipalities disclose on average 34 items, representing a disclosure rate of 39.88%, with a minimum of 14 items and a maximum of 56, which can be considered low compared to other studies carried out in Spain (Navarro et al., 2010) and higher than the results of Joseph et al. (2014) in Malaysia and Nevado-Gil & Gallardo-Vázquez (2016) in Alentejo- Portugal.

Table 2. Descriptive analysis of dependent variables

Category	Minimum	Maximum	Average	Standard Deviance
General	7	22	15,545	2,74892
Economic	1	19	11,212	4,096471
Social	1	11	5,2525	2,2223912
Environment	0	13	1,8888	2,555063
Total Index	14	56	33,8989	8,663696

In the categories disclosure, the general one is the most disclosed, with an average of 57.58%, with an information range that varies from 7 to 22 items. This result coincides with those obtained by Frías-Aceituno et al. (2013) in municipalities of Ibero-America; and with the works of García-Sánchez et al. (2013) and Alcaraz-Quiles et al. (2017) in Spain, albeit in a similar percentage. Second, there is the economic bloc, with disclosure of 46.72% on average, presenting a wide dispersion, ranging from 1 to 19 items. This category, together with the general, is relevant because there is coincidence with the legal provisions, as well as in financial and budgetary matters, that are mandatory (García et al., 2013; Navarro et al., 2010), transparency practices and access to public entities data.

Thirdly, the social category reaches a value of 32.83%, with 13 items on average and an interval of 1 and 11 items reported. Finally, the environmental category has an average of 10.49% disclosure rating, which demonstrates the little interest in this type information on the web pages, with municipalities without any items and with a maximum of 13 of the 18 evaluated in specific cases. One of the reasons to explain the low disclosure in these two categories is that the preparation and presentation of this type of information is voluntary (Navarro et al., 2010; García et al., 2013) and therefore, the entities have not incorporated these practices into the web-sites.

4.2.2. Independent Variables

For the development of this work, five socioeconomic variables were selected to test the hypotheses, which have been constructed from the data available on the official websites and reports of local governments and official national websites of the countries, consulted during the months from April to July 2018.

The variable *size of the entity* is the natural logarithm of the number of inhabitants of the municipality (H1). The *dependent population* corresponds to the proportion of people under 19 years of age and over 65 (H2). The third variable corresponding to the *economic development level* is the unemployment rate of the municipality or region (H3). Fourthly,

the *internet* numerical variable corresponds to the proportion of households with internet access of the city (H4) and fifth, the *budgetary capacity*, is the level of expenditure per inhabitant executed by the municipality, measured in dollars (H5).

4.3. Analysis model and method

According to the objective of the work and the hypotheses raised, the following model of multiple linear regressions is defined:

$$Index = \beta_0 + \beta_1 Size + \beta_2 PobDep + \beta_3 EconoLevel + \beta_4 Internet + \beta_5 Budget + \beta_6 Country + \mu \quad (1)$$

Where “i” (i-1... 99) represents each **local entity**, the **constants** $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ are the **parameters to be estimated**, and μ represents **residues**.

Index: level of disclosure of sustainability information in municipalities measured in percentage (total index and general, economic, social, and environmental sub-indexes).

Size: the size of the entity measured by the natural logarithm of the number of inhabitants

Pobdep: Population with dependence is the percentage of inhabitants under 19 and over 65 years of age concerning for the total population of the municipality.

EconoLevel: the unemployment rate of each municipality represents the economic development level of the municipality.

Internet: households with internet access as measured by the percentage of households subscribed to internet service.

Budget: the budgetary capacity, measured by the US dollar per capita entity’s expenditure.

Country: It is a numerical control variable that represents the four countries analysed (Chile, Colombia, Mexico and Peru)

Table 3 presents the descriptive statistics of the independent variables in this study; showing the differences between minimum and maximum values in the variables considered.

Table 3. Independent Variable Descriptive Analysis

Variable	Minimum	Maximum	Average	Standard Deviance
Size	9.711358	16.00366	12.76311	1.128792
Pobdep	0.1	0.54	0.4130303	0.0526338
EconoLevel	0.015	0.2	0.0687677	0.048376
Internet	0.01	1	0.5748485	0.2241873
Budget	33.15	1146.54	275.9569	189.1-936

For the contrast of the hypotheses, we made a multiple linear regression that “allows explicit control of other factors that simultaneously affect the dependent variable” (Wooldridge, 2006, p. 68), using the OLS method that has been used in previous studies to analyse the determinants that influence the disclosure of information in the public sector (Guillamón et al., 2011; García-Sánchez et al., 2013; Alcaraz-Quiles et al., 2015). The estimate is for the total index and subindexes.

To ensure compliance with the basic assumptions of the model, the Breusch & Pagan (Prob > chi2 x 0.9594) test performed, confirming that **the model does not present heteroscedasticity problems**.

Subsequently, we evaluate the multicollinearity of the model. The correlation matrix (Table 4) shows that there are positive correlations that do not significantly affect the model. The Inflationary Factor of Variance (IFV) test, showing how the variance of an estimator is affected by the presence of multicollinearity, was also carried out (Gujarati &

Porter, 2013), obtaining a value of 3.82 in the model average and less than 8 for each variable, which is considered small (<10) (Guillamón et al. 2016), ensuring that the model has no problems of multicollinearity. Therefore, the coefficients of the OLS model are efficient and consistent.

Table 4. Correlation matrix

	Size	PopDep	Economic	Internet	Budget
Size	1				
PopDep	-0.2272**	1			
EconoLevel	-0.1502	0.2359**	1		
Internet	0.4756***	-0.4631***	-0.1661	1	
Budget	0.0191	-0.089	0.5959***	0.1201	1

Note: ***, **, * indicate its significance from 1%, 5% and 10% respectively

5. Results

In this section, contrasting of the hypothesis set out in section 2 will be made to establish the determinants dependent variable are shown in Table 5, with R² of all models greater than 25%, ensuring that the models have a high explanatory capacity that influences the disclosure of sustainability information.

In model 1, the dependent variable is “Total” which is the disclosure percentage of all the items evaluated (R²: 0.6143); the variables, size, economic level and budget affect the disclosure of sustainability information of local entities, in the case of the size and budget positively at 99% and 90% confidence level, respectively and in the case of the economic level its ratio is negative with a level of confidence at 90%; therefore, the H1, H3 and H5 scenarios are met.

The relationship between size and disclosure is in line with the results obtained by Nevado-Gil & Gallardo-Vázquez (2016); Cuadrado-Ballesteros et al. (2014); Joseph et al. (2014) & García-Sánchez, et al. (2013), and is consistent to the extent that larger cities have more significant pressures to disclose information to different stakeholders. Due to the complexity of their service attention and use electronic communication channels to communicate their management. Therefore, H1 is confirmed.

The variable EconoLevel is related, with the economic development status of the municipalities, is an important topic, monitored by citizens and supervisory entities which affects the quality life and the incomes, to ensure the proper use of

public resources. In case of negative results, the local entities have less incentive to disclose sustainability information as a message of austerity and responsible use of resources, and because they do not carry out activities related to these issues due to the financial situation of the municipality. Therefore, H3 is accepted. This result coincides with those obtained by Cuadrado-Ballesteros et al. (2014) and differs from those obtained by Nevado-Gil & Gallardo-Vázquez (2016); Alcaraz-Quiles et al. (2015) and García-Sánchez et al. (2013).

The variable budget has a positive relationship, associated with the need to legitimise the actions and the management of public resources by the rulers, which creates pressure to present broader information to improve transparency, incorporating sustainability aspects because they have the financial capacity to generate that kind of information. This result differs from that obtained by García-Sánchez et al. (2013) in local entities in Spain, where this variable is not explanatory for the selected sample. H5 is accepted.

In the results of model 2 “general”, the size has a positive and statistically significant association of 95% and the economic level is negative at 90%, which is explained by the need to disclose this type of information to groups of interest and control entities that monitor compliance with countries’ transparency laws. Also, the difficulties in the level of economic development can lead to local governments to limit the publication of this information in their websites, to reduce public pressures on these issues. In this model, the H1 and H3 are accepted.

In model 3 “economic”, the size and internet have a positive and statistically significant ratio at a level of 99%, due to the international trend to incentivise the law of transparency and open data. In the case of size, it is consistent with García-Sánchez et al. (2013) for the municipalities of Spain. Besides, disclosure of financial and budgetary information is mandatory in AP countries. Therefore, the local governments have regulatory pressures for this type of information. H1 and H4 are accepted

In model 4 “social”, no variable was meaningful to explain the disclosure of information, i.e. the determinants analysed in this study do not explain the motivations of the entities to generate and disclose social details. An explanation of this result may be associated with the social function of the entities, which use the web pages to inform the actions they take, without any socioeconomic criteria affecting this type of information and it would be necessary to incorporate and cultural factors, as well as characteristics of rulers, which allow

Table 5. Explanatory factors for the disclosure of sustainability information

Dependent Variable	Model 1 Disclosure		Model 2 General		Model 3 Economic		Model 4 Social		Model 5 Environment	
	Coefficient	Estimated Error	Coefficient	Estimated Error	Coefficient	Estimated Error	Coefficient	Estimated Error	Coefficient	Estimated Error
Size	.0320857***	.0076574	.0242107**	.0104702	.0356146***	.0115339	.0121077	.011918	.0569661***	.0136271
Popdep	-.0597589	.1569241	-.0455306	.2145673	.0830887	.2363671	-.1953259	.2442393	-.1507593	.2792626
EconoLevel	-.6453707*	.3657005	.09273511*	.500034	-.2587011	.5508368	.2768984	.5691823	-.1557506**	.6508017
Internet	.0859651	.0540189	.0258788	.0738618	.3137281***	.081366	.082244	.0840759	-.1242873	.0961322
Budget	.0000986*	.0000515	.0000653	.0000704	.0000158	.0000776	.000052	.0000802	.0003007***	.0000917
Chile	.0979068***	.0349887	.0803262*	.0478412	.1325543***	.0527018	.0136193	.0544571	.1529923***	.0622661
Colombia	.1183344***	.0441369	.1779252***	.0603498	.0530598	.0664813	.10394	.0686954	.1287815	.0785462
México	.1040455***	.025861	.0480803	.0353606	.1518098***	.0389532	.1970512	.0402505	.0415996	.0460223
Peru	Omitted		Omitted		Omitted		Omitted		Omitted	
Constant	-.0996519	.113395	.2352771	.1550486	-.2684463	.1708014	.0815555	.1764899	-.5384133	.2017981
R ²	0,6143		0.2823		0.6901		0,5011		0,3745	
F	17,92***		4.43***		25.05***		11,30***		6,74***	
No obs.	99		99		99		99		99	

Note: ***, ** y * indicates significance from 1%, 5% y 10%, respectively. The country variable controlled the models.

us to deepen these reporting practices. Therefore, no hypothesis is accepted, and this result is equal to that obtained by [García-Sánchez, et al. \(2013\)](#) in the municipalities of Spain.

Finally, in **model 5** "environment", the ratio is positive and statistically significant to 99% with the size and budget variables that are associated with municipalities with a significant number of inhabitants, having more tremendous pressures from the public to work on environmental issues such as gas emission reduction, climate change and waste management, considering that they are mainly urban cities. In the case of the budget, it is emphasised that governments with more budgetary capacity will be more likely to invest in human and financial resources for the conservation of the environment and the disclosure of this information, compared to municipalities with smaller budgets.

The *EconoLevel* variable is also statistically significant at 95%, but with a negative relationship, which means that local governments, in the face of an unfavourable situation of economic development level, have less incentive to disclose information about environmental actions, as a message of austerity in these kinds of matters or because they do not carry out activities related to these issues, due to the financial situation of the municipality. Several studies have highlighted that the disclosure of environmental issues in Latin America are not directly associated with a clear environmental policy, bearing in mind that the central origin of resources in these countries is related to the exploitation of natural resources, which in many cases have negative implications for the environment.

Therefore, a low level of economic development affects low environmental protection, as has been highlighted [Homsy & Warner \(2015\)](#) and low-income populations and minorities also have low environmental protection, with a minor disclosure of information on environmental issues. The pressures in PA countries are mainly related to economic growth and decreasing social inequality of the population.

To conclude this section, [Table 6](#) summarises the contrast of accepted assumptions for each of the dependent variables: H1 is accepted in all models, except social category. H3 is accepted for the total index, economic and environmental categories; the H4 is accepted for the economic category, the H5 is accepted for the total disclosure and environmental category. Finally, H2 could not be tested in any of the models, which differs from the results of [Alcaraz-Quiles et al. \(2015\)](#).

Table 6. Summary of contrasting hypotheses

Variable	Hypothesis	Model 1	Model 2	Model 3	Model 4	Model 5
		Disclosure	General	Economic	Social	Environment
Size	H1	Accepted	Accepted	Accepted		Accepted
Pobdep	H2					
EconoLevel	H3	Accepted	Accepted			Accepted
Internet	H4			Accepted		
Budget	H5	Accepted				Accepted

6. Conclusions

This paper presents an empirical analysis of the factors affecting the disclosure of sustainability information by local governments in the Latin American context, and specifically in PA countries, which contributes to reducing the gap in research in the public sector and developing countries. For this study, the socioeconomic factors of municipality size, dependent population, economic level, internet access and budgetary capacity, considered in the previous literature, were analysed to determine their influence on the disclosure of sustainability information from 99 local governments of the PA,

through a disclosure index that measured the percentage of disclosure of sustainability information available on websites, in the total items analysed, as well as sub-indexes by categories: general, economic, social and environmental.

The municipalities of this region achieve an average total level of disclosure of 39.88%, which is considered a low percentage compared to other works that use the same methodology in the different areas ([Frías-Aceituno et al., 2013](#); [Frías et al., 2013](#); [Navarro Galera et al., 2015](#)). This is due to several reasons: the context of the PA countries and in general in Latin America is a highly legalistic region, which justifies the low dissemination of social and environmental aspects given that they are not mandatory disclosure unlike of the economic, budgetary and general elements. The recent implementation of the Transparency Law and the adoption of the International Public Sector Accounting Standards (IPSAS) in the region is noteworthy. Therefore, the institutional pressures associated with the regulatory and supervisory bodies have a relevant effect on economic and general information and may explain the low disclosure on social and environmental aspects.

Despite the low level of disclosure, these results are a significant step forward, bearing in mind that these entities are not required to disclose sustainability information. Also reaffirms the arguments of [Niemann & Hoppe \(2018\)](#) and [Larrinaga-González & Pérez-Chamorro \(2008\)](#), that point to the public entities disclose sustainability-related information in different communication channels such as web pages, social networks, communications. Another critical aspect is the distrust of the inhabitants of the region towards governments, which has generated frustration and disinterest in public affairs ([Corporación Latinobarometro, 2018](#)). This situation is related with a low control and participation in public affairs, which makes central governments focus on complying with regulatory pressures and control bodies and legitimise their actions before the public through traditional media or social networks. At the same time, progress is still going on in Latin America to discuss the dissemination of sustainability information in local governments.

Latin America countries have particularities that differentiate the area from other regions where such similar studies have been carried out: high-income inequality is reflected in the difficulties of working in Sustainable Development ([Comisión Económica para América Latina y el Caribe \[CEPAL\], \(2016\)](#)). There are difficulties of internet access by the population and the need to meet basic needs, which limit the interest in controlling political actions. Thus sustainability issues from the public sector are in a primary state, albeit with progress in meeting the Agenda 2030, where Latin America has significant challenges to be completed.

In the empirical results, we found that the size of the population affects sustainability disclosure in a positive and significant way ([García-Sánchez et al., 2013](#)) in all the models analysed (except the social category). Thus, local governments with highest numbers of inhabitants have higher pressures of the population and control bodies to disclose sustainability information, such as a mechanism to inform about their performance and have incentives to legitimise their actions before the population and the media, for broader scrutiny. There are many users interested in knowing and controlling the management of public resources by entities, considering corruption cases and that citizens are the principal source of government resources, which coincides with the approaches to Institutional Theory in public entities.

On the other hand, the level of economic development of the municipality has a negative and significant impact

(García-Sánchez et al., 2013) in the total disclosure and the general and environmental categories. Reporting on sustainability information depends on the level of economic development of the municipality for the influence of different interested users. In the case of general and environmental information, the mayors maybe concentrate on highlighting economic and social aspects, which allow to respond to the demands of citizens and legitimise actions related to increasing the economic development of the municipality.

For its part, internet access is only significant in the disclosure of economic information, that is related with the obligation of public entities to disclose financial and budget information for avoiding disciplinary and economic sanctions if it does not; it is also applied to legitimise the use of public resources. This outcome may also be associated with local governments that use other means of information and legitimising their actions.

The budgetary capacity has only a positive and significant relationship in the environmental category, because only municipalities with fiscal capacity, have human, financial and technological resources to generate this information, and generally assume environmental policies in their government plans to meet population demands and demonstrate actions. Finally, it is striking that the dependent population was not an explicative variable in any of the models, unlike the results obtained by Alcaraz-Quiles et al. (2015) in the local governments of Spain. Therefore, in the PA municipalities, it is not possible to associate the dissemination of sustainability information with the child and elderly population.

This work presents several contributions to the study of reporting in local governments: first, it deepens the analysis of the explanatory factors of the disclosure of sustainability information for these entities; secondly, a region that has not been widely researched is analysed, according to the literature review carried out and finally, this study will be carried out for four countries in the region with particular social, economic and political characteristics, which differentiate it from previous researchs, which have been concentrated in a single country. Additionally, this study also essential to analyse progress in meeting the sustainable development goals, because it shows an advance in social and environmental matters in local and regional governments in the PA.

For future research, we proposed to analyse other factors that may influence local government decisions to disclose sustainability information, such as the political, cultural and qualitative characteristics of rulers that can explain the interest of public entities in disclosing non-financial information. Also be interesting to analyse other communication channels that entities use for accountability, such as annual reports and social media, which could complement the results of this study. Among the limitations of the paper is the heterogeneity of the information between countries to measure other socioeconomic variables of interest, which would have expanded the analysis in the PA countries.

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Conflict of interests

The authors declare no conflict of interests.

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3. Reports on Sustainable Development Initiatives (MDGs, MDGs, Global Compact)
- ORGANISATION PROFILE**
4. Identification and contact details of the Entity
5. Information on the procedures and services provided by the Entity
6. Data of interest of the municipality
7. The organic structure with the identification of dependencies or areas responsible for the affairs of the Entity
8. Information on economic, environmental, or social initiatives that the entity has subscribed to or adopted (at least in an item).
9. Information of municipal, national, or international associations or organisations to which the organisation belongs and has any active participation
10. Discloses the obtaining of prizes by the entity prizes or distinctions in the period covering the information provided
11. Regulatory information issued by the entity
- COVERAGE ASPECTS**
12. Decentralised entities or agencies that are part of the Entity
13. Indicates the rules or criteria for the elaboration of information of the entity
- PARTICIPATION OF INTEREST GROUPS**
14. Mention the Interest Groups of the Entity
15. Discloses the regulations or manual of citizen participation in matters of the Entity
16. Identification of municipal citizen participation mechanisms for the strategic decision-making of the Entity
17. Has tools of contact with interest groups (PQRSD)
18. Has social media for interaction with stakeholders
19. Disseminates user input through citizen participation mechanisms
- GOVERNMENT STRUCTURE AND COMPOSITION**
20. Identification of the officials in charge of the administration of the Entity
21. Identification of the areas or officials responsible for the economic, environmental, and social affairs of the
22. Publication of the data of the curriculum of the head of the Entity
23. Contact details of officials in charge of municipal administration are published
- EVALUATION OF THE COMPETITIONS AND PERFORMANCE OF THE TOP GOVERNMENT ORGAN**
24. The current government program or municipal development plan is presented
25. The report on the management or accountability of government bodies is presented
- RETRIBUTION AND INCENTIVES**
26. The remuneration of the officials that make up the government cabinet of the entity is published
- ETHICS E INTEGRITY**
27. The public of the code of ethics and/or good governance

Appendix 1 Information Index Questionary

BLOCK 1: GENERAL CATEGORY

STRATEGIC AND ANALYSIS

1. Information on the strategic management of the entity (mission, vision, values, and objectives)
2. Declaration on the general vision and strategy of the entity aimed at sustainability

BLOCK 2: ECONOMIC CATEGORY

BUDGET INFORMATION

28. Discloses the Entity's annual budget
29. Discloses information on decentralised agencies' budgets
30. Discloses information on budget changes during the period
31. Publishes reports on the implementation of the entity's budget

32. Separately presents items from the entity's revenue and expenditure budget

FINANCIAL INFORMATION

33. Publishes financial information of the Entity (Financial Statements, ledger account balances)
 34. Public financial statements by international public sector financial reporting standards (EEFF)
 35. Presents income and expenses in the financial information of the Entity
 36. Information on expenditures associated with social (financial) programs

MUNICIPAL DEBT

37. Information on liabilities or municipal public debt
 38. Historical evolution of municipal government debt

MANAGEMENT INDICATORS

39. Tax indicators per capita associated with the municipality (investment-debt-expense - surplus/deficit)
 40. Indicators related to the demographic and/or economic situation of the municipality (unemployment, GDP among others)
 41. Discloses indicators management of the municipality's programs
 42. Short- and medium-term economic forecasts of the municipality

PROCUREMENT PRACTICES

43. Publishes the practices, policies, or regulations for the acquisition of goods and services of the Entity
 44. Publication of calls and tenders for the procurement of goods and services for the Entity
 45. Results of calls and tenders made by the Entity
 46. List and amount of operations with mayor's suppliers
 47. List and number of persons' contracts for The Entity's fees

OTHER INFORMATION

48. External audit reports made to the Entity
 49. The cost of the services and formalities provided by the municipal entity is published
 50. The Entity discloses the transfer of public resources to third parties
 51. Presents information on the infrastructure investments made by the entity

BLOCK 3. SOCIAL CATEGORY

LABORAL PRACTICES AND WORK DIGNO

52. Information on the social benefits or incentives that full-time employees are entitled to the Entity
 53. Information about employees or activities related to the Occupational Safety and Health Policy
 54. Information on training employees of the Entity
 55. Composition of civil servants by professional category and gender
 56. Information on the performance assessment of civil servants
 57. Information on the remuneration of men and women of the Entity
 58. Information on programs or activities designed for the promotion or care of human rights (include general information on human rights)
 59. Information on cases of discrimination and corrective measures taken or actions associated with combating discrimination
 60. Information on the right to freedom of association and the right to collective bargaining.

61. Initiatives related to indigenous peoples
 62. Discloses gender-associated programs, policies, or institutions

SOCIETY

63. Information on development programs in local communities
 64. Information on policies and procedures on the fight against corruption in the Entity
 65. Information on the actions taken by the entity to combat corruption
 66. Measuring the satisfaction of the programs and services offered by the Entity
 67. Public Employment Offer or Calls for Public Employment of the municipality

BLOCK 4. ENVIRONMENTAL CATEGORY

GENERAL INFORMATION

68. Updated information on the environmental situation of the municipality
 69. Discloses the environmental expenses and investments made by the Entity
 70. Disseminates municipal, national, or international initiatives carried out to mitigate environmental impacts in the municipality
 71. Information on reducing negative effects on the environment
 72. Discloses campaigns for the use of recycling material
 73. Information on environmental policy or regulations of the Entity is disclosed
 74. Information on the entity's environmental management system is disclosed

ENERGY

75. Information on the energy consumption of the Entity
 76. Dissemination of actions carried out for the consumption of energy efficiently and/or based on renewable energy

WATER

77. Information on water collection sources in the municipality
 78. Information on total consumption and water-related actions in the

BIODIVERSITY

79. Facilities ready for the protection of the biodiversity of the world
 80. Description of protected or restored habitats

EMISSIONS

81. Information on direct and indirect greenhouse gas emissions
 82. There is information on air pollution in the municipality

WASTE

83. Information on the classification and management of the municipality's waste

TRANSPORT

84. Environmental impact associated with public transport service

HEARING CONTAMINATION

85. Up-to-date information on noise pollution is available in the different areas of the municipality