An analysis of university sustainability reports from the GRI database: An examination of influential variables

Abstract

In the business context, many papers have examined whether certain variables can affect the sustainability disclosure practices. However, research on universities has mainly been addressed to explore the extent of sustainability information reported with a little focus to determining the factors that may affect it. This paper analyses the influence exerted by some variables concerning the extent of information reported in the university sustainability reports included in this study. To accomplish this task, data were collected using a content analysis of the university sustainability reports extracted from the GRI sustainability disclosure database. The findings reveal that sustainability disclosure practices by universities are explained by different factors, among which institutionalization, geographical region, external assurance and leadership are. Such results are supported jointly by the underpinnings of the institutional and legitimacy theories in response to coercive and mimetic pressures and by the need to improve reputation in society.

Key words: GRI, sustainability reporting, disclosure, universities, content analysis.

Paper type: Research paper.

Introduction

In response to stakeholders' demands of accountability and to reinforce legitimize, companies worldwide have increased the reporting of social, environmental and economic information during the last years, especially in the case of large and listed enterprises (Fonseca et al. 2011; Alonso-Almeida et al. 2015). This practice is known under the title Sustainability Reporting (SR), defined by the Global Reporting Initiative (GRI) as "the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organizational performance towards the goal of sustainable development" (GRI 2011, p.3). In view of these definitions, SR could be conceived as an activity aimed at reporting information on sustainability impacts to respond to stakeholders' needs and as an instrument to measure sustainability performance of organisations (Joseph 2012).

Nowadays, reporting on sustainability represent the norm and not the exception among listed and private enterprises since primary stakeholders are scrutinizing business activities and are demanding organisations to contribute to a sustainable society (Prado-Lorenzo, Gallego-Alvarez, and Garcia-Sanchez 2009; Alonso-Almeida et al. 2015). This trend is also explained by the rapid growth of the GRI guidelines, "a reporting standard that encourages the use of the term sustainability to describe triple-bottom line disclosures" (Fonseca et al. 2011, p. 22-23). These guidelines were conceived in 1997 and they represent the most widely employed global standards for SR around the world among all organisations (Brown, De Jong, and Levy 2009; Alonso-Almeida et al. 2015). This growing trend has resulted in an extensive number of empirical studies that have examined the extent to which listed and largest private enterprises are reporting on sustainability issues to satisfy stakeholders' demands and improve their reputation (Castelo and Lima 2008; Reverte 2009).

In the public sector sphere, many organisations are also experiencing demands from stakeholders for a greater commitment to the disclosure of social and environmental information (Farneti and Guthrie 2009; Alcaraz, Navarro, and Ortiz 2014). On this basis, universities play a central role in society because they are responsible for training future professionals and are sources of new knowledge to be transferred to the society (Karatzoglou 2013; Sedlacek 2013; **Sassen and Azizi 2018a**). Thereby, SR could be configured as a useful practice to communicate universities' efforts toward sustainability (Lozano 2011; Alonso-Almeida et al. 2015). Previous studies noted the pressures imposed on universities to the disclosure of more detailed and varied information (Garde, Rodríguez, and López 2013; **Del Sordo et al. 2016**). As a result, some universities have started reporting on sustainability issues to satisfy stakeholders' demands and to legitimize their actions in society **(**Dagiliene and Mykolaiteine 2015; Romolini, Fissi, and Gori 2015; **Sassen and Azizi 2018b).** Also, other universities have felt institutionally pressured to report more information about their sustainability performance and to be more accountable to the society (Chatelain-Ponroy and Morin-Delerm 2016).

In spite of the pivotal role of universities in regards to the progress toward sustainability, **SR has not been well addressed by these institutions and it has been pointed out that it is a practice that is still in its initial phase** (**Lopatta and Jaeschke 2014; Del Sordo et al. 2016; Sassen and Azizi 2018b)**. An extensive body of empirical research states that, despite the increasing concern showed by different stakeholders, **the amount of information reported by universities about sustainability themes is reduced compared to private corporations** (**Rodríguez-Bolívar, Garde-Sánchez, and López-Hernández 2013;** Dagiliene and Mykolaiteine 2015; Romolini, Fissi, and Gori 2015). Most of these studies have descriptively

examined the amount of sustainability information reported by **universities according to the indicators contained in the GRI guidelines** but they have not explored the factors that can affect the level of disclosure of sustainability information (**Del Sordo et al. 2016; Sassen and Azizi 2018ab). Also, most of these studies have been contextualized in a specific region with a prevalence of papers performed in Europe and North America (Fonseca et al. 2011; Rodríguez-Bolívar, Garde-Sánchez, and López-Hernández 2013; Lopatta and Jaeschke 2014). However, there are no sufficient studies that have addressed this topic from an international perspective (Alonso-Almeida et al. 2015).**

In view of the above arguments, the main aim of this paper is to analyse the influence exerted by some variables concerning the extent of information reported in the university sustainability reports included in this study. To accomplish this task, data were collected using a content analysis of the university sustainability reports extracted from the GRI sustainability disclosure database. **In more detail, the analysis included those reports around the world that followed the G3 (launched in 2006), G3.1 (initiated in 2011) and G.4 (started in 2013) guidelines.** We have selected the GRI standards because they are the most widely and commonly used for SR among public and private organisations around the world (Alonso-Almeida et al., 2015; Ceulemans, Molderez, and Van Liedekerke 2015). The GRI Guidelines are an indicator-based framework and they were developed by means of a broad multi-stakeholder process emphasizing the involvement of stakeholders in the process of SR (Brown, De Jong, and Levy 2009). Such guidelines contain a section (named as "Standard Disclosures") in which is detailed what should be reported by means of a set of indicators structured in three main categories: economic, social and environmental which are employed by organizations to report about their sustainability performance.

The remainder of the paper is organised as follows. First, a framework for sustainability followed by a literature review of SR in the university sector is described. Second, it is explained the variables that affect the extent of sustainability information reported among universities. Next, the methodology is examined, followed by the analysis of the results. Finally, the discussion and conclusion sections are presented, along with a description of the study's limitations and suggestions for future research.

Theoretical and institutional framework for sustainability in universities

The definition of sustainability[1] comes from two main contributions (Richardson and Kachler 2016). The first one rests on the World Commission on Environment and Development (WCED) who wrote the document 'Our Common Future', known as the 'Brundtland Report'. This document states that sustainability means "the development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987, p. 37). The second definition was adopted by Elkington (1997), who defined the term sustainability using an approach based on the triple bottom line, which involves the interrelationship and integration of the economic, social, and environmental dimensions of corporate actions.

In the university sector, there have been different attempts to conceptualize the characteristics of a sustainable university (Hoover and Harder 2015). In this regard, the transition of universities toward sustainability involves all dimensions of the university described as education, research, community outreach, and operations (Velazquez et al. 2006; Ceulemans, Molderez, and Van Liederke 2015).

Thus, a sustainable university involves changing its own mission, redefining its curricula, modifying its research programs, incorporating new ways to live on their

[1] The GRI guidelines do not offer an own definition of sustainability. Such standards make a reference to the concept of sustainability defined in the Bruntland Report.

campuses, enhancing community engagement and outreach and assessing and reporting these activities to stakeholders (Wals 2014; Alonso-Almeida et al. 2015).

Adopting an institutional approach, there is a large number of policies and declarations aimed at enhancing the implementation of sustainability practices in the business context. Among such initiatives, the approval of the Green Paper in 2001 by the European Commission introduced a debate about how sustainability could be promoted in Europe (Reverte 2009). The Organization for Economic and Cooperation Development (OECD) approved the "OECD Guidelines for Multinational Enterprises" in 2001 (updated in 2011). Such guidelines are governmental recommendations to multinational corporations to incentive responsible business conduct in a global context. Other main policies and declarations that have approved in this regard are The Bench Marks of Principles for Global Corporate Responsibility (2003, third edition), the Ten Principles of United Global Compact (2007) or the renewed EU strategy 2011-14 for Corporate Social Responsibility developed by the European Commission (Reverte 2015).

In the university sphere, many national and international declarations have been developed to foster sustainability and many universities have voluntarily signed several initiatives and declarations over the last thirty years (Lozano et al. 2013). Among these declarations and initiatives, we can point the Stockholm Conference, the Talloires Declaration or the Copernicus University Charter, which were developed many years ago (Calder and Clugston 2003; Lozano et al. 2013). Since then, many other international declarations on sustainability in higher education have been approved, such as the 2012 United Nations Conference on Sustainable Development (UNCSD) held in Rio de Janeiro (Rio+20) and the report "Knowledge, Engagement and Higher Education: Contributing to Social Change" made by the Global University Network for

Innovation (GUNI) in 2013 (Larrán, Herrera, and Andrades 2015). Nevertheless, the fact of signing a declaration does not imply a remarkable progress in the field of sustainability (Dlouhá et al. 2018). For example, the United Nations Decade on Education for Sustainable Development has not had the expected impact despite their relevance and timeless (Leal Filho et al., 2018). The lack of compulsory regulations may be suggesting that there is still a long way to go to sustainability in universities (Radford 2012; Leal Filho et al. 2018). Nowadays, expectations are placed on the United Nations Sustainable Development Goals and its potential impact on implementing sustainability at all university levels (Leal Filho et al. 2017, 2018).

Literature review

Sustainability reporting in the business sphere

The extensive number of academic papers that have examined the extent of social and environmental reporting among companies have employed different variables, such as size, profitability, leverage or ownership structure (Cormier, Magnan, and Van Velthoven 2005; Castelo and Lima 2008; Reverte 2009). Results of these studies found that there is a positive relationship between size and media exposure with the extent of sustainability information reported by private companies (Brammer and Pavelin 2008; Reverte 2009). Also, it was found that companies belonging to industries with a strong impact on the environment tend to report more information about sustainability issues (Castelo and Lima 2008). Theoretically, such results are supported by the need that enterprises have to legitimize their actions in society (Reverte 2009; Tagesson et al. 2009).

Sustainability reporting in the university sector

Over the last fifteen years, there has been an increasing concern for the disclosure of sustainability information (Ceulemans, Molderez, and Van Liedekerke 2015). After reviewing the GRI sustainability disclosure database, we have appreciated that the first sustainability report from a university was included in 2001 while the number of university sustainability reports to date is of 188[2]. In this regard, some universities have adopted a leading position since they have published three or more sustainability reports consecutively. Among such universities are the University of Cadiz from Spain, La Trobe University from Australia, Pontifical Catholic University of Valparaiso (Chile), University of Santiago de Chile (Chile) and Ball State University (United States).

This trend has been accompanied by a greater number of papers that have examined the state of reporting on sustainability in universities (Lozano 2011; **Lopatta and Jaeschke 2014**). To describe the literature, we have used the following structure: context, sample, reporting tool and results. Based on the context, previous studies have been conducted in different regions. **In Europe, some authors have contextualized their research in Italy** (Siboni, del Sordo, and Pazzi 2013; Romolini, Fissi, and Gori 2015; **Del Sordo et al. 2016**), Lithuania (Dagiliene and Mykolaiteine 2015), France (Chatelain-Ponroy and Morin-Delerm 2016), Germany and Austria (**Lopatta and Jaeschke 2014)** or Spain (Moneva and Martin 2012)**. In North America, some studies were performed in** Canada (Fonseca et al. 2011; **Sassen and Azizi 2018b**), and United States (Garde, Rodríguez, and López 2013; **Sassen and Azizi 2018a**). Other authors have focused their attention on Australia (Gamage and Sciulli 2017). Meanwhile, some papers have adopted an international perspective (Lozano 2011; Alonso-Almeida et al.

[2] Data extracted from 22 January 2018. These 188 reports have been published following the G1, G2, G3, G3.1 and G4 guidelines. At this point, we have to note that our sample is composed of 138 reports because the data was collected between January 2017 and March 2017 and according to the G3, G3.1 and G4 standards.

2015). Concerning **the sample and data collection**, **most of the literature has performed a content analysis** of a limited number of universities that made and published their own sustainability reports (Lozano 2011; Fonseca et al. 2011; Siboni, del Sordo, and Pazzi 2013; Dagiliene and Mykolaiteine 2015; Romolini, Fissi, and Gori 2015). **As an example, the paper by Lopatta and Jaeschke (2014) only examined six university sustainability reports while Sassen and Azizi (2018a) explored 23 reports on sustainability.** Meanwhile, Garde, Rodríguez, and López (2013) conducted their study based on the annual reports and websites for 154 universities from United States. Alonso-Almeida et al. (2015) selected the total number of sustainability reports published by universities during the period from 2001 to 2012 and this resulted in a sample of 46 universities that had published a total of 78 sustainability reports. Other studies collected the data by means of surveys which were administered to universities that had published sustainability reports (Ceulemans, Lozano, and Alonso-Almeida 2015) **while some authors conducted two data collection methods based on content analysis and interviews (Lopatta and Jaeschke 2014) or surveys (Del Sordo et al. 2016)**

Concerning the reporting tool selected, most of the literature used the G3 and G4 GRI guidelines (**Rodríguez-Bolívar, Garde-Sánchez, and López-Hernández 2013; Sassen and Azizi 2018a)**, excepting some cases. For example, the paper by Lozano (2011) used the Graphical Assessment of Sustainability in Universities (GASU) tool for the analysis of the reports. GASU facilitates the comparison of sustainability information reported, which can help university leaders to compare and benchmark their sustainability performance. GASU is based on the GRI 2002 guidelines, with an additional educational dimension and it is composed of 126 indicators. **This instrument has been employed by some authors as a source of indicators for reporting on the**

university dimension (Lopatta and Jaeschke 2014; Sassen and Azizi 2018ab). Siboni, del Sordo, and Pazzi (2013) used to measure the disclosure of sustainability information a tool previously defined by a study that was focused on exploring practices of SR in Italian local governments. Additionally, Fonseca et al. (2011) examined the sustainability reports using a list of 56 indicators derived from the GRI guidelines and other tools, such as Sustainability Tracking Assessment & Rating System (STARS), which represents the most recent tool for assessing sustainability in universities from United States and Canada. In addition to these tools, there are other instruments that are integrated by indicators to measure and report on sustainability in universities, such as the Sustainability Assessment Questionnaire, the Campus Sustainability Assessment Framework, the College Sustainability Report Card or the Auditing Instrument for Sustainable Higher Education (Ceulemans, Molderez, and Van Liedekerke 2015; Larran et al. 2016).

Results from previous research shows that the extent of sustainability information reported by universities is quite reduced, with a greater emphasis on the economic and environmental dimensions compared to social aspects (Lozano 2011; Garde, Rodríguez, and López 2013; Romolini, Fissi, and Gori 2015). Lozano (2011) explained that the greater emphasis on the environmental dimension may derive from sustainability was primarily linked with environmental connotations. **Also, universities from Canada and United States that have published sustainability reports are participating in the STARS, whose reporting framework emphasizes the measurement of environmental performance (Sassen and Azizi 2018ab).** The greater emphasis on the economic aspects is justified by this information is easily removable from the annual reports (Dagiliene and Mykolaiteine 2015). With regard to societal issues, evidence shows that the social dimension is less matured at the university level compared to

environmental aspects (Salzman, Ionescu-Somers, and Steger 2003). Also, social issues are more difficult to measure compared to the environmental dimension (Lozano 2011).

Barriers to the disclosure of sustainability information in universities

The paper by Blanco-Portela et al. (2017) made an extensive review of the literature of barriers toward the implementation of sustainability practices in universities. They structured such barriers in five main dimensions: stakeholders, internal structure of the university, institutional framework, resources and external aspects. Following this order, different authors have noted that one of the main problems toward the integration of sustainability practices in universities comes from the lack of involvement of stakeholders (Disterheft et al. 2015). In the same vein, Jongbloed, Enders, and Salerno (2008) identified three main barriers to the university engagement with their communities. Such barriers are connected with the fact that research and teaching are not aligned with stakeholders' demands, the internal reward structure of faculty members and the lack of an entrepreneurial culture in universities. With a focus on information disclosure, it is argued that the lack of SR in universities is connected with the absence of external stakeholder engagement processes (Ceulemans, Molderez, and Van Liedekerke 2015).

Meanwhile, some authors have also documented that the complexity of the internal structure of universities is a potential barrier to change for sustainability (Hoover and Harder 2015). Other studies noted that the lack of a proper institutional framework could hamper the progress toward sustainability in universities (Lozano et al. 2013). The lack of resources, both financial and human, has been commonly mentioned as an important obstacle to overcome (Velazquez, Munguia, and Sanchez 2005; Ceulemans, Lozano, and Alonso-Almeida 2015). Finally, several authors found

different external factors, like lack of pressure from society, which have a relevant influence in the commitment to sustainability in universities (Ferrer-Balas et al. 2008; Larran et al. 2015).

Theoretical approaches on sustainability reporting

Empirical research on reporting on sustainability in the business context has been mainly supported by different theoretical perspectives, being the most commonly used the agency theory, the legitimacy theory, the institutional theory and the stakeholder theory (Brammer and Pavelin 2008; Castelo and Lima 2008; Reverte 2009). Focusing on the university sector, it is important to note the contribution of Jongbloed, Enders, and Salerno (2008) in which was described the relevance of the stakeholder theory to argue the interconnection between universities and its communities. Chatelain-Ponroy and Morin-Delerm (2016) adopted a theoretical positioning based on intertwined approaches like stakeholder, legitimacy and institutional theories. Meanwhile, Larrán, Herrera, and Andrades (2016) used the institutional theory to explain that the implementation of sustainability practices in universities is explained by coercive pressures. **Sassen and Azizi (2018b) theorized their paper according to the stakeholder and legitimacy theories while Del Sordo et al. (2016) selected the legitimacy theory to explain patterns in SR in universities.** In view of the previous arguments, we consider appropriate to adopt a multi-theoretical framework because reporting practices on sustainability is a too complex process to be supported by a single theory (Garde, Rodriguez, and Lopez 2016). In particular, we have selected the legitimacy, stakeholders and institutional theories.

The legitimacy theory has been mainly explored in the social accounting research, and more specifically from the basis of voluntary reporting of social and environmental

information by listed companies as an instrument of gain legitimacy and reputation (Brammer and Pavelin 2008; Castelo and Lima 2008; Reverte 2009). In the university context, the neo-liberal agenda has supposed a new institutional climate in which universities have been forced to compete for funding (Christensen and Laegreid 2015). Citing the paper by Jongbloed, Enders and Salerno (2008, p. 318) "One may say that when the role of government in terms of financing and regulating is diminishing, the university as a public institution will have to seek its legitimacy in the way and extent to which its services are accepted and valued by its various stakeholders in society". This has led to an increased concern for universities to be more accountable to the society to improve their social legitimacy (Carvalho and Santiago 2010). Different authors have argued that the commitment to the disclosure of sustainability information by universities is explained by its beneficial effect on their corporate image and reputation in society (Moneva and Martin 2012; Chatelain-Ponroy and Morin-Delerm 2016**; Del Sordo et al. 2016).**

The stakeholder theory has been examined from different research fields, such as management or accounting (McWilliams and Siegel 2001) and many studies on corporate sustainability reporting in private companies has employed such theoretical approach (Reverte 2009; Tagesson et al. 2009). In the university context, the current situation, characterized by legal and socioeconomic changes that affect to their activities, requires that universities have to be more connected with society (Brennan 2008). This involves the need to articulate a proper accountability strategy to manage the relationship and interaction with different actors (Jongbloed, Enders, and Salerno 2008). Theoretically, this is clearly manifested in the stakeholder theory whose principles reflect that universities have to develop their activities to meet the demands of different stakeholders (Garde, Rodriguez, and Lopez 2013; **Sassen and Azizi**

2018b). Chatelain-Ponroy and Morin-Delerm (2016) found that SR by first adopters in the French university context is driven from the pressure exerted by a broad number of stakeholders.

The institutional theory is built on the arguments that organizational behaviour cannot be understood without taking into account the institutional context in which organizations are inserted (Chatelain-Ponroy and Morin-Delerm 2016; Larran, Herrera, and Andrades 2016). Conceptually, this phenomenon has been described as institutional isomorphism, defined by Di Maggio and Powell (1983) as a process in which organizations that have similar environmental conditions are required to resemble each other. Institutional theorists have described that institutional pressures to be isomorphic are represented in coercive forces (regulatory requirements), mimetic forces (imitation practices to obtain conformity) and normative pressures defined as homogenization (Chatelain-Ponroy and Morin-Delerm 2016). In the university sector, Richardson and Kachler (2016) noted that sustainability reports are employed to manage the institutional context in which universities operate. Larran, Herrera, and Andrades (2016) found that the implementation of sustainability strategies in Spanish universities was supported by coercive and mimetic forces derived from the funding performance system. Chatelain-Ponroy and Morin-Delerm (2016) documented that changes in SR patterns of first adopters are explained by coercive pressures as well as by imitation process and normative transmission.

Factors leading to the disclosure of sustainability information in universities

The previous theories have been selected to explain how certain variables can affect the extent of sustainability information reported by universities. In the university context, the most common variables that have been employed in the academic literature are

public/private status, size, institutionalization, geographical region, leadership and quality (Garde, Rodríguez, and López 2013; Alonso-Almeida et al. 2015; Richardson and Kachler 2016). Other variables employed in the context of disclosure of information in universities are leverage, profitability, age and orientation of the university (Gallego, Garcia, and Rodriguez 2011). However, these variables have not been incorporated in this study because they are difficult to fit in the public sector context (profitability and leverage), they can measure similar aspects than other variables (age is associated with size) or they can be factors contextualized to a particular geographical area (orientation of the university).

Public or private status

Public universities, whose funding is depending on the State, are exposed to greater social pressure because their activity is subjected to public scrutiny and control and they are responsible to use public resources in an accountable manner (Gallego, Rodríguez, and García 2011; Rodríguez-Bolívar, Garde-Sánchez, and López-Hernández 2015). Compared to private universities, stakeholders' expectations of accountability are greater in the case of public universities because these institutions are controlled by the public administration and they need to legitimise their actions (Greiling and Grüb 2014; Greiling, Anton, and Stötzer 2015). Based on the underpinnings of the legitimacy and stakeholder theories, it is expected that public universities show a greater commitment to SR in comparison with private universities. The reason is that they are dependent for resources on external bodies and this could explain that the publication of sustainability reports by public universities will be employed to manage their legitimacy in society and to satisfy stakeholders' demands (Richardson and Kachler 2016). Therefore, the following hypothesis is proposed:

H1: The extent of sustainability information reported will be greater at public universities compared to private ones.

Size

The size variable has been commonly examined to determine the extent to which private companies are reporting about sustainability issues (Brammer and Pavelin 008; Tagesson et al. 2009). The literature has found that larger private companies tend to report a great amount of sustainability information compared to smaller ones in response to their greater visibility and power in society and for the need to respond to a greater number of stakeholders (Brammer and Pavelin 2008; Castelo and Lima 2008; (Reverte 2009). In the university context, some authors also found a positive linkage between size and the commitment to sustainability practices (Da Silva and Aibar 2010; Gallego, Rodríguez, and García 2011). We assume that larger universities will show a strong commitment to SR for several reasons recognized under the principles of the legitimacy and stakeholder theories: first, such institutions have more resources and this can influence their behaviour in the context of SR (Richardson and Kachler 2016); second, they are more visible to the society and thus they could be pressured to legitimise their behaviour by means of the adoption of SR practices (Larran, Herrera, and Andrades 2015); third, they have to satisfy informational needs of a broad number of stakeholders (Garde, Rodriguez, and Lopez 2013). So, this leads us to assert the following hypothesis:

H2: Larger universities are more likely to report a greater amount of sustainability information than smaller universities.

Institutionalization

In the private sector, the delegation of responsibilities and functions to different departments has led to a greater level of specialization, with each one being managed by qualified experts (Garde, Rodriguez, and Lopez 2013). Previous research suggests that private firms with departments or committees related to sustainability issues are more likely to disclose social and environmental information (Kastenholz, Galín, and Valero 2004).

Assuming that universities are rational actors, the process of SR may be associated with the university's commitment to sustainability in their organizational structure (Richardson and Kachler 2016). Many universities have adopted within their management structure a unit related to sustainability which facilitates the involvement in the process of SR (Larrán, Herrera, and Andrades 2015). In this sense, Ferrer-Balas et al. (2008) noted that the existence of a coordination unit for the implementation of sustainability practices may affect positively to the change in the university sector. Velasquez, Munguia, and Sanchez (2005) stated that the creation of a functionally-integrative organizational structure to encourage the implementation of sustainability practices allows making decisions more quickly. In view of the above comments and based on the institutional theory, the following hypothesis is proposed:

H3: Universities with sustainability offices are more likely to report a greater amount of sustainability information than the rest.

Geographical region

In the literature on private companies, previous cross-cultural sustainability research has primarily focused on describing this phenomenon in regards to know what the differences are and why they are different (Maignan and Ralston 2002). A common argument used in cross-national sustainability research is that companies are embedded

in country-specific institutional arrangements and this affects the organisations' behaviours and the relationship with their stakeholders (Wu 2001). Theoretically, most of the literature to explain cross-national differences regarding the commitment to sustainability has been supported by the underpinnings of the institutional theory (DiMaggio and Powell 1983; Matten and Moon 2008). Regarding the literature on social and environmental reporting in the business context, pioneering research was aimed at examining the disclosure of sustainability information by companies from Anglo-Saxon countries, especially in the United Kingdom, Australia and New Zealand (Gray, Kouhy, and Lavers 1995, Hackston and Milne 1996). The reason behind this behaviour is the strong emphasis on accountability in the Anglo Saxon culture which drives greater disclosure of sustainability information compared to other regions (Navarro et al. 2014).

In the university sector, previous studies have stated that universities from the United Kingdom, the United States, New Zealand, Canada, Australia and Ireland, identified as Anglo Saxon institutions, are strongly engaged with the disclosure of sustainability information (Garde, Rodríguez, and López 2013; Rodríguez-Bolívar, Garde-Sánchez, and López-Hernández 2013). In view of the previous comments and following the arguments of the institutional theory, the next hypothesis is raised:

H4: Anglo-Saxon universities are more likely to report a greater amount of sustainability information than universities from other regions.

External assurance

Previous research has used the external assurance of disclosures as a proxy variable to measure the quality of sustainability reports (Richardson and Kachler 2016). In recent years, the literature on SR among largest private companies has emphasized the need to

increase the participation of external stakeholders in assuring the quality of sustainability reports (O´Dwyer, Owen, and Unerman 2011; Perego and Kolk 2012). Previous studies have found that about 40% of sustainability reports made by private and largest corporations contain an assurance declaration by a third party organization (Manetti and Toccafondi 2012). Assurance is configured as a key factor in assuring the reliability and credibility of sustainability reports (Perego and Kolk 2012). However, to date there has been a lack of research that examines those processes by which sustainability assurance statements can be achieved (O´Dwyer, Owen, and Unerman 2011).

In the literature on SR in universities, there is a general lack of research on this matter (Ceulemans, Molderez, and Van Liedekerke 2015). Some researchers have argued that the credibility of the reporting process could be improved using third party assurance of sustainability reports (Ceulemans, Molderez, and Van Liedekerke 2015; Richardson and Kachler 2016). To provide assurance, sustainability reports have to be checked by an independent auditor to determine that the information reported is complying with the standards used (Richardson and Kachler 2016). In view of these arguments, and according to the legitimacy theory, the following hypothesis is defined:

H5: The involvement of third party assurance in SR is positively associated with the extent of sustainability information reported.

Leadership

In the private sector, research on the social and environmental reporting has shown that companies belonging to sectors with a high environmental impact have traditionally disclosed a greater amount of sustainability information compared to firms belonging to other sectors (Castelo and Lima 2008; Reverte 2009; Tagesson et al. 2009). Therefore,

these companies could be defined as pioneering institutions in the process of SR which has derived in an imitated behaviour by companies belonging to other sectors (Outtes Wanderley et al. 2008; Alonso-Almeida et al. 2015).

Focusing on the university context, Ferrer-Balas et al. (2008) stated that the pressure exerted from peer institutions or top-tier universities can affect the commitment to sustainability. Different authors have argued that universities have to take a lead position on sustainability by demonstrating their concern for the achievement of a sustainable society (Lukman and Glavič 2007; Garde, Rodríguez, and López 2013). Leading universities can represent change agents in the commitment to sustainability by other institutions (Ferrer-Balas et al. 2008). On this basis, and from a reporting approach, the greater number of sustainability reports disclosed by universities may be considered as a variable to explain the leadership exerted by some universities to a great extent the most prestigious universities have to be recognised as leaders in the movement of social change (McNamara 2008; Larrán, Herrera, and Andrades 2016). Based on the underpinnings of the institutional and legitimacy theories, the fastest adoption of processes of SR may be associated with a mimetic effect derived from pressures from key agents or regulations as well as due to the need to improve reputation (Alonso-Almeida et al. 2015). In view of the previous comments, the following hypothesis is raised:

H6: Leading universities in SR are more likely to report a greater amount of sustainability information than other universities.

Methods

Sample selection

The sample of this study was composed of all university sustainability reports submitted in the website of the GRI sustainability database according to the most recent guidelines: G3, G3.1 and G4 in which a set of indicators for measuring sustainability at universities are defined **(Del Sordo et al. 2016).** These standards are composed of a list of performance indicators organized in three main categories: economic, environment, and social dimensions **(Sassen and Azizi 2018a).** The social category is broken down in four main sub-dimensions: labor, human rights, society and product responsibility. Table 1 summarizes the structure of each GRI standard, in which the indicators that make up each standard are indicated.

[Insert Table 1 here]

At the time of this study, between January 2017 and March 2017, 58 universities around the world have published a total of 138 sustainability reports on the institutional website of the GRI sustainability disclosure database following the G3, G3.1 or G4 guidelines. While in previous studies the sample was composed of the latest reports published by each university (Fonseca et al. 2011; Romolini, Fissi, and Gori 2015), this study was composed of all sustainability reports published by some universities to check whether the extent of information reported by universities has increased over time. The general profile of the sample is explained in Table 2. We can appreciate that most of sustainability reports have been made by European public and larger universities, with a smaller participation of Anglo-Saxon universities. Alonso-Almeida et al. (2015) manifested that European universities tend to adopt the GRI guidelines for making their sustainability reports. Meanwhile, Anglo-Saxon universities often use

other instruments to measure and assess sustainability performance (Ceulemans, Molderez, and Van Liedekerke 2015).

[Insert Table 2 here]

Data collection and content analysis

To collect the data, a content analysis was performed. In the social and environmental accounting research, many studies have analysed the content of university reports or web pages to determine the amount of sustainability information reported (Moneva and Martin 2012; Rodríguez-Bolívar, Garde-Sánchez, and López-Hernández 2013; **Del Sordo et al. 2016). In our case, as in previous studies, we examined the content of university sustainability reports (Lopatta and Jaeschke 2014; Sassen and Azizi 2018b).** Some authors have stated that content analysis reduces the weaknesses of questionnaires and interviews since the information is publicly available (Larran, Herrera, and Andrades 2016). Also, the use of content analysis represents a faster and cheaper method to collect data (Castelo and Lima 2008).

Castelo and Lima (2008, p. 691-692) stated that content analysis method "consists of classifying the information disclosed into several categories of items which capture the aspects of social responsibility one wants to analyse". One question associated with this research method is related to which sustainability topics are disclosed (Branco and Rodrigues 2006). The focus of this study was on the content of sustainability reports and this represents the simplest form of content analysis, which involves checking for the presence or absence of those items selected for measuring SR in universities (Larrán, Herrera, and Andrades 2015). The extent of information reported can represent an indication of the relevance of a certain topic in relation to the reporting entity (Garde,

Rodríguez, and López 2013; **Rodríguez-Bolívar, Garde-Sánchez, and López-Hernández 2013**).

Methods limitations and treatment

Three major concerns typically associated with the content analysis method are the subjectivity, the coding structure and the measure (Deegan and Gordon 1996). To respond to such limitations, the authors have adopted the following solutions:

The first problem may be connected with the possible distorting effects of subjectivity and its potential on the assignment of contents to the analytical themes identified **(Larran, Herrera, and Andrades 2016)**. To avoid this, **as in previous research**, the process of coding was conducted by two different researchers (**Del Sordo et al. 2016**). In a next stage, a third researcher reviewed the coded data to coordinate the resolution of discrepancies resulting from the diverging interpretation in regards to the assignment of elements to the coding framework.

The second problematic issue is about the selection of the coding framework to measure the extent of sustainability information reported (Ceulemans, Molderez, and Van Liedekerke 2015). We selected the GRI guidelines for two main reasons: First and following the comments by Fonseca et al. (2011, p. 27), "the GRI guidelines have become the world's leading guidelines and are currently the "standard" in several sectors". Secondly, the GRI tool represents a relevant instrument to standardize the different measures to report on sustainability in universities (Lozano 2006; Alonso-Almeida et al. 2015). Thus, this study facilitates the understanding of the feasibility of applying the GRI guidelines to the university context **(Sassen and Azizi 2018ab).**

For this study, as we mentioned earlier, the sample consisted of those sustainability reports that have been performed according to the most recent versions of

the GRI guidelines (G3, G3.1 and G.4) The content of sustainability reports that have been elaborated according to the GRI guidelines are structured on the basis of indicators classified in each one of the dimensions and sub-dimensions contained in Table 1. This makes easier the process of coding data when we performed the content analysis.

Once selected the coding framework, the following step was to examine the presence or absence of these indicators in the 138 sustainability reports sampled. To do this, and according to the literature, the authors designed three indexes to measure the extent of information reported according to the G3, G3.1 and G4 guidelines (Garde, Rodríguez, and López 2013; Larrán, Herrera, and Andrades 2015). This was done to adapt the indexes to each GRI standard to perform a more reliable examination of the extent of information reported. Regarding the scores assigned to each indicator, and taking into account previous approaches (Caba, López, and Rodríguez 2005; Rodríguez-Bolívar, Garde-Sánchez, López-Hernández 2013), this investigation took a binary dichotomous scoring system (0/1) to document the absence or presence of each indicator in the sustainability reports. The authors also calculated cumulative values for indicators across each of the six categories.

These indexical values were achieved from calculating the proportion of indicators classified in each category present in all sustainability reports with respect to the total class (Figure 1). This procedure was performed differentially depending on the standard followed by each university in regards to the preparation of its sustainability report (G3, G.3.1 and G4). For example, and adopting the G3 guidelines, the calculation of the environmental index was done as follows: the authors measured the sum of the indicators on environmental performance incorporated in each sustainability report divided by the 30 indicators related to the environmental category multiplied by the total of sustainability reports sampled (138). For sustainability reports performed

following the G4 guidelines, the environmental index was measured as follows: the authors assessed the sum of the indicators on environmental performance incorporated in each sustainability report divided by the 34 indicators related to the environmental category multiplied by the total of sustainability reports sampled (138).

This procedure was repeated by each one of the categories incorporated in the research taking into account the number of indicators contained in each of the GRI guidelines used for measuring the extent of sustainability information reported. For the total of indicators, the calculation of the index was done as follows: the authors measured the sum of all indicators on sustainability incorporated in all sustainability reports divided by the 79 (G3), 84 (G3.1) or 91 (G4) items multiplied by the total of sustainability reports in the sample (138).

[Insert Figure 1 here]

Data analysis

Once we examined the content of all sustainability reports, the following step was to explore the potential influence exerted by certain variables in relation to the disclosure of sustainability information. The statistical analysis was conducted in two stages: first, results were contrasted in accordance with each one of the six categories of indicators defined by the G3, G3.1 and G4 GRI guidelines explained in detail in the previous section as well as in Figure 1; second, results also were statistically analyzed for each of the three global indexes created for each of the three standards (G3, G3.1 and G4) which were composed of all indicators.

To accomplish this task, the authors performed non-parametric tests after that the Kolmogorov-Smirnov and Shapiro-Wilk tests of normality showed that the data were not based on a population with normal distribution (Larrán, Herrera, and Andrades

2015). The literature suggests that the Mann–Whitney and Kruskall–Wallis tests represent the most appropriate non-parametric tests (Larrán, Herrera, and Andrades 2016). The Mann–Whitney test determines the null hypothesis on the mean equality from two independent samples. For this study, this test was performed to explore all variables, excepting geographical region: public (coded 0) and private status (coded 1), data provided by the GRI sustainability disclosure database; smaller (coded 0) and larger (coded 1) universities, data provided by the GRI sustainability disclosure database; absence (coded 0) or presence (coded 1) of sustainability offices responsible for making sustainability reports; sustainability reports with external verification (1)/sustainability reports without external verification, data provided by the GRI sustainability disclosure database; leading (1)/not leading universities (0), measured as the number of sustainability reports made and published by each institution. In our case, we have considered leading universities in SR those institutions which have published more than four reports in a period of six years. The Kruskall–Wallis test focuses on contrasting the null hypothesis on the mean equality from three or more independent samples. This test was performed to contrast the influence of the geographical region. In this way, three groups were coded: universities from United States Canada, Australia, United Kingdom, New Zealand or Ireland (coded 0), universities from Europe (coded 1) and universities from other regions (coded 2).

Results

Extent of sustainability information reported

Table 3 shows that the extent of economic, environmental and social indicators reported in the 138 sustainability reports analysed is quite reduced and limited. From a global approach, the indicators on sustainability from a triple bottom line perspective were

reported in the 43.59% of the total of sustainability reports examined. For the different dimensions, the results show a greater emphasis on the disclosure of economic information (53.70%) compared to the information reported about social (43.69%) and environmental issues (41.07%). Within the social dimension, we can appreciate the strong commitment to report information about labor practices and decent work issues (61.04%), while the disclosure of information related to human rights, social issues and product responsibility was relatively scarce compared to the other categories, with a proportion ranging from 32.61% to 36.47%. Such differences explain that the social dimension was ranked in the second position instead of the first place.

[Insert Table 3 here]

Table 4 shows which indicators are the most reported in the sustainability reports analysed. To do this, we have taken as reference those indicators in more than 75% of the 138 sustainability reports examined. In this way, 8 of the list of GRI indicators have been widely reported. By category, 2 indicators are part of the economic category, 4 are part of the labor and decent work issues and 1 belongs to the environment category. With regard to the economic category, we can appreciate that there is an emphasis on reporting about the direct economic value generated. The second indicator most covered is related to the significant financial assistance received from governments. Regarding the labor and decent work issues category, we found that there is a strong emphasis on issues related to the employment, training and injury. Finally, the findings show that the most reported indicators on the environment category are related to the direct consumption by primary energy sources as well as the total water withdrawal by source.

[Insert Table 4 here]

In regards to which indicators have been less reported, we can note that these are belonging to the human rights and product responsibility categories. To highlight these

findings, the environment category also contains a greater number of indicators with a low level of reporting. In particular, there is limited reporting on biodiversity (usually under campus' land use), suppliers, products and services. From a society perspective, there is a need to improve the commitment to sustainability by universities with their communities.

Statistical analysis

Table 5 reflects the statistical results after conducting non-parametric tests. We can appreciate that the most influential variables for explaining the amount of information disclosed in the sustainability reports analysed are institutionalization, geographical region, external assurance and leadership. With regard to the first variable hypothesized, results show that, in general terms, public universities report more information on sustainability than private universities. Nevertheless, we have only found statistically significant differences in the amount of information disclosed on economic, environmental and labor aspects. Thus, Hypothesis 1 is partially accepted. The second variable examined is the size and results show that larger universities have reported more sustainability information than smaller universities except in the case of society and product responsibility. Such differences have not been significant and therefore size is a variable that does not statistically affect the amount of sustainability information reported. Therefore, Hypothesis 2 is rejected. Focusing on the institutionalization variable, statistical results reveal that universities with coordination units responsible for making sustainability reports have disclosed more information than others. In general, differences have been statistically significant and this leads us to accept the Hypothesis 3. The fourth hypothesis focuses on the influence of geographical region. Results show that the extent of sustainability information reported is higher in Anglo American

institutions compared to other universities. Statistically, differences have been found in most of dimensions and categories, except in the case of labor practices and product responsibility. In view of the global results, we accept the Hypothesis 4. Finally, the last variables examined are external assurance and leadership. Statistical results show that universities whose reports have been externally verified have reported a higher amount of sustainability information and differences have been statistically significant in all dimensions. Then, Hypothesis 5 is accepted. Similar arguments could be used to explain statistical results for leadership variable. In all dimensions, leading universities have reported more sustainability information than other universities and differences have been statistically significant. So, Hypothesis 6 is also accepted.

[Insert Table 5 here]

Discussion and implications for practice

This study aims to fill a research question in the field of SR in universities: how the extent of sustainability information reported by universities can be affected by a set of variables. As it happens in the business context, we have found that the amount of sustainability information reported by universities have been affected by a variety of factors, being the most influential variables the following ones: institutionalization, geographical region, external assurance (as a proxy variable of quality) and leadership.

Regarding the institutionalization variable, we have found that the amount of sustainability information reported is greater in those reports published by universities with specific political structures or units, such as sustainability offices. This finding is consistent with the results of the previous academic literature on sustainability in universities. Ferrer-Balas et al. (2008) manifested that the process of change toward sustainability in universities could be driven by the existence of coordination units

responsible for implementing such practices. Disterheft et al. (2015) found that the support of top management positively affects the implementation of institutional sustainability initiatives. Blanco-Portela et al. (2017) documented that most of drivers toward the integration of sustainability in universities were associated with those actions and plans conducted from an institutional approach. In this regard they stated as specific drivers the presence of a coordination unit responsible for implementing sustainability practices or the support from senior management teams of universities. In our study, the four sustainability reports of the La Trobe University (Australia) have been published by the office pro vice-chancellor sustainability. Ball State University (United States), which has published four sustainability reports in the last years, is another good example of a university strongly committed toward sustainability. In particular, their sustainability reports have been made by Building Better Communities, an administrative office of this university**.** In view of the previous arguments and according to the institutional theory, the existence of coordination units could boost the transition to sustainability at all university levels for as long as all necessary changes are implemented (Ferrer-Balas et al. 2008; Blanco-Portela et al. 2017).

Focusing on the geographical region, the findings show that there is a greater amount of information reported in sustainability reports published by Anglo-Saxon universities, mainly from the USA and Australia, compared to others. On this basis, the business and university literature on SR reveals that the emphasis on accountability is stronger in the Anglo-Saxon culture, which facilitates the greater commitment to reporting practices on sustainability information (Garde, Rodríguez, and López 2013; Navarro et al. 2014). This evidence is theoretically supported by the underpinnings of the legitimacy and institutional theories. On the one hand, different researchers have noted that Anglo-Saxon universities are more concerned with the implementation of

explicit sustainability practices compared to European ones (Matten and Moon 2008; Garde, Rodríguez, and López 2013). Explicit actions refer to the adoption of voluntary disclosure practices in response to the informational expectations of different stakeholders and the need to improve reputation and visibility (Matten and Moon 2008; Alonso-Almeida et al. 2015). According to the legitimacy theory, different authors have found that the disclosure of sustainability information by Anglo-Saxon universities is adopted strategically to enhance their reputation among different stakeholders (Rodríguez-Bolívar, Garde-Sánchez, and López-Hernández 2013). Adopting a perspective based on the institutional theory, this result could be supported by the introduction of the New Public Management (NPM) reforms, whose origin was framed in Australia and New Zealand in the early 1980s and this process was subsequently implemented in other Anglo-American countries (Christensen 2011; Larrán and Andrades 2017). The NPM reforms introduced a new governance framework to increase competition for funding within the public sector while these institutions were required to be more accountable for their performance outputs (Christensen and Lægreid 2015; Swiatczak, Morner, and Finkbeiner 2015). The main tenets of the NPM reforms are strongly associated with the need to improve accountability and transparency of public organisations (Carvalho and Santiago 2010; Christensen 2011).

The third most influential variable that affects the amount of information disclosed by universities in their sustainability reports is the involvement of third party assurance institutions. For this study, we have found that the amount of sustainability information reported is greater in those sustainability reports that have been verified by external quality agencies. The paper by Richardson and Kachler (2016) stated that the credibility of sustainability reports is enhanced by the involvement of external agencies of quality verification to a great extent these stakeholders evaluate if the data reported is a reliable

and valid measure of the sustainability performance of universities. Blanco-Portela et al. (2017) documented that one of the most relevant external drivers toward the inclusion of sustainability in universities is the certification understood as a quality driver. Hence, and according to the legitimacy theory, the external quality assurance could be configured as a way of increasing credibility, reputation and social visibility of universities that make sustainability reports (Ceulemans, Molderez, and Van Liedekerke 2015).

Another factor that has been associated with the extent of sustainability information reported is the leadership exerted by some universities in regards to the process of SR. Those institutions with a greater number of sustainability reports published in the GRI Sustainability Disclosure Database have reported a greater amount of information about social, environmental and economic affairs. Ferrer-Balas et al. (2008, p. 297) noted that a key driver of SR in universities could be leadership and vision "where, to be effective, leaders must have appropriate assignments and responsibilities. This often requires university arrangements that promote cooperation and collaborative efforts rather than competition between units. Leadership may also be a driver when the leader sees transformation as a way to leave his or her legacy on the organization". From an institutional perspective, Adams (2013) stated that a proactive leadership exerted by senior management teams of universities is one of the main reasons to explain why some universities are strongly committed to SR. Blanco-Portela et al. (2017) stated that one of the main challenges to overcome the complexity of the organizational change in universities is the role exerted by sustainability leaders. They can have a pivotal influence in supporting the integration process of sustainability at all levels of universities. According to the underpinnings of the institutional and legitimacy theories, leading universities in SR could drive the adoption of such practice for other

universities as a mimetic process in which they try to copy successful practices implemented by some innovative universities (Moneva and Martín 2012; Larrán, Herrera, and Andrades 2015). This mimetic behaviour could be implemented in response to the internal and external pressures from different stakeholders as well as to a mechanism to obtain social recognition and improved reputation (Alonso-Almeida et al. 2015).

Likewise, the findings have revealed a partial influence exerted by the public/private status of universities. In more detail, we have found that the amount of information reported about social and environmental affairs is greater in the sustainability reports made by public universities which support the arguments emanated from the legitimacy and stakeholder theories to great extent public universities are funded by the State and as result these institutions must be accountable to respond to the demands of their main funding body as well as these institutions have a broad number of stakeholders involved in their activities (Gallego, Rodríguez, and García 2011; Rodríguez-Bolívar, Garde-Sánchez, and López-Hernández 2015). Meanwhile, size does not affect the extent of sustainability information reported.

In view of the previous results, the main contribution of this paper is that the motivations that drive the progress toward SR in universities are intertwined supported by the underpinnings of the institutional and legitimacy theories. In such regard, we have found that universities are reporting on sustainability influenced by coercive and mimetic pressures exerted by the institutional framework materialized in NPM reforms, coordination units responsible for making sustainability reports or declarations and policies. Also, universities have also motivated to report on sustainability performance to increase confidence, credibility and reputation in society which has been materialized through external quality assurance and geographical location. Such results are consistent

with the current institutional context in the university sector characterized by the fact that many changes have been implemented according to meeting new societal challenges (Siboni, del Sordo, and Pazzi 2013). The growth in financial autonomy has emphasized the need to demonstrate universities' performance results in order to obtain more funds which has led to an increasing concern for adopting performance measurement systems and providing a greater level of accountability toward their stakeholders (Meneguzzo and Fiorani 2009; Frey, Melis, and Vagnoni 2010). Thus, practices of SR could be conceived as a tool for improving the process of accountability to society in the context of universities.

With a more detailed approach, if we compare the extent of information reported by those universities included in this study that have published more than four sustainability reports, we can appreciate that the amount of information disclosed by these institutions has grown. Universities like Anhanguera Educational, Ball State University, La Trobe University or Pontificia University Catholic of Valparaiso have increased their level of reporting over time. This corroborates the arguments of Alonso-Almeida et al. (2015) in which it was manifested that SR starts slowly and after there is an expansion phase. Also, higher education networks could be configured as a potential driving factor of the progress in SR in such universities (Ferrer-Balas et al. 2008; Larran et al. 2015). Different authors have documented that capital social emanating from network collaboration plays a pivotal role in the progress toward sustainability (Dlouha et al. 2018). Universities like Ball State and La Trobe are members of different partnerships and networks, among which we can state Association for the Advancement of Sustainability in Higher Education, Higher Education Sustainability Initiative and the Association of University Leaders for a Sustainable Future.

The findings of this paper reveal some important implications for practice and for university planners. Although this paper suggests that the commitment to report sustainability information in the university context has experienced a remarkable growth over the last years, we assume that the practice of SR is not well extended among universities compared to the business perspective which could suggest that this practice is in early stages. **Our results are similar to the findings of previous studies that used content analysis as a methodological approach in which was noted that SR in universities is an uncommon practice besides the scarce amount of sustainability information reported by universities (Lopatta and Jaeschke 2014; Del Sordo et al. 2016; Sassen and Azizi 2018b).** In fact, we have found that only 58 universities have made sustainability reports (a total of 138) according to the most recent GRI guidelines. On this basis, one question needs to be addressed. If only a small number of universities use the GRI guidelines, what is the possible reason? The GRI guidelines represent one of the most common standards to measure and report sustainability engagement as well as they have widely adapted for universities (Lozano 2011; Fonseca et al. 2011). Nevertheless, the GRI guidelines were not developed for measuring the sustainability performance in the university sector (Cole 2003). In accordance with Lozano (2011), the GRI guidelines do not cover the two most relevant dimensions of universities, which are education and research. To report about the sustainability performance of an organisation, the process has to start identifying the different activities which can be assessed (Cortese 2003). The literature suggests that the main universities' activities are education, research, community outreach, and campus operations (Wals 2014). However, the GRI guidelines do not cover these four dimensions of the university system. Thus, the effectiveness of this tool for assessing and reporting universities' sustainability efforts could be limited and reduced. This is

associated with the absence of a generally accepted guideline for SR in the university sector could be a potential reason to explain the low number of universities that have performed sustainability reports (Siboni, del Sordo, and Pazzi 2013; Ceulemans, Molderez, and Van Liedekerke 2015; **Del Sordo et al. 2016**). Some researchers have argued that there is no consensus about the standards used by universities in relation to practices of SR (Siboni, del Sordo, and Pazzi 2013; **Sassen and Azizi 2018a**). For such reason, one implication of our results for practice and university planners is the need to create a "universal" tool to assess and report sustainability performance for the university sector which facilitates the comparison among these institutions **(Del Sordo et al. 2016; Larrán et al. 2016; Sassen and Azizi 2018b).**

A second implication of our results is connected with the need to reinforce the participation of universities in networks which could be a driving force toward the SR progress. In this sense, university planners may be incentivized to contribute to the formulation of practices toward sustainability. Another implication of our results is associated with the scarce influence of the stakeholder theory to explain how and why universities are reporting on sustainability. Reasons behind the disclosure of sustainability information have been supported by institutional and reputation forces. However, and as has been mentioned in the literature, there is a general lack of stakeholder engagement in the process of SR in universities (Ceulemans, Molderez, and Van Liedekerke 2015). In future, university planners have to emphasise the adoption of a participatory approach, referring to the involvement of different stakeholders, in regards to reporting on sustainability as has been mentioned by Disterheft et al. (2015). Without an active participation of different key stakeholders, SR is not an adequate instrument to meet societal needs and demands.

Limitations and future research

Any research paper has its limitations. One potential shortcoming is that our paper has only been focused on examining the amount of sustainability information reported and the reasons that facilitate SR (outcomes of the SR) rather than studying how universities can introduce changes into their processes to reinforce SR. In future, it would be appropriated to examine the potential for organizational change of SR in universities. To accomplish this task, we assume the need to conduct a case study approach by means of selecting some leading universities on SR. Second, the analysis of the amount of information reported by universities over time might be deteriorated. Results could be biased because this could represent different stages of the process of SR in each university. Third, the sample is limited those sustainability reports published on the GRI database according to the G3, G3.1 and G4 guidelines. In fact, only 138 sustainability reports made by 58 universities have been examined and it may not be representative of the global situation of worldwide universities. Taking into account that the 138 sustainability reports have been made by 58 universities, the findings of this study may be biased because the sample is concentrated in a little number of universities. For this reason, future research could be oriented to find out more universities that have published sustainability reports into their web pages. This could provide a broaden perspective of how is being reported sustainability indicators for universities in their reports as well as it could be examined which are the most commonly standards used to make sustainability reports. In line with the previous, the selection of the GRI standards to measure report on sustainability in universities could represent another limitation. Such guidelines do not contain specific sections to report about the main dimensions of

the university sector. This could suppose a problem when we examine the extent of sustainability information reported by universities.

Conclusions

This study has two main contributions which are inextricably linked from a theoretical explanation. First, we have found that, as it happens in the business literature, the disclosure of sustainability information by universities is explained by a set of factors, being the most influential variables the following ones: institutionalization, geographical region, leadership and quality (measured as external assurance). Second, our results reveal that the main driving forces to report on sustainability by universities are supported by the interrelation of the institutional and legitimacy theories. In more detail, universities are reporting on sustainability in response to coercive and mimetic pressures derived from the institutional framework as well as by the need to improve credibility and reputation in society.

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Table 1. GRI indicators for measuring sustainability reporting

Categories	G3 Indicators	G3.1 Indicators	G4 Indicators
Economic performance (EP)	9	9	9
Environmental performance (ENP)	30	30	34
Labor practices and decent work issues (LI)	14	15	16
Human rights issues (HRI)	9	11	12
Society issues (SI)	8	10	11
Product responsibility issues (PRI)	9	9	9
Total	79	84	91

Table 2. General profile of the sample

Variable	Sub-category	No.
Size	Larger	91
	Smaller	47
Status	Public	108
	Private	30
Geographical region	Europe	62
	Anglo-Saxon	27
	Other regions	49

Figure 1. Disclosure indexes according to the GRI categories

$$IEP(G3,G3.1,G.4)_j = \frac{1}{9}\sum_{i=1}^{9} X_{ij}$$

$$IENP(G3,G3.1)_j = \frac{1}{30}\sum_{i=1}^{30} X_{ij} \quad IENP(G4)_j = \frac{1}{34}\sum_{i=1}^{34} X_{ij}$$

$$ILI(G3)_j = \frac{1}{14}\sum_{i=1}^{14} X_{ij} \quad ILI(G3.1)_j = \frac{1}{15}\sum_{i=1}^{15} X_{ij} \quad ILI(G4)_j = \frac{1}{16}\sum_{i=1}^{16} X_{ij}$$

$$IHRI(G3)_j = \frac{1}{9}\sum_{i=1}^{9} X_{ij} \quad IHRI(G3.1)_j = \frac{1}{11}\sum_{i=1}^{11} X_{ij} \quad IHRI(G4)_j = \frac{1}{12}\sum_{i=1}^{12} X_{ij}$$

$$ISI(G3)_j = \frac{1}{8}\sum_{i=1}^{8} X_{ij} \quad ISI(G3.1)_j = \frac{1}{10}\sum_{i=1}^{10} X_{ij} \quad ISI(G4)_j = \frac{1}{11}\sum_{i=1}^{11} X_{ij}$$

$$IPRI\ (G3, G.3.1, G4)_j = \frac{1}{9}\sum_{i=1}^{9} X_{ij}$$

$$ITotal\ (G3)_j = \frac{1}{79}\sum_{i=1}^{79} X_{ij}\quad ITotal\ (G3.1)_j = \frac{1}{84}\sum_{i=1}^{84} X_{ij}\quad ITotal\ (G4)_j = \frac{1}{91}\sum_{i=1}^{91} X_{ij}$$

Table 3. Extent of information reported in all sustainability reports sampled

Dimension	Category	% Category	% Dimension
Economic dimension	Economic performance	53.70	53.70
Environmental dimension	Environmental performance	41.07	41.07
Social dimension	Labor practices and decent work issues	61.04	43.69
	Product responsibility issues	36.47	
	Society issues	35.49	
	Human rights issues	32.61	
Global			43.59

Table 4. Indicators on sustainability most reported

Dimension	**Indicators with greater level of diffusion**
Economic	EC1: Direct economic value generated
	EC4: Significant financial assistance received from government Practices associated with assessing student satisfaction
Labor and decent work issues	LA1: Total workforce by employment type, employment contract, and region, broken down by gender
	LA7: Rates of injury, occupational diseases, lost days, and absenteeism, and number of work related fatalities by region.
	LA8: Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases.
	LA10: Average hours of training per year per employee by gender, and by employee category
Environment	EN3: Direct energy consumption by primary energy source
	EN8: Total water withdrawal by source

Table 5. Variables influencing the extent of sustainability information reported.

Variables	**Economic performance**	**Environmental performance**	**Labor practices and decent work**	**Human rights**	**Society**	**Product responsibility**	**Global**

Public /private status	Public	72,77 (0.067**)	73,84 (0.016*)	73,27 (0.035*)	71,21 (0.332)	71,61 (0.237)	67,34	72,40 (0.106)
	Private	57,73	53,88	55,92	63,35	61,92	77,27 (0.223)	59,05
Size	Smaller	64,11	63,65	67,33	65,54	72,48 (0.526)	70,70 (0.797)	66,10
	Larger	72,29 (0.251)	72,52 (0.217)	70,62 (0.645)	71,54 (0.395)	67,96	68,88	71,26 (0.472)
Institutionalization	Not coordination unit	58,43	56,76	58,60	57,90	58,91	61,57	56,98
	Coordination unit	74,68 (0.025*)	75,46 (0.010*)	74,60 (0.028*)	74,93 (0.018*)	74,46 (0.032*)	73,21 (0.106)	75,36 (0.012*)
Region	Anglo Saxon	87,38 (0.024*)	92,48 (0.02*)	80,69 (0.215)	88,42 (0.003*)	86,44 (0.01*)	74,79 (0.26)	88,98 (0.017*)
	Europe	67,03	67,74	67,98	58,13	59,24	62,98	64,02
	Other	61,73	58,13	64,09	72,45	72,09	73,54	64,69
External Assurance	Not external verification	66,55	64,69	66,37	66,63	66,19	65,83	65,63
	External verification	85,05 (0.045*)	94,89 (0.001*)	86,02 (0.034*)	84,66 (0.048*)	86,95 (0.024*)	88,84 (0.012*)	89,93 (0.009*)
Leadership	Not leading	59,38	63,42	63,04	63,79	57,58	60,30	61,82
	Leading	82,27 (0.001*)	77,18 (0.045*)	77,66 (0.032*)	76,71 (0.055**)	84,55 (0.000*)	81,11 (0.002*)	79,20 (0.011*)

*P-value significant<0.05.

**P-value significant<0.10.