

RESEARCH ARTICLE

Determinants of the dissemination of economic, social and environmental information at the university level in the context of commitment to the Sustainable Development Goals

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Abstract

In the context of universities' commitment to the Sustainable Development Goals (SDGs), the paper aims to analyse the factors that influence the degree of information disclosure related to the economic, social, and environmental (ESE) aspects of SDGs. Based on a content analysis of the annual and/or sustainability reports for 2021 and the websites of the top 200 universities in the Shanghai ranking, the results show that the volume of ESE disclosures at universities is associated with gender diversity in the governance team, stakeholder commitment and position in academic and environmental rankings. By taking entities that are global benchmarks, the results make practical and managerial contributions. First, they can serve as a guide to setting policy frameworks for institutions to create procedures to develop their SDG-compliant actions. Second, the promotion of women's participation on the board and the active presence of stakeholders favour universities' information disclosure policies. Third, the results show that the efforts towards disclosure at the top universities in both academic and environmental rankings are related to legitimising their actions and meeting stakeholders' demands. In addition, this study proposes the development of an index that could help improve the ESE information disclosed by universities, which is currently low, yet some aspects of it, such as economic aspects, are barely covered but essential to ensure sustainability. Finally, the proposed indicators can also serve as a guide for governing bodies' management of SDG-related aspects.

KEYWORDS

diversity board; economic, social and environmental information (ESE); rankings; SDGs; stakeholder engagement; sustainability; sustainable development; universities

1 | INTRODUCTION

Universities can play a key role in advancing the Sustainable Development Goals (SDGs) and can be key players in the transition to a more

sustainable world (Cuesta-Claros et al., 2022; González Gaudiano et al., 2015; Waas et al., 2010) due to their work in training future professionals (Heleta & Bagus, 2021) and the possibility of promoting lines of research in line with the SDGs. Universities have committed

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to implementing the various practices that are being developed with the SDGs in their various curricula, research, operations, outreach and reporting (González-Campo et al., 2022; Lozano et al., 2013; Lozano & Barreiro-Gen, 2019).

Since the launch of the Declaration of Sustainability in Higher Education (SHE) in 1972 during the first United Nations declaration on the human environment, numerous initiatives have been launched in the social and environmental sphere at universities, which shows the concern for sustainability in the university environment. To this we can add that climate change and the concerns it generates have led universities in different countries to declare a climate emergency (Dillon, 2019). Concern for the commitment and sustainability of practices leads to the question of what characteristics and factors drive or determine actions in the field of sustainability and their dissemination. Thus, our study aims to identify the factors that influence the dissemination of sustainability information and their relationship with SDGs. It could be said that this information serves as an instrument to legitimise the actions of higher education institutions (Etzion & Ferraro, 2010), meet the information requirements of various stakeholders (Moneva & Martín, 2012), and respond to society's requirements.

Sustainability reporting has evolved over time, mainly marked by the proposed standards for companies (Global Reporting Initiative standards; GRI 4, 2013, Integrated reporting framework; IIRC, 2013, and recently, in 2016, SDGs) (Curtó-Pagès et al., 2021). That evolution can be seen in the information disclosed by universities (Alonso-Almeida et al., 2015; Gutiérrez-Goiria et al., 2021). The volume of information disclosed by universities related to sustainability reporting has been increasing (An et al., 2020; Nicolò et al., 2021; Romolini et al., 2015), and, more recently, there is arguably a tendency to link actions to SDGs. Although universities have taken up the challenge proposed by the international sustainability agenda, the implementation of SDG indicators is still very fragmented (Alcántara-Rubio et al., 2022), it usually is focused on a single SDG, and reporting is still in an early stage at universities (Aras et al., 2021).

Sustainable information needs to be seen in a broader context. Most European universities tend to follow the standards proposed by the GRI 4 (Ceulemans, Molderez, & Van Liedekerke, 2015; Larrán Jorge et al., 2019). Other proposals are the Sustainability Tracking, Assessment and Rating System (STARS) standards for universities (Sassen & Azizi, 2018b; Sepasi et al., 2018), although the number of institutions participating is still limited (currently 1103, of which 575 are in the ranking); the UI World Universities Ranking Based on GreenMetric, in which a limited number of universities worldwide also participate (currently 958 universities); and the Times Higher Education (THE) ranking, which, in addition to using academic indicators, introduces the SDGs. That is, it presents a ranking where only academic aspects are shown, which is one of the most comprehensive, as it rates a total of 1799 universities out of a total of 2345, but it also carries out rankings considering each of the SDGs (THE, 2022).

Universities promote different actions that are usually included in the annual reports or sustainability reports they publish. Although economic, social and environmental (ESE) information has traditionally been disclosed separately (Ceulemans, Molderez, & Van

Liedekerke, 2015), the current trend is to consider these aspects together (Alonso-Almeida et al., 2015), as is also the case in enterprises. The joint consideration of ESE aspects makes it possible to analyse the commitment of universities with stakeholders (Richardson & Kachler, 2017), in the sense of ensuring that the measures adopted and value generated by universities reach the different stakeholders, and sustainability, in the sense of ensuring these measures' viability in the medium and long term (Gutiérrez-Goiria et al., 2021). Integrated reporting has been gaining prominence in recent years because of its ability to create greater value for organisations (Mauro et al., 2020). Empirical work on the incorporation of non-financial indicators alongside financial indicators in universities (Ceulemans, Lozano, & Alonso-Almeida, 2015) or on the volume of information disclosed is scarce, with developed countries taking the lead, as is the case in France (Chatelain-Ponroy & Morin-Delerm, 2016), Italy (Del Sordo et al., 2016), Spain (Brusca et al., 2018; Larran et al., 2016), Germany and Austria (Lopatta & Jaeschke, 2014), the United States (Garde-Sánchez et al., 2013; Sassen & Azizi, 2018b), Canada (Fonseca et al., 2011; Sassen & Azizi, 2018a), and Australia (Gamage & Sciulli, 2017).

For universities, the disclosure of economic information is mandatory, whereas the disclosure of reports containing social and environmental information is usually voluntary, although in the European Union, it will become mandatory soon (Chatelain-Ponroy & Morin-Delerm, 2016; Hamilton & Waters, 2022). This type of report aims to publicise universities' practices, mainly in environmental matters (Alonso-Almeida et al., 2015; Lozano, 2011), but considering this dimension together with the economic and social ones offers a more complete view of the commitments made by universities and their sustainability over time (Gutiérrez-Goiria et al., 2021). In other words, despite the importance of environmental information, universities' objective of advancing the SDGs also requires information on social aspects, and from the point of view of the management and sustainability of the measures, it is also necessary to have economic information (Sepasi et al., 2019). The focus of the economic aspects would be to study the economic impact of environmental and social practices, and to analyse the value generated by universities and its distribution among the different stakeholders (Ayuso et al., 2022).

With respect to the aspects that can have an impact on sustainable reporting, the incidence of gender diversity, the stakeholders' commitment, and the effort to reach top positions in the rankings may affect the sustainability information disclosed by universities. Women are more sensitive to and aware of social issues than men (Amorelli & García-Sánchez, 2020) and can influence organisational practices such as CSR reporting policies (Cabeza-García et al., 2018; García-Sánchez et al., 2019). They try to improve the relationship with stakeholders (Rodríguez-Ariza et al., 2017) and promote more transparency (Rodríguez-Ariza et al., 2014). Stakeholders require transparency, and universities establish different channels to interact with them and offer sustainability information. The information is also disseminated through social networks (e.g., Facebook, Twitter, Instagram) to generate greater stakeholder engagement (Di Tullio et al., 2021).

In addition, higher education institutions are interested in positioning themselves in international rankings such as the Shanghai

Academic Ranking of World Universities (Gómez-Marcos et al., 2022; Shan et al., 2022). The rankings measure universities' reputation, quality, and performance (Ruiz Morillas, 2019), classifying institutions by their academic performance and research results (Docampo et al., 2022), which facilitates international comparisons (Garde Sánchez et al., 2020). The Shanghai ranking has become the most influential worldwide (Barats, 2020). The importance of environmental performance in universities means that universities are also trying to position themselves in environmental rankings to show their environmental efforts. Among these, the UI GreenMetric is the broadest in scope (Suwartha & Sari, 2013).

This study provides two main contributions to the existing literature. Firstly, it proposes an index of ESE information disclosure based on the information currently disclosed by universities, which makes it possible to analyse the extent to which universities attend to their different stakeholders and the way in which ESE aspects are managed, taking into account medium- and long-term viability as an indicator of the degree of commitment to the SDGs. Secondly, we analyse the factors that may affect the degree of dissemination of information related to this index, which is an indicator of higher education institutions' commitment to the SDGs. The results indicate that the degree of participation by women on the governance team, the consideration of stakeholders' opinions, and the positioning of the institution in both academic and environmental rankings are related to the volume of information universities disclose.

The rest of the paper is structured as follows: the next section presents the theoretical framework and formulates the hypotheses. The third section presents the methodology used in the study. The fourth section presents the main results and discussion, and finally, the last section provides the conclusions.

2 | THEORETICAL FRAMEWORK AND HYPOTHESIS FORMULATION

The theoretical frameworks that have been applied in the university field related to sustainability are mainly stakeholder theory, agency theory, legitimacy theory, and institutional theory (Chatelain-Ponroy & Morin-Delerm, 2016; Del Sordo et al., 2016; Larran et al., 2016; Reverte, 2009). Multi-theoretical analyses are sometimes used, although they are less frequent (Larrán Jorge et al., 2019). The theoretical framework most commonly used to explain the rationale for the disclosure of information that captures aspects of the triple bottom line in the university setting is stakeholder theory (Amoako et al., 2023; Flórez-Parra et al., 2021; Garde Sánchez et al., 2020; Jongbloed et al., 2008). Stakeholder theory argues that institutions try to balance the sometimes conflicting interests of stakeholders affected by and involved in the organisation's activity (Freeman, 1984).

This election is justified by the approach of the research. First, the research focuses on the role of women to take into account stakeholders' demands for information and the women's orientation to stakeholders (Amorelli & García-Sánchez, 2020; Cabeza-García et al., 2018). In addition, this theoretical framework makes it possible to consider stakeholders' participation in the organisation, as well as to take into account their

demands and requirements (De Lange, 2013). One way of meeting stakeholder demands is integrated reporting, which fulfils the communication and accountability function of university management bodies (Ceulemans, Molderez, & Van Liedekerke, 2015). The information requires the use of indicators and the establishment of channels to interact with users. Although the objectives of our work are more appropriately justified by stakeholder theory, other research on university information disclosure has relied on other theoretical frameworks such as legitimacy theory, which is more related to the image that universities want to offer, or neo-institutional theory, focusing on the role of the regulatory framework in information disclosure (Chatelain-Ponroy & Morin-Delerm, 2016).

The approach of this research is outside-in (Burrill & Schaltegger, 2010), which includes stakeholder dialogues, reports, and communication channels, and the results of which are used by external parties such as rating agencies, media groups, and other stakeholders. This approach adapts the information to external requirements (Herzig & Schaltegger, 2011). However, an inside-out approach is also important so the institution can identify weaknesses or have a tool for managing sustainability issues and positioning the university with respect to the SDGs (Ceulemans, Lozano, & Alonso-Almeida, 2015).

2.1 | Gender diversity in the governing team and information dissemination

In recent decades, there has been a growing interest in increasing the presence of women in university management bodies. The presence of women in university governing bodies is due, among other things, to the implementation of regulations on gender diversity in various countries. In fact, there has been a considerable increase in women's positions of responsibility as rectors and members of governing bodies, although their number is still low compared to that of men (Garde Sánchez et al., 2020; Steinþórsdóttir et al., 2020), so the impact of their participation in decision-making needs to be verified (Lipton, 2017). Arguably, governing bodies are becoming increasingly balanced, in the diversity of their members, providing new possibilities for setting educational institutions' strategic direction (Sherer & Zakaria, 2018). Sweden, with 43% female participation in university governing bodies, is one of the leading countries in this field (Peterson, 2011, 2016).

It could be said that there has been a change in the model of university governance, with more aspects related to management oriented towards efficiency and effectiveness, generating multiple internal and external tasks where women provide support (Castaño et al., 2019; Redmond et al., 2017). When women are part of the governance team at universities, they take on a role that, in fact, involves the incorporation of a series of characteristics that are specific to management (Amorelli & García-Sánchez, 2020; Kreissl et al., 2015), such as a greater commitment to social equity and concern for environmental issues (Morley, 2013). Women tend to be more sensitive to social justice issues, which is related to a management orientation towards stakeholders, mainly students and employees (Cabeza-García et al., 2018; Rodriguez Gomez et al., 2020; Tomas et al., 2010). This

orientation towards stakeholders leads to the establishment of communication channels and wider dissemination of information. Women are also related to transparency (Rodríguez-Ariza et al., 2014, 2017) and sustainability disclosure (Amorelli & García-Sánchez, 2020). Thus, it is hypothesised that there is a positive and significant relationship between women's participation in decision-making in university management bodies and the dissemination of ESE information:

Hypothesis 1. *Gender diversity in the governing team has a positive impact on universities' dissemination of economic, social and environmental information.*

2.2 | Stakeholder commitment and information disclosure

Stakeholder theory proposes the need for organisations to take into account and meet the demands of various interest groups (Freeman, 1984). In the university context, taking this theoretical framework as a reference has led to a greater commitment to transparency and accountability, and in this sense, the disclosure of information plays a decisive role (Adams, 2013; Siboni et al., 2013). Disclosure of information refers not only to aspects related to management but in recent decades has involved the incorporation of environmental and/or sustainability reports, which are a key element to ensure communication with key stakeholders (Gamage & Sciuili, 2017)—students, administrators, staff, and faculty. The idea of a participatory university leads to the creation of communication channels with stakeholders that address different topics of interest, including initiatives related to economic, management, social and environmental aspects (Dagiliūtė et al., 2018; Wright, 2010). Furthermore, other stakeholders, such as university supervisory bodies—university social councils, accreditation and quality assessment agencies, auditing institutions, or society in general—also demand this type of information from universities (Brusca et al., 2018; Yuan et al., 2013). Producing and disseminating this information makes it possible to create indicators that are useful for decision-making and strategy-setting by managers and governing bodies (Robinson-García et al., 2019).

The most common channels used in the university environment to disseminate information to various stakeholders are websites (De Aguilera Moyano et al., 2010). The use of technological tools and the creation of interaction platforms enables greater and universal stakeholder participation, as it allows information demands to be detected and met (Saraite-Sariene et al., 2019). Social networks are also channels used to communicate and disseminate information to various stakeholders (Di Tullio et al., 2021; Yeo, 2014). In this sense, stakeholders' concern about the actions that managers take related to management, as well as social aspects and the environment, can lead to a greater volume of information disclosure. In that sense, the following hypothesis is put forward:

Hypothesis 2. *Stakeholder participation has a positive impact on universities' dissemination of economic, social and environmental information.*

2.3 | Academic rankings and the dissemination of information

Academic rankings have been an international point of reference since their launch (Dobrota et al., 2016; Flórez-Parra et al., 2014), as they are useful for comparing universities' position internationally (Michavila & Martínez, 2018). The positioning of universities in these rankings reflects their leadership in the aspects they measure (Flórez-Parra et al., 2014) and is an indicator of the institution's prestige and reputation (Jarocka, 2015). The Shanghai Academic Ranking of World Universities may be the most important and determinant worldwide (Barats, 2020). Hence, higher education institutions are interested in positioning themselves in it (Shan et al., 2022).

Academic rankings have had their detractors, insofar as they are linked to the commodification of higher education (Saunders & Blanco Ramirez, 2017), or they are accused of only reflecting some aspects of the reality of university institutions, with the quality of universities being a much broader concept. They have also had their defenders, as universities' efforts in relation to the indicators they propose have contributed to greater competitiveness and transparency in these institutions (Lauder et al., 2015) and facilitated international comparisons (Garde Sánchez et al., 2020).

The fact that the proposed academic and research indicators do not indicate excellence in other aspects that are also relevant and demanded by stakeholders has led many institutions to introduce social and environmental information, following the most widely used guidelines (GRI) or the proposed environmental rankings (STARS and UI GreenMetric Ranking) (Dabija et al., 2017; Suwartha & Sari, 2013). In this sense, we understand that universities better positioned in academic and research rankings should also integrate social and environmental information to be institutions of excellence (Meho, 2020). Universities that are well positioned in the rankings cannot remain aloof from the demands of society, whether to legitimise their actions or because the efforts and investments made in environmental issues, for example, can lead to competitive advantages in the areas of energy saving and waste and emissions reduction and reduce universities' long-term costs (Atici et al., 2021). This would lead to institutions being able to qualify as quality institutions (Amsler & Bolsmann, 2012; Gonzales & Núñez, 2014; Saunders & Blanco Ramirez, 2017). Therefore, universities that are well positioned in academic rankings will disclose a greater volume of information of an ESE nature. In this sense, the following hypothesis is put forward:

Hypothesis 3. *Position in academic rankings has a positive impact on universities' dissemination of economic, social and environmental information.*

2.4 | Position in environmental rankings and disclosure of information

Universities are not only concerned with academic and research positioning, although this is a priority objective. Since the Declaration of

SHE, university institutions have been integrating mainly environmental but also social policies into their strategies. In recent years, new scenarios related to climate change, rising energy prices, and the environmental footprint have led universities to focus their efforts on creating greener campuses and investing in policies that improve the use of resources and reduce the environmental impact of their actions. Apart from the environmental implications, these measures will lead to cost reductions in the long term (Atici et al., 2021). The difference between academic and environmental rankings lies in the type of indicators they propose. Academic rankings use indicators where research has a significant weight (Lynch, 2015), while environmental rankings focus on aspects such as ecology, energy, waste management, or environmental footprint reduction (Emanuel & Adams, 2011; Flórez-Parra et al., 2021).

At the world level, the UI GreenMetric ranking was launched in 2010 with the participation of 35 countries and the aim of evaluating and measuring universities' environmental impact (Suwartha & Sari, 2013). The categories the UI GreenMetric ranking uses to evaluate institutions are environment and infrastructure, energy and climate change, waste, water, transport, and, finally, education and research (UI GreenMetric, 2021). Entities that make an effort to participate in these rankings may have several objectives: firstly, to complement the ideal of excellence achieved in the academic and research fields; secondly, to respond to the demands of stakeholders in this field; and thirdly, to legitimise their performance and improve their image (Lauder et al., 2015). It is hypothesised that universities that seek to position themselves in environmental rankings in order to showcase their environmental efforts will be those that disseminate a greater volume of environmental information. This trend will also be reflected in greater dissemination of other aspects related to sustainability, such as economic and social aspects. In this sense, the following hypothesis is put forward:

Hypothesis 4. *Position in environmental rankings has a positive impact on universities' dissemination of economic, social and environmental information.*

3 | METHODOLOGY

3.1 | Sample

There is a wide variety of international academic rankings in the university field, such as the THE ranking (Ordorika & Rodríguez Gómez, 2010), the Quacquarelli Symonds ranking (QS) (Dobrota et al., 2016), and the Shanghai ranking (Flórez-Parra et al., 2014). We will focus on the latter, as it is one of the best known and one of the world's most highly regarded (Barats, 2020). Currently, the rankings are considered a mechanism for evaluating universities' academic and research excellence and leadership by means of objective indicators (Meho, 2020). The sample is made up of the universities that occupied the top 200 positions in the Shanghai

ranking for 2021. The distribution by countries and geographical areas can be seen in Appendix 1.

3.2 | Research method

3.2.1 | Analysis of qualitative information

The information on the aspects disclosed by the universities on their SDG commitments related to ESE aspects was obtained from the annual, environmental, and sustainability reports published on the universities' websites (Del Sordo et al., 2016; Larrán Jorge et al., 2019). Based on the information disclosed, an index of disclosure of information on ESE aspects of both a general and specific nature was drawn up (Amoako, 2023; Cuadrado-Ballesteros et al., 2014; Gallego Álvarez et al., 2011). The index is based on previous papers on information disclosure in the university environment (Garde-Sánchez et al., 2013; Rodríguez Bolívar et al., 2013). Indicators on social, environmental, and economic aspects contained in the Global Reporting Initiative (GRI 4, 2013) and in the integrated report (IIRC, 2013) (Garde Sánchez et al., 2020) have also been taken into account. Table 1 shows the aspects that have been assessed in each of the selected universities.

Once the index was structured, each of the proposed items in every concept being evaluated was assessed using a dummy variable that took the value of 1 if the university disclosed the information and 0 in the absence of information (Caba et al., 2005; Frias-Aceituno et al., 2013). The value of each item included in a concept depends on the number of items that compose it, with the maximum value of the concept being 1 and the minimum, 0 (Ho et al., 2008).

3.3 | Variables

3.3.1 | Dependent variable

The dependent variable consists of the Dissemination Index of General and Specific Information on aspects of ESE disclosed by higher education institutions (Table 1, 10 items), as shown in the following model (Garde Sánchez et al., 2020; Garde-Sánchez et al., 2013; GRI 4, 2013; IIRC, 2013; Larrán Jorge et al., 2019; Rodríguez Bolívar et al., 2013):

$$\text{DIGSIESE} = \sum_{k=1}^c \frac{\text{PUVS}}{2} + \sum_{m=1}^b \frac{\text{IEC}}{2} + \sum_{p=1}^f \frac{\text{PVSUS}}{2} + \sum_{i=1}^q \frac{\text{ICS}}{2} + \sum_{h=1}^s \frac{\text{DEPI}}{2} + \sum_{v=1}^o \frac{\text{DSPI}}{3} + \sum_{x=1}^y \frac{\text{DECI}}{4} + \sum_{w=1}^l \frac{\text{DEI}}{6} + \sum_{n=1}^p \frac{\text{DSI}}{6} + \sum_{j=1}^u \frac{\text{DIE}}{3}. \quad (1)$$

DIGSIESE (Dissemination Index of General and Specific Information on aspects of ESE): presentation of the university's vision and strategy on environmental issues (PUVS); information on environmental certifications (IEC); presentation of the vision and strategy of the

TABLE 1 Dissemination of general and specific information on economic, social and environmental (ESE) aspects by universities and their relationship to the Sustainable Development Goals (SDGs).

Concept	Items	Score	SDG to which it relates
General information	$GI = \sum_{i=1}^M gi$		
1. Presentation of the university's vision and strategy on environmental issues (PUVS)	a. Key environmental commitments are disclosed. b. The website or sustainability report includes a statement from the governing team on environmental issues.	0/0.5 based on the absence/presence of each item	SDG 13.a SDG 13.3
2. Information on environmental certifications (IEC)	a. The certifications corresponding to the environmental management systems are disclosed (awards and recognitions). b. Environmental indicators are disclosed.	0/0.5 based on the absence/presence of each item	SDG 13.2 SDG 12.1
3. Presentation of the vision and strategy of the university in social aspects (PVSUS)	a. The main social commitments are disclosed. b. The website or sustainability report includes a statement by the governing team on social issues	0/0.5 based on the absence/presence of each item	SDG 1.3 SDG 17.14
4. Information on commitments in services (ICS)	a. Signed commitments to service excellence are disclosed. b. Service quality indicators are disclosed.	0/0.5 based on the absence/presence of each item	SDG 4.3 SDG 9.1
5. Data on economic performance indicators (DEPI)	a. Indicators on the origin and application of funds received. b. Indicators on the distribution of the budget in the different areas (research, academia, extension).	0/0.5 based on the absence/presence of each item	SDG 17.19 SDG 8.4
6. Data on social performance indicators (DSPI)	a. Indicators on the satisfaction of the different groups. b. Indicators of policies with workers. c. Indicators of policies for students.	0/0.33 based on the absence and/or presence of each item	SDG 16.7 SDG 8.3 SDG 4.7
Specific information	$SI = \sum_{i=1}^m gi$		
7. Disclosure of economic information (DECI)	a. Students b. Employees (staff) c. Suppliers d. Public sector (balance sheets)	0/0.25 based on the absence and/or presence of each item	SDG 16.10 SDG 9.3 SDG 12.7 SDG 16.6
8. Dissemination of environmental information (DEI)	a. Energy b. Water c. Procurement management d. Waste management and recycling e. Transport f. Healthy food	0/0.16 based on the absence and/or presence of each item	SDG 7.b SDG 6.5 SDG 12.2 SDG 12.5 SDG 11.2 SDG 12.3
9. Dissemination of social information (DSI)	a. Employment (employee health promotion) b. Campus services/student life c. Campus safety and security d. Health services e. Scholarships f. Disability resources	0/0.16 based on the absence and/or presence of each item	SDG 8.5 SDG 4.a SDG 16.a SDG 3.8 SDG 4.b SDG 4.5
10. Dissemination of information on education (DIE)	a. Academic b. Research c. Academic support service	0/0.33 based on the absence and/or presence of each item	SDG 4.c SDG 9.5 SDG 4.4

university in social aspects (PVSUS); information on commitments in services (ICS); data on economic performance indicators (DEPI); data on social performance indicators (DSPI); disclosure of economic

information (DECI); dissemination of environmental information (DEI); dissemination of social information (DSI) and dissemination of information on education (DIE).

TABLE 2 Model variables, definitions and measurements.

Variable	Definition	Measure
DIGSIESE	Index of general information disclosure on economic, social and environmental aspects (ESE).	In accordance with the elements listed in Table 1.
Gender Diversity	Represents the number of women (vice-chancellors and the rector) who make up the university's governing team.	Total number of women/total number of members of the governing team
Stakeholder	Measured through the communication channels that the university provides for these (interactivity features, forums/chat, Web 2.0 technology, online surveys and newsletters).	In accordance with the elements listed in Table 3.
Academic Ranking	International university rankings. Source: Shanghai Ranking 2021.	Position of the university in the ranking (AMWU).
Environmental Ranking	International university rankings. Source: UI GreenMetric World University Ranking 2021.	1 if present in the ranking and 0 if absent from the ranking.
Size	Represents the number of students at the university. Source: annual reports 2021.	Logarithm of the total number of students.
Character	Character of the university (public or private).	1 if private and 0 if public.

3.3.2 | Model

Having defined the dependent variable—DIGSIESE—which quantifies the volume of information dissemination related to aspects of ESE, both general and specific, by the universities in the top 200 positions of the Shanghai ranking, we proceeded to test the hypotheses according to the multiple regression model proposed below. The statistical package we used was SPSS version 25.0.

$$\text{DIGSIESE} = \alpha_0 + \beta_1 \text{Gender diversity} + \beta_2 \text{Stakeholders} + \beta_3 \text{Academic Ranking} + \beta_4 \text{Environmental Ranking} + \beta_5 \text{Size} + \beta_6 \text{Character} + \epsilon_i$$

The assessment of the independent variables is shown in Table 2.

The variable 'stakeholder participation' was measured by means of an index (interactivity characteristics, forums/chat, web 2.0 technology, online surveys and newsletter; Fang, 2002; Flórez-Parra et al., 2017; Holzer & Kim, 2007; Holzer & Manoharan, 2007) where, for each concept, 0 means the absence of information and 1 means the presence of information disclosed by the universities (see Table 3). The value of each item in a concept equals 1 divided by the number of items.

As for the variable of gender in the governing body, a content analysis was carried out on the websites on the structure and composition of the universities' governing bodies. The academic ranking and environmental ranking variables were measured through the universities' positioning and classification in the Shanghai ranking and the UI GreenMetric, respectively. Specifically, the environmental ranking variable was measured dichotomously, where 1 means the university's participation in the UI GreenMetric ranking, which is widely followed in higher education institutions worldwide, and 0 means its absence.

The study includes the analysis of control variables such as size and public or private nature. The size variable can affect the volume of information disclosed (Gallego Álvarez et al., 2011) and is a factor

used to analyse transparency and accountability in universities (Flórez-Parra et al., 2017). The character variable captures the possible difference in information disclosure between public and private entities (Garde-Sánchez et al., 2013; Holsapple & O'Leary, 2009).

3.4 | Limitations of the method

The present study analyses one of the most prestigious rankings in the world (Shanghai). Due to the existence of other university rankings, it is possible that the results may vary. Although the number of universities analysed is significant (Top 200), there is a larger number of institutions in the academic ranking, which indicates that the sample size of universities could be larger, and at the same time the period of analysis could be extended. The consideration of those aspects could provide a broader vision of the information disclosed related to sustainability in the university field at an international level. Information on sustainable development and SDGs is scarce, although is growing. The largest universities in developed countries are committed to social and environmental issues because they are societal concerns. The analysis is focused on the latest available year of information but should be expanded in future years.

The model proposed analyses the determinants of the universities' degree of ESE information disclosure. The model could include other variables, such as the administrative culture where the universities operate, the degree of stakeholder satisfaction with the information disclosed, or other variables related to governing bodies.

4 | ANALYSIS AND DISCUSSION OF THE RESULTS

Table 4 shows the descriptive statistics and the correlations between the variables. In relation to the average data, it can be seen that the

TABLE 3 Description of the stakeholder variable.

Stakeholder participation (stakeholders)		$STAKEH = \sum_{i=1}^m a$ Score
Concept	Items	
1. Characteristics of interactivity	a. An e-mail address other than that of the webmaster is provided for requests for information or explanations. b. Personal contacts with the persons responsible for the information provided at the university are provided on the website. c. The website has a mailing list to provide updated information to the users of this service.	0/0,33 based on the absence/presence of each item.
2. Forums/chat	a. General content forums b. Forums related to ESE.	0.5 if the online forum/chat used allows the discussion of general topics. 1 if there is a specific forum/chat used for the discussion of ESE topics.
3. Web 2.0 technology	a. An instant messaging system is provided to request information or explanations. b. Interactive maps are provided for stakeholder information on the website. c. The website has a sharing list of photos, files, videos, etc.	0/0,33 based on the absence/presence of each item.
4. Online surveys	a. Forums for general content. b. Economic, social and environmental forums.	0.5 if the online forum/chat used allows the discussion of general topics and 1 if there is a specific forum/chat used for the discussion of ESE topics.
5. Newsletter	a. Newsletter with general content. b. Newsletter related to ESE.	0/0.5 based on the absence/presence of each item.

Source: Own elaboration based on previous literature (Fang, 2002; Holzer & Kim, 2007; Holzer & Manoharan, 2007).

volume of information disclosed is not very high; that the presence of women on the governing council is around three members, which is considered a critical mass (Amorelli & García-Sánchez, 2020) that can influence sustainability practices; that the communication and feedback channels established with stakeholders are varied and are present in almost all institutions; and that a low percentage of entities that occupy relevant positions in the academic rankings also appear in the environmental rankings. On the one hand, the disclosure of information on ESE aspects in universities is significantly and positively associated with the independent variables of gender diversity in the governance team and stakeholders; on the other hand, the top-ranked universities in the academic ranking are significantly associated with disclosure of ESE information, but their relationship indicates that universities that occupy a higher level in the academic ranking disclose more ESE information. In addition, the universities that occupy higher positions in the environmental ranking are those that disclose more ESE information. With regard to the variables of the size and character of the university, there is no significant relationship with the disclosure of information related to ESE aspects.

On the other hand, the variable of stakeholders is significantly associated with the variable of gender on the governance team, indicating a stakeholder orientation when women participate in university governance (Castaño et al., 2019; Rodríguez Gomez et al., 2020; Rodríguez-Ariza et al., 2017). However, the relationship between stakeholder orientation and position in the academic rankings is significant, indicating that the objectives of universities well positioned in the academic rankings are oriented primarily towards meeting the demands of stakeholders (Atici et al., 2021; Meho, 2020; Saraite-Sariene et al., 2019).

Similarly, it is observed that the academic ranking variable is significantly associated with the nature of the institution, indicating that public universities hold privileged positions in the ranking (Lauder et al., 2015). Public universities in the sample under study have a greater weight in the ranking as a whole. On the other hand, it is worth noting that private universities have a higher number of women in their governing bodies than public universities. These differences may indicate that the management models used by public and private universities differ (Flórez-Parra et al., 2017; Meho, 2020).

TABLE 4 Descriptive statistics and bivariate correlations between the variables of the model.

Correlations											
	Minimum	Maximum	Mean	Desv. típ.	1	2	3	4	5	6	7
1. DIGSIESE	0.00	10.00	3.33	2.44	1						
2. Gender diversity	0.00	23.00	3.98	3.00	.238**	1					
3. Stakeholders	0.00	5.00	4.15	.969	.371**	.223**	1				
4. Academic ranking	1.00	200.00	100.50	57.87	-.379**	-.151*	-.238**	1			
5. Environmental ranking	0.00	1.00	.10	.30	-.153*	-0.032	-0.102	.053	1		
6. Size	3.35	5.53	4.47	.26	-0.029	0.023	-0.072	0.005	.218**	1	
7. Character	0.00	1.00	.16	.37	0.111	.245**	0.110	-.329**	-0.103	-.431**	1

**The correlation is significant at the .01 level (bilateral).

*The correlation is significant at the .05 level (bilateral).

Finally, the environmental ranking variable is significantly related to the size of the university. The rating of universities in environmental rankings has led to changes in policies and strategies linked to respect and care for the environment and compliance with the SDGs related to environmental issues (Atici et al., 2021; Flórez-Parra et al., 2021), which are more important in relation to the universities' size. Size implies a greater volume of resources that can be allocated to environmental care objectives (Dagiliūtė et al., 2018). Table 5 shows the results of the proposed multiple regression model.

The participation of women on the governance team, stakeholders and both academic and environmental rankings have significant impacts on the disclosure of information related to ESE issues.

The results show a significant and positive relationship between the variable of gender diversity in the governance team and the disclosure of ESE information, indicating that the incorporation of a greater number of women in the governing bodies of universities guarantees, among other things, a greater commitment to disclosing information related to the ESE measures and/or objectives proposed by the institutions (Peterson, 2016; Redmond et al., 2017). The participation of women, with their greater sensitivity to social and environmental issues (Amorelli & García-Sánchez, 2020; Kreissl et al., 2015; Rodríguez Gomez et al., 2020; Tomas et al., 2010) and greater orientation towards stakeholders (Cabeza-García et al., 2018; Rodríguez Gomez et al., 2020; Tomas et al., 2010), leads to greater disclosure of information on ESE aspects (Amorelli & García-Sánchez, 2020; Rodríguez-Ariza et al., 2014, 2017). The results show an association between women's participation in higher education institutions' governing bodies and the disclosure of information on ESE aspects, so we accept Hypothesis 1.

With regard to the significant and positive relationship of stakeholders with the disclosure of ESE information, the results show that higher education institutions are aware of the need to legitimise their actions and respond to stakeholder demands (Brusca et al., 2018; Ceulemans, Lozano, & Alonso-Almeida, 2015; Gamage & Sciulli, 2017). This leads them to establish communication channels through their websites (De Aguilera Moyano et al., 2010) and/or social networks (Di Tullio et al., 2021; Yeo, 2014) to collect information and respond to demands by

TABLE 5 Results of the proposed multiple regression model.

Variable	β	t
DIGSIESE	2.550	.816
Gender diversity	.149	2.255***
Stakeholders	.259	3.960***
Academic ranking	-.315	-4.623***
Environmental ranking	-.108	-1.700***
Size	-.022	-.309
Character	-.078	-1.030
R	0.510	
R ²	0.260	
F-Statistics	11.286***	

* $p < .10$; ** $p < .05$; *** $p < .01$.

disclosing management and/or sustainability reports (Saraitiene et al., 2019). At the same time, it leads them to enable stakeholders to participate actively, producing feedback between both parties (Gamage & Sciulli, 2017). On the other hand, the demands for information cause governance bodies to disclose a greater volume of information also linked to ESE aspects (Dagiliūtė et al., 2018; Wright, 2010; Yuan et al., 2013). According to the results obtained, Hypothesis 2 is accepted.

The results show a significant negative relationship between the academic rankings variable and the dissemination of information on ESE, that is, the best-positioned institutions are those that make the greatest effort to disseminate ESE information. At the international level, academic rankings have been playing a differentiating role in the university environment, being considered indicators of excellence, leadership (Meho, 2020), and legitimisation, which attract a greater number of prestigious students and researchers (Robinson-Garcia et al., 2019). Perhaps the pressures exerted by the various stakeholders (Dabija et al., 2017; Suwartha & Sari, 2013) and the strong global repercussions generated by the issue of climate change and the application of the SDGs in the university environment have led, on the one hand, to academic leaders integrating sustainable development disclosure, contributing to greater transparency (Lauder

et al., 2015), and, on the other hand, to international rankings establishing new metrics related to ESE and SDGs to compare institutions (Garde Sánchez et al., 2020) and establish which ones are quality institutions (Amsler & Bolsmann, 2012; Gonzales & Núñez, 2014; Saunders & Blanco Ramirez, 2017). According to the results obtained, Hypothesis 3 is accepted.

As for the environmental ranking variable, this is significantly and negatively associated with the dissemination of information related to ESE aspects, that is, the best-positioned institutions in UI GreenMetric ranking are those that make the greatest effort to disseminate ESE information, accepting Hypothesis 4. Universities have been making efforts to integrate and report on actions in different areas, although, according to the results, there is still room for improvement. From an environmental point of view, they are implementing measures on their campuses such as reducing CO₂ emissions, saving resources such as water and energy, and waste treatment and/or recycling, among others, which represent long-term budgetary savings (Atici et al., 2021). Universities are also joining the various declarations on the climate emergency, but few of them are disseminating systematised information or following widely accepted standards or indicators on environmental issues (Alonso-Almeida et al., 2015; Ceulemans, Lozano, & Alonso-Almeida, 2015). It seems that the universities in the sample follow parameters in the disclosure of information that are required in the environmental ranking, although not all environmental issues covered by the SDGs are addressed (Alcántara-Rubio et al., 2022). In addition, the results show an under-representation of universities from the Shanghai ranking in the UI GreenMetric, which indicates that further efforts are required to find more widely accepted formulas and standards. In this sense, the impulses of the stakeholders and the members of the governing team are important. Given the importance of environmental aspects in the various areas in which the university operates, it is necessary to continue to develop tools that make it possible to make progress in the achievement of the SDGs.

The results in Table 1 show that universities are contributing some measures related to climate change action (SDG 13) and in turn are forging strategic alliances with other institutions to make progress in meeting the various goals (SDG 17) (Dillon, 2019). In addition, other results related to the general section show that most universities are inclined to prioritise the SDGs in very specific areas, such as publicising their commitments to service excellence (SDG 4, quality education), followed by the dissemination of the main environmental commitments (SDG 13, climate change) and, finally, the indicators of worker policies (SDG 8, decent work and economic growth).

With respect to specific information, the actions undertaken by universities focus on academics and campus services/student life, both linked to SDG 4 (quality education); energy-related measures, linked to SDG 7 (affordable and clean energy); waste management and recycling schemes, linked to SDG 12 (responsible production and consumption); actions to reduce emissions through alternative transport, linked to SDG 11 (sustainable cities and communities); or water conservation, linked to SDG 6 (clean water and sanitation). These

results are in line with the studies about universities' commitments to the SDGs (Beer, 2016; Da Silva et al., 2023; Gómez et al., 2016; Kiehle et al., 2023; Li et al., 2015) and show that the implementation of SDG indicators is still very fragmented (Alcántara-Rubio et al., 2022), and its reporting is still at an early stage in universities (Aras et al., 2021).

Finally, the size variable is not related to the disclosure of information on ESE aspects, perhaps because the size of the universities in the Shanghai ranking is not a differentiating factor. Likewise, the public or private nature of the universities is not related to the disclosure of ESE aspects, which may indicate that there is no differentiation in relation to the disclosure of information between public and private higher education institutions.

5 | CONCLUSIONS

Universities have been disseminating information on ESE aspects that respond to some of the SDGs. The information is scattered on the institutions' websites and in their annual, environmental, or social responsibility reports and usually follows the parameters and indicators used in the business world—specifically, the parameters of the GRI 4 (2013) or integrated reports (IIRC, 2013). Although different environmental rankings have been developed and linked to the SDGs, their scope and acceptance are restricted to the institutions that are assessed in them. A practical contribution of the research is that the existence of homogeneous information and standards that enable comparison between entities, as well as management and monitoring of the degree of achievement of the SDGs, is essential to analyse the level of implementation of the SDGs, to ensure the effectiveness of the measures taken, and to make them known to the different stakeholders. These standards should take into account the sustainable indicators that entities have been using, enriching and expanding them, since the SDGs cover a multitude of aspects which are not currently being reported on.

Universities are currently focusing on the environmental aspects of the SDGs, but one contribution of the current paper is that the standards of reporting make it possible to analyse the impact of universities' practices as well as the value generated with a broader view that would consider economic as well as social and environmental aspects in a stakeholder-oriented manner. This perspective would make it possible to assure the sustainability of the practices and the degree of achievement in relation to the SDGs, would guarantee the response to the different stakeholder demands, and would also serve as a tool for legitimising actions.

Within the findings of our study, 12 of the 17 SDGs have been identified in the sustainability reports. The most used and best valued by the universities are related to SDG 4 (quality education); SDGs 13, 7 and 6 related to the environment and sustainability; and SDGs 16 and 17 linked to strengthening and partnerships with institutions. Universities are aware of the global issues of climate change and have been selecting SDGs according to their needs and/or interests, which implies that universities show different progress towards the different goals and targets set by the SDGs.

One of the contributions of the work is the identification of the influence of both gender diversity on governance teams and stakeholders in the dissemination of a greater volume of information related to ESE aspects. ESE information is also an important support point for the achievement of the SDGs, to which it is related. First, universities need to integrate ESE aspects in their management. This type of information would facilitate decision-making and make it possible to efficiently and effectively address the SDGs to be achieved. Thus, the practical implication of this work is the need to reach, in this second step, a proposal for homogeneous standards specific to the university world that unify the way in which information on the SDGs is disclosed in a way that favours transparency and improves the process of accountability.

Our research can contribute to the scarce literature on the extent of ESE disclosure in universities. The progress that institutions have been making in this area reveals, on the one hand, the commitments they have made to the 2030 agenda and, on the other hand, those concerning accountability to society and its various stakeholders. However, perhaps the pace at which the various actions focused on sustainability or the preparation of environmental reports in the university environment are being implemented is not so efficient, which may mean that not all the goals proposed by the SDGs can be achieved within the timeframe set.

One of the social implications of the work is to show the decisive role in the development of social and environmental objectives of women's participation in governing bodies and the need to take into account the perceptions and requirements of stakeholders.

Academic rankings are benchmarks for universities around the world and are widely recognised. However, this is not the case for environmental rankings, where social support and reach are much lower. One contribution of the paper is to show the need to educate stakeholders and governance teams and raise their awareness of these rankings and to encourage institutional support for the creation of homogeneous guidelines to enable the development and management of SDG-related initiatives. Academic rankings enhance reputation and are an indicator of leadership, although the design of their indicators is questioned, as they show only certain aspects of quality and are generally not stakeholder-oriented. This criticism could be softened if these higher education institutions could demonstrate their engagement with social and environmental objectives. Currently, few universities in the top 200 of the Shanghai ranking are ranked in the most widely accepted environmental ranking, the UI GreenMetric, although the best rated are those that disclose the most ESE information.


Finally, the disclosure of ESE information reduces the asymmetry of information between the higher education institution and the various stakeholders and makes it possible to meet their information demands, including about the SDGs. The relevance of the disclosure of ESE information by universities in the most prestigious rankings lies in the fact that they are considered benchmarks for other institutions. In this context, the proposed future lines of research could focus on analysing the degree of implementation of the SDGs in universities in other rankings or located in other geographical areas such as Latin America and analysing the perception of stakeholders such as university rectors and students on ESE aspects.

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APPENDIX 1: UNIVERSITIES BY CONTINENT

Countries	Total universities	%	Universities by continent
USA	92	46.0	Country in North America (53.5%)
Canada	15	7.5	
Brazil	1	0.5	Country in South America (1%)
Mexico	1	0.5	
Australia	8	4.0	Country in Oceania (4.5%)
New Zealand	1	0.5	
UK	18	9.0	Countries in Europe (32.5%)
Germany	14	7.0	
Switzerland	5	2.5	
Italy	5	2.5	
Spain	1	0.5	
France	1	0.5	
Portugal	1	0.5	
Austria	1	0.5	
The Netherlands	6	3.0	
Sweden	4	2.0	
Norway	3	1.5	
Denmark	3	1.5	
Belgium	2	1.0	
Finland	1	0.5	
China	7	3.5	
Japan	3	1.5	
South Korea	3	1.5	Country in the Middle East (1%)
Singapore	2	1.0	
Israel	2	1.0	