Online sustainability disclosure practices in the university context. The role of the board of directors

Giuseppe Nicolò, Natalia Aversano, Giuseppe Sannino and Paolo Tartaglia Polcini

(Information about the authors can be found at the end of this article.)

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Abstract

Purpose – *The study aims to examine the impact of corporate governance in terms of certain board characteristics on the level of universities' voluntary sustainability disclosure.*

Design/methodology/approach – *A content analysis based on a comprehensive disclosure index – that also accounts for the impact that COVID-19 exerted on the social dimension of university activities – is performed on a sample of Italian public universities' websites for the year 2020. An ordinary least squares regression model is estimated to test the association between universities' board characteristics, namely, board size, board independence and board gender diversity (including the presence of a female rector), and online sustainability disclosure.*

Findings – *This study provides evidence that websites represent a valid tool used by universities to highlight their social performance and demonstrate their commitment to dealing with the pandemic's social and economic disruption by supporting their stakeholders. Board gender diversity and female Rector's presence are crucial factors that positively impact voluntary sustainability disclosure levels.*

Practical implications – *Policymakers and regulators can benefit from the study's findings. Using the results of this study, they may reflect on the need to regulate sustainability reporting in universities. In addition, findings may offer policymakers inspiration for regulating the presence of women on university boards.*

Originality/value – *This study offers novel contributions to existing literature analysing the university's voluntary sustainability disclosure practices through alternative communication tools such as websites. Moreover, it provides novel insight into the role of the board gender diversity in university sustainability disclosure practices.*

Keywords *Sustainability disclosure, Gender diversity, Corporate governance, University, Sustainable development*

Paper type *Research paper*

1. Introduction

As knowledge-based entities responsible for preparing future leaders and decision-makers of both public and private organisations, universities are more and more envisaged to take leading positions in fostering a cultural, physical and ethical transition towards a sustainable society (Sassen and Azizi, 2018a; An *et al.*, 2019; Lourenço *et al.*, 2021; Leal Filho *et al.*, 2021a). As part of the virtual social contract existing between higher education and society, universities are called upon to meet a broader societal demand to instil new mental sustainability paradigms in their students (Lopatta and Jaeschke 2014; Sassen and Azizi, 2018a, 2018b; Leal Filho *et al.*, 2021a, 2021b). Attuned, they are expected to craft innovative and technological solutions to contribute to regional and national socio-economic development through their institutional activities, including teaching, research and third mission (Sassen and Azizi, 2018a; An *et al.*, 2019; Leal Filho *et al.*, 2021a, 2021b). Moreover, following the recent launch of the United Nations (UN) 2030 Agenda for

Sustainable Development (the 2030 Agenda), universities have been considered pivotal actors in both supporting and contributing to the achievement of all the 17 Sustainable Development goals (SDGs) (United Nations General Assembly, 2015; Leal Filho *et al.*, 2021a).

Universities' crucial role in society's advancement has been further underscored by the recent global crisis caused by COVID-19. The pandemic has prompted universities to embrace innovative and sustainable models to ensure the continuity of their core services. It also prompted universities to assume a leadership role in helping neighbouring communities to cope with the social, economic and political disruption (Ikram *et al.*, 2020; Carnegie *et al.*, 2022; Lourenço *et al.*, 2021). As Lourenço *et al.* (2021) observed, the global emergency scenario caused by the COVID-19 outbreak has profoundly impacted the universities' social dimension, forcing them to implement pro-social actions that could reduce the suffering of communities – *in primis* students – and reduce emerging human-right inequalities.

In light of these challenges, sustainability reporting (SR) practices have gained momentum to establish a dialogue between universities and stakeholders (Moggi, 2019; Manes-Rossi *et al.*, 2020). Unlike other organisations, universities have to cope with various stakeholders forums, such as students, researchers, central and local governments, industries, other universities, local communities and non-governmental organisations (Gamage and Sciulli, 2017; Gori *et al.*, 2022). They exert constant scrutiny and pressure to receive information about the positive or negative impact generated by universities' activities on the economy, society and environment and their contribution to the social and economic recovery from the recent health crisis (García-Sánchez and García-Sánchez, 2020; Nicolò *et al.*, 2021a; Trireksani *et al.*, 2021). Thus, sustainability disclosure has become crucial for universities to reduce information asymmetry with their stakeholders and obtain legitimacy for their operations (Schaffhauser-Linzatti and Ossmann, 2018). It helps stakeholders in comparing the different dimensions of universities' sustainability performance and improves, in turn, their decision-making processes and confidence in universities' operations Larrán Jorge *et al.* (2019), Shan *et al.* (2021). Also, increasing the level of sustainability disclosure enables universities to mould a brand identity as providers of a "sustainable learning environment" (Shan *et al.*, 2021, p. 4) and enhance their image to the external audience (Del Sordo *et al.*, 2016; Shan *et al.*, 2021; Gori *et al.*, 2022). Accordingly, sustainability disclosure represents a pivotal tool to legitimate the universities' position within society, demonstrating to stakeholders and society at large how they are using public resources to conduct activities that fulfil broader traditional and emerging societal expectations and norms (Sassen and Azizi, 2018a, 2018b; An *et al.*, 2019).

Nevertheless, an extensive body of literature has highlighted that SRs practices in the university are still at an early stage due to many barriers curbing their diffusion Gamage and Sciulli (2017), Larrán Jorge *et al.* (2019). Meanwhile, websites have gained increasing prominence in the public sector as sound tools to convey non-financial information to stakeholders (Andrades *et al.*, 2021). In particular, some scholars noted that websites might represent powerful communication instruments for universities to disclose information about social, environmental and sustainability issues in a timelier, faster and more accessible way than other communication tools such as traditional SRs (Rodríguez Bolívar *et al.*, 2013; Manes-Rossi *et al.*, 2018).

However, mainstream research on sustainability disclosure in the university context largely focused on traditional stand-alone SRs based on Global Reporting Initiative (GRI) Guidelines (Sassen and Azizi, 2018a; Moggi, 2019), while websites remain largely under-investigated (Rodríguez Bolívar *et al.*, 2013; An *et al.*, 2019). Moreover, previous studies mainly focus on investigating the extent or quality of sustainability disclosure, offering limited empirical insight into the potential explanatory factors of sustainability disclosure practices.

Mindful of this, this research seeks to address the above gaps by providing a number of novel contributions to the existing sustainability disclosure literature in the higher education context.

First, based on a modified Fonseca *et al.*'s (2011) tick-box framework, this study contributes to the literature by offering contemporary evidence on the level of sustainability disclosure provided by a sample of 60 Italian public universities through websites. In doing so, due to the contemporaneity of the research, the original Fonseca *et al.*'s (2011) tick-box framework has been modified to include 11 items that address COVID-19 issues, which are dramatically impacting the social dimension of university sustainability.

Secondly, this study broadens the scope of previous studies that provide descriptive insight into universities' sustainability disclosure level. As Adams (2013, p. 390) stated "Critical to the development of a report which addresses sustainability issues is a sound governance and management structure for sustainability". Accordingly, this paper contributes to the literature by examining how university governance structure in terms of board size, independence and gender diversity (including the percentage of women directors and a female rector) influences the level of sustainability disclosure provided by the Italian public universities via the Web. University governance is one of the university dimensions that have been addressed mainly by the long season of New Public Management (NPM)-based neo-liberal reforms oriented towards the marketisation and managerialisation of Higher education (Ntim *et al.*, 2017; Carnegie *et al.*, 2022). In particular, in the Italian context, Law 240/2010 – inspired by pillars of accountability and autonomy – has introduced radical changes to the university governance structure, conferring the board of directors a central role in the strategic decision-making processes (Donina *et al.*, 2015).

Moreover, in focusing on governance structure, particular attention has been devoted to gender diversity in terms of the presence of women directors and female rectors. Due to the historical under-representation of women at the senior management and governance level, starting from the European Commission proposal in 2012 (EC, 2012), a global movement has widespread to increase gender diversity on the board of directors (Jain and Jamali, 2016; Rao and Tilt, 2016). The board gender diversity is widely considered a synonym of good corporate governance and a vehicle for higher accountability and transparency (Rao and Tilt, 2016; Fernandez *et al.*, 2019). So, this study provides novel insight into its role in university sustainability disclosure practices.

The remainder of this paper is organised as follows. Section 2 reviews the literature on SR by universities; Section 3 frames the theoretical background; Section 4 presents the hypotheses; Section 5 illustrates the research methodology; Section 6 presents and discusses results, whereas Section 7 provides concluding remarks, implications and limitations of the study.

2. Literature review

Incorporating sustainability pillars in the university's core activities and operations goes hand in hand with the need to communicate to stakeholders how they create value and support the society's progress toward sustainable development An *et al.* (2019), Larrán Jorge *et al.* (2019). However, SR practices in the Higher Education context are mainly voluntary and not regulated under the law. This has sparked interest among academics who have started empirically investigating the state of voluntary SR practices in universities.

Some studies based their analysis on specific countries: Canada (Fonseca *et al.*, 2011; Sassen and Azizi, 2018a); Germany and Austria (Lopatta and Jaeschke, 2014); USA (Sassen and Azizi, 2018b); Australia Gamage and Sciulli (2017), Trireksani *et al.* (2021); Italy (Del Sordo *et al.*, 2016; Moggi, 2019); Turkey (Son-Turan and Lambrechts, 2019); Hong Kong (An *et al.*, 2019). Other scholars adopted an international perspective, examining university voluntary sustainability disclosures across different geographical contexts

(Rodríguez Bolívar *et al.*, 2013; Schaffhauser-Linzatti and Ossmann, 2018; Larrán Jorge *et al.*, 2019; Sepasi *et al.*, 2019).

Most of these studies focused on GRI-based SRs, detecting a limited adoption rate and significant differences in the extent and content of sustainability disclosures (Fonseca *et al.*, 2011; Gamage and Sciulli, 2017; Sassen and Azizi, 2018a, 2018b). In particular, an aptitude for disclosing environmental performance information emerged, while the social dimension – except for gender diversity issues – remains largely neglected (Fonseca *et al.*, 2011; Gamage and Sciulli, 2017; Sassen and Azizi, 2018a; Moggi, 2019). Moreover, in the Italian context, both Del Sordo *et al.* (2016) and Moggi (2019) investigated the state of social reports in public Universities. Limited attention toward social and human rights seems to persist as social reports frequently address managerial dimensions linked to universities' missions (e.g. research and teaching activities).

On the other hand, in investigating a sample of worldwide universities, Larrán Jorge *et al.* (2019) detected a focus on economic performance disclosures and less attention devoted to environmental ones. They also found that sustainability disclosure practices are influenced by organisational factors such as institutionalisation (the presence of academic sustainability offices), geographical region, external assurance and leadership. Along the same line, Sepasi *et al.* (2019) noted that the quality of SRs – in terms of comprehensiveness – is still low. They also observed that important dimensions such as education and outreach programs are largely unaddressed.

In the mind of these limitations, some scholars have started investigating alternative tools to convey corporate social responsibility (CSR) and sustainability information in the university context. Particular attention has been devoted to the websites, as they represent dynamic communication channels that allow universities to enhance the dialogue and the engagement with stakeholders with lesser costs and more accessible and timelier disclosure (Rodríguez Bolívar *et al.*, 2013; An *et al.*, 2019; Garde Sanchez *et al.*, 2020; Flórez-Parra *et al.*, 2021; Nicolò *et al.*, 2021a). Also, unlike SRs, websites are not subject to periodicity limits or format and standard indicators constraints (Son-Turan and Lambrechts, 2019). This is a crucial factor motivating universities to exploit websites as vehicles to convey their sustainability message. However, the investigation of websites has provided mixed findings. An *et al.* (2019) found that universities pay much attention to voluntary sustainability disclosure practices through websites to enhance the dialogue with stakeholders and preserve their legitimacy. In contrast, Rodríguez Bolívar *et al.* (2013) and Garde Sanchez *et al.* (2020) observed that universities appear slow to realise the potential of websites as sustainability disclosure means.

Thus, the literature review evidence that existing research primarily focuses on investigating the extent or quality of sustainability disclosure. There is a scant empirical insight into the potential explanatory factors that could explain SR practices, especially through websites. In particular, despite its relevance in decision-making processes and disclosure policies definition, little is known about the impact of university governance – in terms of board composition – on sustainability disclosure practices. The only exceptions are represented by the study of Garde Sanchez *et al.* (2020) and Flórez-Parra *et al.* (2021) focused on, respectively, online CSR and environmental disclosure. However, they are both focused on the top universities in the Shanghai ranking in 2018 and have not examined the influence of crucial board attributes, such as independence and diversity.

Accordingly, to fill these gaps, the present study sets the following research questions:

RQ1. What is the level of sustainability disclosure provided through websites by Italian public universities?

RQ2. To what extent does governance structure in terms of board's composition affect the level of sustainability disclosure provided through websites by Italian public universities?

3. Sustainability reporting and governance: theoretical background

Universities are governmental-funded entities with a broad mandate to deliver public services to the stakeholders' community interest (Jongbloed *et al.*, 2008). In the light of the multiple missions involving teaching, research, technology transfer and continuous engagement that characterise their public mandate, universities are exposed to massive social and political pressures and the scrutiny exerted by a vast forum of constituents (Ntim *et al.*, 2017; Sassen and Azizi, 2018a). This paved the way for the discourse of legitimacy that postulates the existence of a virtual social contract between universities and society at large (Deegan, 2002; Jongbloed *et al.*, 2008; Adams, 2013; An *et al.*, 2019). It embeds the multiple, emerging, evolving expectations that society has matured against universities' activities (Deegan, 2002; Trireksani *et al.*, 2021).

From this perspective, sustainability disclosure has become fundamental for universities. It allows universities to account for their activities' most salient economic, environmental and social impacts and the relation of those to their performance in a transparent way (Gamage and Sciulli, 2017; An *et al.*, 2019). Through sustainability disclosure, universities enable stakeholders to better understand the links between sustainability-related issues and their academic plans and strategy (Gamage and Sciulli, 2017). Therefore, sustainability information is crucial to reducing information asymmetry between universities and their multiple forums of stakeholders as it permits them to compare the sustainability performance of different universities, enhancing their decision-making process (Larrán Jorge *et al.*, 2019; Shan *et al.*, 2021). By means of sustainability disclosure, universities also demonstrate how they use public resources to implement policies and strategies to ensure global progress towards sustainable development and support social and economic recovery from the recent health crisis (Nicolò *et al.*, 2021a, 2021b, 2021c; Gori *et al.*, 2022). In such a way, universities improve their reputation and project outside an image of a socially responsible entity (An *et al.*, 2019; Larrán Jorge *et al.*, 2019). For these reasons, sustainability disclosure allows universities to legitimate their position in society, demonstrating that they are acting in compliance with the system of norms, values and expectations established by stakeholders' community and public society (Jongbloed *et al.*, 2008; Sassen and Azizi, 2018b; Larrán Jorge *et al.*, 2019).

From the legitimacy theory perspective, the discourse of sustainability disclosure cannot be decoupled from considering the pivotal role of governance arrangements, particularly board composition, in determining organisational transparency and accountability levels (Chan *et al.*, 2014; Leal Filho *et al.*, 2021b). The role of corporate governance has been discussed at length under the traditional agency theory standpoint (Jensen and Meckling, 1976; Vitolla *et al.*, 2020). However, the dramatic increase in society's expectations of organisations' social, environmental and ethical responsibilities arising from the impact of their activities on the external ecosystem has led scholars to question the shareholder value maximisation approach to corporate governance portrayed by the agency theory (Rao *et al.*, 2012; Michelon and Parbonetti, 2012; Chan *et al.*, 2014; Jain and Jamali, 2016). The traditional agency-based outlook of corporate governance has been growingly considered "narrow and shortsighted with rising calls to include governance consequences and spillovers for non-financial stakeholders" (Jain and Jamali, 2016, p. 253). Accordingly, a broader view of corporate governance has been increasingly adopted based on legitimacy theory's predictions (Rao *et al.*, 2012; Chan *et al.*, 2014; Jain and Jamali, 2016). From this broader theoretical perspective, effective corporate governance systems have been recognised as key accountability mechanisms that increase organisational legitimacy (Michelon and Parbonetti, 2012). Specifically, considering its task to oversee and define disclosure strategies, the board of directors should recognise and address the legitimate interests of the vast range of stakeholders' involved or interested in organisations' activities rather than only shareholders' ones (Michelon and Parbonetti, 2012; Rao *et al.*, 2012; Chan *et al.*, 2014). It follows that the board should define objectives and strategies that allow an

organisation to comply with the social contract signed with society and promote an adequate level of disclosure ranging from economic to social, environmental and ethical sustainability issues that demonstrate the respect of the social contract (Michelon and Parbonetti, 2012; Rao *et al.*, 2012; Chan *et al.*, 2014).

This perspective is particularly relevant in the public university context, characterised by a lack of shareholders' interests and a primary need to manage and balance the claims of a multitude of stakeholders (Sassen and Azizi, 2018a; An *et al.*, 2019). Therefore, legitimacy theory allows framing the role of the board of directors in upholding the university sustainability agenda and related reporting practices (Jongbloed *et al.*, 2008; Sassen and Azizi, 2018a; Garde Sanchez *et al.*, 2020; Leal Filho *et al.*, 2021b). In the last decades, many countries (e.g. UK, Germany, The Netherlands, Norway, Australia; Italy) have introduced laws to reduce the burden of government bureaucracy and increase the stakeholder's participation in the governance of universities (ter Bogt and Scapens, 2012; Donina *et al.*, 2015). In tune, the heterogeneity of the board has been increased to include external, independent members with specific managerial skills and experience (ter Bogt and Scapens, 2012; Donina *et al.*, 2015). As for private sector entities, the board has become the central university decision-making body. It has been empowered to preserve sound financial resources management and is also expected to foster the integration of social and environmental development concerns in academic core activities and strategies (Jongbloed *et al.*, 2008; Ntim *et al.*, 2017; Flórez-Parra *et al.*, 2021). In doing so, the board has a primary responsibility to determine adequate levels of transparency and accountability about financial and non-financial issues that satisfy stakeholders' and society legitimate expectations (Ntim *et al.*, 2017; Nicolo'*et al.*, 2020). However, the effectiveness to which the board of directors fulfils its responsibilities and promotes accountability and transparency for stakeholders and society at large strictly depends on its composition, in particular on its size and the degree of independence and diversity of its members (Ntim *et al.*, 2017; Nicolo'*et al.*, 2020). Therefore, the following section presents hypotheses that test the relationship between university sustainability disclosure and the principal board of directors' characteristics: board size, board independence and board diversity.

4. Hypotheses development

This section formulates the research hypotheses based on the theory previously discussed and arguments from mainstream studies investigating the association between corporate governance and CSR or sustainability disclosure in the private sector (Michelon and Parbonetti, 2012; Chan *et al.*, 2014; Liao *et al.*, 2015; Jain and Jamali, 2016; Rao and Tilt, 2016; Helfaya and Moussa, 2017; García-Sánchez and Martínez-Ferrero, 2018). Moreover, considering the lack of research on corporate governance and sustainability disclosure in the university realm, previous studies investigated the impact of certain university board attributes on the level of voluntary disclosure (Ntim *et al.*, 2017); Intellectual Capital (ICD) disclosure (Manes-Rossi *et al.*, 2018; Nicolo' *et al.*, 2020; Nicolò *et al.*, 2021c); and, corporate governance disclosure (Andrades *et al.*, 2021), represent further valid relevance to corroborate and contextualise the hypotheses.

This study presents three main hypotheses related to: board size, board independence and gender diversity (including the percentage of women on boards and the presence of a female rector). Furthermore, three control variables related to the presence of an academic CSR/Sustainability committee, university size and age are tested.

4.1 Board size

According to legitimacy theory, larger boards are associated with a more effective internal decision-making process and greater ability to address the legitimate expectations of various social constituents due to the heterogeneity ensured by a higher number of

members (Ntim *et al.*, 2017; Nicolo'*et al.*, 2020). This leads to more significant disclosures that help organisations communicate the respect of the social contract and preserve, in turn, their license to operate (Chan *et al.*, 2014). From this perspective, in the university context, a higher number of directors is expected to increase the university board's ability to account for the most salient economic, environmental and social impacts of their activities and demonstrate congruence with the system of norms, values and expectations established by stakeholders' community and society at large (Jongbloed *et al.*, 2008; Ntim *et al.*, 2017; Nicolo'*et al.*, 2020).

However, previous scholars failed to detect any significant association between university board size and voluntary disclosure (Ntim *et al.*, 2017; Manes-Rossi *et al.*, 2018; Garde Sanchez *et al.*, 2020: Nicolo'*et al.*, 2020). Only Nicolò *et a*l. (2021c) found a positive impact of board size on the level of structural and relational capital voluntary disclosure conveyed by Italian universities through performance reports.

Therefore, due to the mixed theoretical and empirical evidence, board size is hypothesised to be related to the voluntary sustainability disclosure provided by Italian public universities through websites. However, the direction of the coefficient has not been specified as follows:

H1. There is an association between university board size and the level of online sustainability disclosure.

4.2 Board independence

From a legitimacy theory's perspective, external/independent directors act as a guarantee and accountability mechanism as their primary role is to ensure that the organisation addresses the interests not only of shareholders but also of stakeholders at large (Michelon and Parbonetti, 2012; García-Sánchez and Martínez-Ferrero, 2018). External/independent directors are less aligned with internal management, so they are particularly interested in preserving the board's objectivity to enhance their reputation (Michelon and Parbonetti, 2012; García-Sánchez and Martínez-Ferrero, 2018). Also, they attract inestimable resources to their organisations, as they have a plurality of external dialogues with stakeholders (Helfaya and Moussa, 2017). So, they are considered more receptive to social demands and keener than inside directors to ensure the alignment between the board and societal values (Michelon and Parbonetti, 2012; Ntim *et al.*, 2017). Moreover, external/independent directors are expected to be less oriented towards short-term financial performance goals and more towards long-term sustainability objectives. As a result, they defend the provision of higher levels of social and environmental information as an instrument to demonstrate the organisation's social responsibility and commitment to respect the social contract (Chan *et al.*, 2014). From this perspective, the presence of external members on the university board of directors is pivotal as, being not tied with internal governance or management actors, they "symbolise openness and transparency" (Ntim *et al.*, 2017, p. 79). Thus, they are considered more capable and prone than inside members to positively affect the university's response to the broader societal interests and expectations (Ntim *et al.*, 2017; Nicolo' *et al.*, 2020).

These arguments were confirmed empirically by Ntim *et al.* (2017) and Nicolo' *et al.* (2020) in the UK and Italian public university contexts. They observed a positive association between university board independence and the level of voluntary disclosure (Ntim *et al.*, 2017) and ICD disclosure (Nicolo' *et al.*, 2020).

Accordingly, the following hypothesis is posited:

H2. There is a positive association between university board independence and the level of online sustainability disclosure.

4.3 Gender diversity

Recently, a large consensus emerged about the beneficial effects of a higher presence of women on boards in terms of increased boards effectiveness and overall organisations' performance and transparency, especially in terms of CSR and sustainability information (Liao *et al.*, 2015; Jain and Jamali, 2016; Rao and Tilt, 2016; Helfaya and Moussa, 2017).

From a legitimacy theory perspective, the presence of women on corporate boards would be desirable, as it represents a crucial vector to increasing the organisation's legitimacy and reputation (Liao *et al.*, 2015). Compared to their men counterparts, women tend to perceive it as legitimate and more relevant privileging non-financial long-term performance rather than short-term economic performance (Liao *et al.*, 2015; Fernandez *et al.*, 2019). Also, women directors have deep concerns for the welfare of society, people and the environment and are more interested in safeguarding stakeholders' interests (Rao and Tilt, 2016; Helfaya and Moussa, 2017; Fernandez *et al.*, 2019). Female directors are also more averse to reputation loss and litigation; this encourages them to promote the implementation of sustainable initiatives and minimise perceived sustainability risks (Helfaya and Moussa, 2017). Accordingly, a higher presence of women on boards is expected to stimulate higher transparency and accountability about CSR and sustainability issues, enhancing the organisations' ability to address the different stakeholders' claims and preserve legitimacy to operate (Liao *et al.*, 2015). In the university context, the presence of women on board – including the rectors who chair the board – may facilitate universities in managing the legitimacy claims arising from the strict interdependence existing with key stakeholders, such as national and local government, and industry by means of higher accountability and transparency on non-financial issues (Ntim *et al.*, 2017; Garde Sanchez *et al.*, 2020).

Empirically, Andrades *et al.* (2021) observed that women in top management Spanish university positions positively affect online financial disclosure. Also, Ntim *et al.* (2017) observed a positive association between the UK universities' board gender diversity and the level of voluntary disclosure.

Therefore, based on theoretical arguments and empirical evidence, the following hypotheses are proposed:

H3a. There is a positive association between university board gender diversity and the level of online sustainability disclosure.

H3b. There is a positive association between the presence of a female Rector and the level of online sustainability disclosure.

4.4 Control variables

Previous literature has emphasised the significance of other factors that may influence the dissemination of non-financial information.

In particular, in the private sector, several scholars have investigated the impact of the presence of a CSR/Sustainability committee on non-financial disclosure (Michelon and Parbonetti, 2012; Amran *et al.*, 2014; Liao *et al.*, 2015; Helfaya and Moussa, 2017). They have emphasised how the presence of a specific CSR/sustainability committee can represent a capital resource, as it contributes to integrating social and environmental concerns into organisational strategic direction and reporting practices (Michelon and Parbonetti, 2012; Amran *et al.*, 2014; Helfaya and Moussa, 2017). The presence of a CSR/sustainability committee also evidences that the organisation has a strategic posture regarding its stakeholders and external environment (Michelon and Parbonetti, 2012). So, it is considered a valid means to better deal with stakeholders' expectations and reduce the legitimacy gaps (Michelon and Parbonetti, 2012; Amran *et al.*, 2014; Helfaya and Moussa, 2017). In the university sector, Larrán Jorge *et al.* (2019) found that the presence of institutional sustainability offices positively affects the level of disclosure provided by

European universities through stand-alone reports. Accordingly, this study includes the presence of an institutional CSR/Sustainability committee as a control variable.

Consistent with prior studies (Ntim *et al.*, 2017; Larrán Jorge *et al.*, 2019; Nicolo' *et al.*, 2020; Andrades *et al.*, 2021; Flórez-Parra *et al.*, 2021), this study also includes two organisational attributes: university size and age as control variables.

Concerning size, larger universities have to deal with a larger number of stakeholders interested or involved in their activities and are subject to massive public scrutiny and social opinion (Larrán Jorge *et al.*, 2019; Nicolo' *et al.*, 2020). Moreover, they are equipped with more financial and human resources to be devoted to SR practices (Manes-Rossi *et al.*, 2018; Larrán Jorge *et al.*, 2019). Therefore, they are expected to be more prone to increase the extent of their voluntary sustainability disclosure practices to address the concerns of a wider audience and legitimise their behaviours (Larrán Jorge *et al.*, 2019; Nicolo' *et al.*, 2020; Nicolò *et al.*, 2021c).

Finally, regarding *age*, scholars argue that older established universities tend to show more comprehensive accountability practices than younger ones, as they benefit from consolidated knowledge, routines and internal processes and have solid relationships developed with stakeholders (Manes-Rossi *et al.*, 2018; Nicolo' *et al.*, 2020). Moreover, they are interested in maintaining their reputation to the external audience and preserving the financial resources transferred from national governments (Nicolò *et al.*, 2021c). So, older universities are expected to provide more voluntary sustainability disclosures.

5. Research methodology

5.1 Sample

To accomplish the study's goals, the whole set of Italian public universities officially recognised by the Italian Minister of education, university and research (MIUR) has been selected. Private and telematics universities were excluded *a priori* because of differences in funding sources, governance structure, legislative background and accounting requirements that make them incomparable to public ones (Manes-Rossi *et al.*, 2018; Mazzotta *et al.*, 2020). So, according to the MIUR database, 67 Italian public universities active in the 2020 year have been initially selected. However, for the sake of consistency, according to scholars (Donina *et al.*, 2015; Mazzotta *et al.*, 2020), other six public universities were excluded from the analysis, as they are focused on doctoral training and, according to Law 240/2010, present peculiar internal governance and management structures. Moreover, one university was excluded due to missing governance data. Therefore, the final sample consists of 60 Italian public universities.

Italy was identified as a relevant case study because it has shown a growing interest in promoting voluntary non-financial reporting practices in the public sector, including universities (Del Sordo *et al.*, 2016; Moggi, 2019). Italy was also selected as the Italian Higher Education system has undergone a long process of NPM-based reforms. Such reforms have concurred in revising the internal governance mechanisms, management structures, accounting systems and public funding allocation of public universities (Reale and Primeri, 2014; Donina *et al.*, 2015; Manes-Rossi *et al.*, 2018). In particular, Law 240/2010 has redesigned the Italian public university governance structure, specifically improving the leadership, composition, oversight and accountability roles of the administrative board that has become a key actor of university decision-making system (Reale and Primeri, 2014; Donina *et al.*, 2015; Manes-Rossi *et al.*, 2018).

Specifically, the Italian universities' governance has been configured on a dual collegial governing structure composed of the board and the academic senate.

The board of directors is the key governing body. It has been empowered to determine the strategic orientation and planning, ensure the financial sustainability of activities and

provide accountability for stakeholders (Reale and Primeri, 2014; Donina *et al.*, 2015; Mazzotta *et al.*, 2020). According to Law 240/2010, the board can be composed of a maximum of 11 members, including the Rector – who chairs the board – student representatives and a number of directors selected according to their managerial skills and cultural and scientific experience (Reale and Primeri, 2014; Donina *et al.*, 2015). At least three members (in the case of a board composed of 11 members) or two members (in the case of a board composed of less than 11 members) should be independent and external from universities' roles (Reale and Primeri, 2014). The academic senate can be considered a supporting governing body entitled to formulate binding proposals and opinions regarding teaching, research activities and services delivered to students (Reale and Primeri, 2014; Donina *et al.*, 2015). It also may formulate proposals about the constitution or the abolition of new courses, sites and departments of the university the administrative board must approve (Reale and Primeri, 2014). Thus, the senate plays a subordinate role to the board of directors, as its tasks are mainly focused on academic issues, and its decisions are mostly subject to the final approval by the board (Donina *et al.*, 2015). Also, it is composed of the rector; at least two-third of the members elected among professors (of which one-third should be heads of departments); and a representation of students. So, more than strategic, the academic senate's role is political (Donina *et al.*, 2015).

5.2 Content analysis and coding framework

This study relies upon a content analysis method to detect the level of voluntary sustainability disclosure provided by Italian public universities through their official websites (An *et al.*, 2019; Andrades *et al.*, 2021). It has been selected as it is one of the most popular and reliable research methods used in accounting studies to process and systematise large amounts of textual and visual data in a cheaper, faster and more reliable way (Chan *et al.*, 2014; Manes-Rossi *et al.*, 2018). It also allows obtaining quantitative information or indexes that can be used to perform complementary statistical analysis (Larrán Jorge *et al.*, 2019; Raimo *et al.*, 2022).

The websites have been selected as data sources based on the following rationales.

Firstly, prior research has evidenced some barriers curbing the regular adoption of stand-alone SR in the university context, including the absence of regulation (Adams, 2013; Gamage and Sciulli, 2017; Larrán Jorge *et al.*, 2019). This has been confirmed by preliminary research conducted by the authors of this study on both the official GRI database and websites of Italian public universities. This step allowed us to observe that only a limited number of Italian public universities are currently involved in regularly adopting stand-alone SR or other forms of non-financial reporting. Secondly, in the wake of the e-government process, information and communication technology (ICT), particularly websites, have rapidly become an integral part of the dialogue between public sector organisations and stakeholders as a means of transparency and accountability (Andrades *et al.*, 2021).

A disclosure index based on a well-established coding framework was developed to measure the level of voluntary sustainability information reported by sample universities through their websites. According to scholars (Low *et al.*, 2015; Larrán Jorge *et al.*, 2019), referring to a well-consolidated coding scheme increases the reliability and comparability of the analysis, limiting subjectivity biases. Therefore, the coding scheme developed by Fonseca *et al.* (2011) – and replicated by several studies (An *et al.*, 2019; Moggi, 2019; Larrán Jorge *et al.*, 2019; Nicolò *et al.*, 2021a) – has been adopted. It is based on well-recognised GRI guidelines and consists of 56 items grouped in 10 categories.

However, to enhance the accuracy of the instrument and its suitability for the present study, it has been cross-checked by two authors through a pilot study conducted on five websites

(Chan *et al.*, 2014; Low *et al.*, 2015; Ntim *et al.*, 2017). After the pilot study, slight amendments have been made.

Firstly, the category "reporting approach" has been removed, as it embeds information narrowly associated with the draft of stand-alone sustainability reports based on GRI requirements (e.g. information on reporting standards or guidelines adopted or external assurance received). Secondly, within the category "Organisation profile and governance", the item "statement from the president" was changed into "statement from the rector" which is more coherent with the sample investigated. Thirdly, consistent with Nicolò *et al.* (2021a), considering the timeliness of the study and the impact of the pandemic on universities' sustainability dimensions (Carnegie *et al.*, 2022; Lourenço *et al.*, 2021), an additional category named "Sustainability and COVID-19" has been added. However, unlike Nicolò *et al.* (2021a), this category has been enriched with five additional items (Online entrance exams and enrolment; digital support for students; financial support for students; support for local/national community; and presence of online seminars and conferences on sustainability issue related to COVID-19). This allows having a more comprehensive picture of the information disclosed by universities about the different initiatives, policies and strategies implemented to deal with the pandemic and support its stakeholders.

As a result, the final disclosure index is based on a comprehensive coding framework, including 63 items grouped in 10 categories (see Appendix).

The data collection took place between September and November 2020. Considering the multidimensional character of websites and the necessity to fully exploit their communicative potential, according to prior studies (Nicolò *et al.*, 2021b; Raimo *et al.*, 2022), rather than single instances or words, we adopted a comprehensive unit of analysis, including sentences, paragraphs, portions of Web pages and tables including texts. The motivation underpinning this choice is that individual words or instances may have scarce or misleading meanings without a correct interpretation in the context, paragraphs or portions of pages in which they are included, entailing incorrect coding (Milne and Adler, 1999; Nicolò *et al.*, 2021b). In keeping with this view, the coding process was performed manually. So, consistent with prior research (Rodríguez Bolívar *et al.*, 2013; Manes-Rossi *et al.*, 2018), all website's tabs in Web-browser format (e.g. HTML) were manually clicked and examined to determine whether a sample university disclosed sustainability disclosure items on its website. Other documents available on the website, such as financial, annual or sustainability reports as pdf or word files, were excluded, as they have been considered as different information sources not coherent with the purpose of the study (Rodríguez Bolívar *et al.*, 2013; Manes-Rossi *et al.*, 2018). The information gathered on websites was then transcribed in electronic format to support storage, verification and correction of data and subsequent statistical data analysis (Gamage and Sciulli, 2017; Andrades *et al.*, 2021). Such a manual procedure allowed us to adopt a meaning-oriented approach to content analysis based on a more detailed interpretation of the websites' content rather than a mere counting of single instances and words reported on the websites (Steenkamp and Northcott, 2007; Nicolò *et al.*, 2021a, 2021b, 2021c; Raimo *et al.*, 2022). Accordingly, we avoid coding sentences with generic, multiple or misleading meanings, capturing only information specifically referring to the items included within the disclosure index (Milne and Adler, 1999; Steenkamp and Northcott, 2007; Raimo *et al.*, 2022).

The disclosure index was operationalised following an unweighted-dichotomous approach (Manes-Rossi *et al.*, 2018; Larrán Jorge *et al.*, 2019). This approach reduces potential biases arising from assigning subjective weights to one or more items and fosters easy comparisons between different studies (Manes-Rossi *et al.*, 2018; An *et al.*, 2019; Larrán Jorge *et al.*, 2019; Raimo *et al.*, 2022). Accordingly, a score of (1) was attributed if the university disclosed one of the items on its website and a score of (0) otherwise.

Through this procedure, the Online Sustainability Disclosure Index (OSDI) was calculated as the ratio of the value of the total number of items disclosed to the maximum possible items a university can disclose (63):

$$\text{OSDI} = \frac{\sum_{i=1}^{n} d_i}{n}$$

Where d = 1 if the item was disclosed and 0 otherwise; n = the maximum number of items (63 items).

Three steps have been used to ensure the reliability and validity of the content analysis process.

Firstly, after defining the final coding list on which to build the disclosure index, a training exercise was conducted simultaneously by two coders on a sample of five websites. This phase served to familiarise websites and define explicit coding rules to reduce discrepancies and ensure the objectivity of the analysis. Secondly, after the initial training, the two coders performed a content analysis independently on another sample of five websites. The coders meet at the end of this phase to discuss possible grey areas and further refine coding rules. Thirdly, the two coders independently examined a different sample of 10 websites. Krippendorff's α was computed using an SPSS macro, providing a degree of agreement of 0.8863, which is well above the minimum acceptable limit of 0.8 (Krippendorff, 2004). After these three steps, the coders ran the analysis on the remaining websites independently.

5.3 Empirical model

An ordinary least squares (OLS) regression model was estimated to test the hypotheses and assess the extent to which university governance factors influence the level of voluntary sustainability disclosure provided by the sample of Italian public universities. The model is represented as follows:

$$\begin{aligned}\text{OSDI} = {} & \beta_0 + \beta_1(\text{Board size}) + \beta_2(\text{Board Independence}) + \beta_3(\text{Board gender diversity}) \\ & + \beta_4(\text{Female Rector}) + \beta_5(\text{CSR/Sustainability committee}) + \beta_6(\text{Size}) + \beta_7(\text{Age}) \\ & + \varepsilon i\end{aligned}$$

The dependent variable OSDI is represented by the disclosure index computed for each university.

The independent variables were operationalised as follows:

- *Board Size* was measured by the number of members on the university board (Ntim *et al.*, 2017; Manes-Rossi *et al.*, 2018).
- *Board Independence* was measured by the percentage of external/independent directors on the board (Ntim *et al.*, 2017; Manes-Rossi *et al.*, 2018).
- *Board gender diversity* was proxied by the percentage of women sitting on the university board (Rao *et al.*, 2012; Rao and Tilt, 2016).
- *Female Rector* was computed as a binary variable equal to (1) if the Rector was a woman and (0) otherwise (Furlotti *et al.*, 2019; Andrades *et al.*, 2021).

Furthermore, the proxy of the control variables are the following:

- *CSR/Sustainability committee* was proxied by a dichotomous variable equal to (1) if the university has established a specific internal committee or unit responsible for CSR or Sustainability issues and (0) otherwise (Larrán Jorge *et al.*, 2019).

- *Size* was proxied by the natural logarithm of the number of students (Manes-Rossi *et al.*, 2018; Flórez-Parra *et al.*, 2021).
- *Age* was measured as the natural logarithm of the years since the university foundation year (Manes-Rossi *et al.*, 2018; Nicolò *et al.*, 2021c).

Data about governance variables have been directly extracted from the official websites and, where present, internal reports on board meetings and decisions. Data about size and age have been retrieved from the MIUR database. Last, the CSR/Sustainability committee's presence has been checked by examining the universities' official websites. However, we were aware that some universities could have established such a commission without mentioning it on their website. Accordingly, when no information on the possible presence of a CSR/Sustainability committee was found, an e-mail was sent to the general director of the university. All queried general directors answered our e-mail in 15 days allowing us to define our variable.

6. Results and discussion

6.1 The dependent variable: content analysis results

Table 1 resumes the dependent variable's descriptive statistics – the OSDI – to respond to the first research question. Specifically, Table 1 outlines that, on average, each university discloses about 35% of the total items included in the coding framework, ranging from a minimum of 0.17% to a maximum of about 0.51%. Prevalent attention has been devoted to "organisation profile and governance" (76%) and social issues such as "social performance" (58%), "society issues" (60%) and "sustainability and COVID-19" (61%). At the same time, the environmental and teaching dimensions were less addressed.

This finding contrasts with most prior studies (Fonseca *et al.*, 2011; Gamage and Sciulli, 2017; Sassen and Azizi, 2018a), which found a tendency towards environmental and economic disclosures. The following rationales may justify such differences.

Most prior studies examined stand-alone SRs based on GRI guidelines specifically focused on environmental policies and issues such as waste, materials, emissions, biodiversity and compliance with environmental legislation (Gamage and Sciulli, 2017). Also, most of these works (Fonseca *et al.*, 2011; Sassen and Azizi, 2018a) have been carried out in North American and Oceanian geographical contexts where several governmental regulations and programs incentivising environmental sustainability exist (Sassen and Azizi, 2018a). On the contrary, as shown in Table 2, Italian public universities' stakeholders have different accountability and transparency needs that depend on their roles and expectations (Gori *et al.*, 2022) (Table 2).

In particular, information social aspects and society issues play a key role for the large part of Italian public universities stakeholders (Nicolò *et al.*, 2021a; Gori *et al.*, 2022). Accordingly, in line with Nicolò *et al.* (2021a), our results confirm that websites represent valid means to discharge accountability about social and societal issues involving universities and a wide forum of stakeholders, including students, researchers, central and local governments, local communities and non-governmental organisations. Items such as Labour/management relations; Impacts on community; Corruption have been disclosed by a huge number of Italian public universities. This highlights the relevance of such information for their stakeholders and the consequent need for universities to deal with these issues voluntarily on their websites to maintain their legitimacy.

In addition, the shock caused by the global COVID-19 pandemic has had unprecedented effects on universities' core activities, enrolments and revenues as well as on their stakeholders, creating a general climate of uncertainty and distrust. Such a crisis has led universities to revisit their role in society and the ways they engage with their crucial stakeholders, such as students, governments and firms (Ikram *et al.*, 2020; Carnegie *et al.*, 2022). Therefore, as demonstrated by our results, websites have acquired paramount

Table 1 Descriptive results: the dependent variable – OSDI

Items	*Min*	*Max*	*Mean*	*SD*
Online Sustainability Disclosure Index (OSDI)	0.17	0.51	0.34	0.09
1) Organisation profile and governance	0.40	1.00	0.76	0.17
Statement from the rector	0	1	93%	
Description of the organisation	0	1	98%	
Governance structure or processes	0	1	60%	
Commitments to external sustainability initiatives	0	1	90%	
Stakeholder engagement	0	1	93%	
2) Economic performance	0.00	0.67	0.53	0.20
Economic performance	0	0	0%	
Contribution to local economy	0	1	75%	
Indirect economic impact	0	1	85%	
3) Environmental performance	0.00	0.87	0.36	0.26
Material	0	1	22%	
Energy	0	1	38%	
Water	0	1	50%	
Biodiversity	0	1	17%	
Emissions, effluents and wastes	0	1	40%	
Compliance with environmental legislation	0	1	15%	
Transportation	0	1	75%	
Environmental expenditures	0	1	35%	
4) Social performance	0.00	1.00	0.58	0.25
Employment	0	1	43%	
Labour/management relations	0	1	93%	
Occupational health and safety	0	1	57%	
Training and education	0	1	73%	
Diversity and equal opportunity	0	1	23%	
5) Human rights issues	0.17	0.67	0.44	0.14
Investment and procurement policy	0	1	58%	
Non-discrimination	1	1	100%	
Freedom of association and collective bargaining	0	1	68%	
Child labour and forced labour	0	1	2%	
Security practices	0	1	32%	
Indigenous rights	0	1	3%	
6) Society issues	0.20	1.00	0.60	0.20
Impacts on community	0	1	85%	
Corruption	0	1	98%	
Public policy	0	1	45%	
Anti-competitive behaviour	0	1	2%	
Compliance with general legislation	0	1	72%	
7) Research on sustainability topics	0.00	1.00	0.46	0.24
Policies related to sustainability in research	0	1	27%	
Research centers/labs related to sustainability	0	1	43%	
Sustainability-related research programs	0	1	30%	
Incentives to sustainability research	0	1	28%	
Funding and grants for sustainability research	0	1	38%	
Academic production related to sustainability	0	1	78%	
Sustainability-related research projects	0	1	80%	
8) Curriculum and teaching on sustainability topics	0.00	0.86	0.25	0.18
Policies related to sustainability in curriculum	0	1	13%	
Courses related to sustainability	0	1	77%	
Students taking sustainability related courses	0	0	0%	
Sustainability literacy assessment	0	1	5%	
Degree programs related to sustainability	0	1	48%	
Non-curricular teaching initiatives related to sustainability	0	1	15%	
Scholarships offered to sustainability-related education	0	1	17%	
9) Green buildings and procurement	0.00	1.00	0.37	0.26
Green buildings and renovations	0	1	27%	

(*continued*)

Table 1

Items	*Min*	*Max*	*Mean*	*SD*
Green spaces	0	1	45%	
Food services	0	1	93%	
Recycled paper	0	1	12%	
Green electronics	0	1	18%	
Green furniture	0	1	25%	
10) Sustainability and COVID-19	0.36	1.00	0.61	0.17
Remote/online teaching activities	0	1	100%	
Counselling and psychological support	0	1	52%	
Prevention measures	0	1	97%	
COVID-19 Research projects	0	1	50%	
Smart working	0	1	93%	
Crowdfunding/fundraising for COVID-19	0	1	33%	
Online entrance exams and enrolment	0	1	77%	
Digital support for students	0	1	38%	
Financial benefits for students	0	1	28%	
Support for local/national community	0	1	28%	

importance for universities as vehicles to enhance public engagement and provide information that testifies their commitment to coping with the pandemic's social, economic and political disruption. During the health crisis, particular attention has been devoted by Italian public universities to timely inform stakeholders – especially students – about the temporary measures adopted to ensure a sustainable continuity of their activities. Also, a high number of universities provided efforts to disclose information on smart working and the prevention measures adopted. In doing so, universities have tried to preserve their legitimacy by demonstrating to their stakeholders how they have fulfilled their academic responsibilities during the crisis and provided social support to students, academic staff and society.

In summary, the above results – collectively – pinpoint that the social and societal issues dominate the online sustainability discourse between universities and their stakeholders. Therefore, Italian public universities are exploiting the potential of websites in terms of accessibility and timeliness to enhance their legitimacy mostly based on emphasising their impact on communities and social performance achieved, making particular reference to their supporting role during the COVID-19 pandemic.

6.2 Descriptive statistics for independent variables and correlation analysis

Table 3 reports the descriptive statistics for the independent variables, showing the minimum, maximum and mean values as well as the standard deviation.

Table 4 presents the Pearson correlations matrix between the dependent and independent variables. A positive and significant association is detected between OSDI and four independent variables: *board gender diversity* ($p < 0.05$); *CSR/Sustainability committee* ($p < 0.01$); *size* ($p < 0.01$); and *age* ($p < 0.05$). Moreover, *size* is positively correlated with *board size* ($p < 0.01$) and *CSR/Sustainability committee* ($p < 0.01$). It is worth noticing that all the correlation values are less than 0.70, so potential serious multicollinearity issues are avoided (Chan *et al.*, 2014; Ntim *et al.*, 2017).

6.3 Empirical model results

Table 5 shows the results of the OLS regression model estimated to test the hypotheses. The model presents significant goodness-of-fit test statistics due to the high significance of *p*-value (1% level) and the adequate explanatory power expressed by both the R^2 value

Table 2 Main universities' stakeholder groups and examples of important sustainability information

Stakeholder group		*Example of important sustainability information*
Students	Teaching aspects Social aspects Society issues COVID-19 aspects	E.g. courses and degree programs related to sustainability; scholarships offered to sustainability-related education; Remote/online teaching activities; Impacts on community; Counselling and psychological and digital support; Online entrance exams and enrolment; Financial benefits, etc.
Academic staff (e.g. Researchers and professors)	Research aspects Teaching aspects Social aspects COVID-19 aspects	E.g. Policies related to sustainability in research, Incentives to sustainability research, Sustainability-related research programs; courses and degree programs related to sustainability, policies related to sustainability in curriculum; Employment; Remote/online teaching activities, COVID-19 Research projects; smart working, etc.
Other staff (e.g. administratives)	Organisational and governance aspects Social aspects Human right issues COVID-19 aspects	E.g. Governance structure or processes; Employment; Labour/management relations; Occupational health and safety, Training and education; Non-discrimination; Freedom of association and collective bargaining; Counselling and psychological support, etc.
Central and local governments	Organisational and governance aspects Economic performance Social aspects Environmental aspects Society issues Research aspects Teaching aspects COVID-19 aspects	E.g. Commitments to external sustainability initiatives; Economic performance; Compliance with environmental legislation; Occupational health and safety; Security practices; Corruption; Compliance with general legislation; Policies related to sustainability in research; Academic production related to sustainability; Policies related to sustainability in curriculum; Prevention measures; Support for local/national community during COVID-19, etc.
Society (e.g. local communities)	Economic performance Environmental aspects Social aspects Human right issues Society issues COVID-19 aspects	E.g. Contribution to local economy; Indirect economic impact; Energy, Water; Emissions, effluents and wastes; Occupational health and safety; Non-discrimination; Security practices; Impacts on community; Corruption; Green buildings and renovations; Crowdfunding/fundraising for COVID-19; Support for local/national community during COVID-19, etc.
Industry (e.g. suppliers and partners)	Organisational and governance aspects Economic performance Environmental aspects Society issues Research aspects COVID-19	E.g. Governance structure or processes; Commitments to external sustainability initiatives; Contribution to local economy; Indirect economic impact; Material; Energy; Impacts on community; Anti-competitive behaviour; Research centers/labs related to sustainability; Funding and grants for sustainability research; Green buildings and renovations; COVID-19 Research projects; etc.
Other universities	Organisational and governance aspects Teaching aspects Research aspects COVID-19	E.g. Description of the organisation; Governance structure or processes; Courses related to sustainability; Degree programs related to sustainability; Sustainability-related research programs; Funding and grants for sustainability research; Remote/online teaching activities; Online entrance exams and enrolment, etc.
Non-Governmental organisations (e.g. associations and foundations)	Organisational and governance aspects Economic performance Environmental aspects Social aspects Human right issues Society issues COVID-19 aspects	Description of the organisation; Governance structure or processes; Contribution to local economy; Indirect economic impact; Emissions, effluents and wastes; Occupational health and safety; Non-discrimination; Impacts on community; Corruption; Crowdfunding/fundraising for COVID-19; Financial benefits for students, etc.

Note: Adapted from Sassen and Azizi (2018a); Gori *et al.* (2022)

Table 3 Descriptive statistics for independent variables

Continuous variables	*Min*	*Max*	*Mean*	*SD*
Board size	7.0	14.0	10.083	1.5326
Board independence	0.1111	0.4444	0.24357	0.0522
Board gender diversity	0.10	0.7142	0.3288	0.1307
Size	6.8501	11.5145	9.7763	0.9104
Age	3.0445	6.9641	4.8955	1.3375
Dummy variables	*Y/N*			
Female Rector	4/56			
	6.7%/93.3%			
CSR/Sustainability committee	21/39			
	35%/65%			

Table 4 Correlation analysis

Variables	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. *OSDI*	1	0.191	0.202	0.285*	0.102	0.564**	0.585**	0.261*
2. *Board Size*		1	−0.076	0.090	−0.059	0.190	0.401**	0.179
3. *Board Independence*			1	0.206	−0.074	0.103	0.133	−0.002
4. *Board Gender diversity*				1	0.096	0.106	0.088	0.026
5. *Female Rector*					1	−0.056	−0.031	−0.015
6. *CSR/ Sustainability committee*						1	0.402**	0.076
7. *Size*							1	0.411**
8. *Age*								1

Notes: $^{*}p < 0.05$; $^{**}p < 0.01$ (two-tailed)

Table 5 OLS regression model results and tests

	Coefficient	*Std error*	*T-statistic*	*p-value*	*Sig.*	*VIF*
const	−0.145484	0.0903978	−1.609	0.1136		
Board size	−0.00361598	0.00615084	−0.5879	0.5592		1.235
Board independence	0.134182	0.175060	0.7665	0.4469		1.103
Board gender diversity	0.130911	0.0618975	2.115	0.0392	**	1.078
Female Rector	0.0449414	0.0231147	1.944	0.0573	*	1.028
CSR/Sustainability committee	0.0750549	0.0217045	3.458	0.0011	***	1.219
Size	0.0406004	0.0117456	3.457	0.0011	***	1.655
Age	0.00526888	0.00794794	0.6629	0.5103		1.221
Model specification:						
Mean dep. variable	0.345767		Std dev. Dep. variable		0.092743	
Sum of squared residuals	0.232771		Regression std error		0.066906	
R^2	0.541318		Adjusted R^2		0.479573	
$F(6. 110)$	16.13847		P−value(F)		0.000000	

Notes: The asterisks indicate statistical significance at the following levels: * 10; ** 5; *** 1%. Normality OLS model Test: T-Statistic: $\chi^2(2) = 0.145427$; p-value = 0.929867 (Errors are normally distributed) Jarque–Bera test: T-statistic: 0.506612; p-value = 0.77623 (residuals are normally distributed) Breusch–Pagan test: T-statistic: LM = 7.84105; p-value = $P(\chi^2(7) > 7.84105) = 0.346819$ (not heteroskedasticity) White test: T-statistic: LM = 12.4863; p-value = $P(\chi^2(12) > 12.4863) = 0.407455$ (not heteroskedasticity)

(about 0.54) and the adjusted R^2 value (about 0.48). Also, a battery of diagnostic tests has been conducted: both the test for the normality of residuals and the Jarque–Bera test indicated that the errors were distributed normally; the Breusch–Pagan and White tests indicated that the errors have constant variance and, thus, that heteroscedasticity was not

present in the model; last, the VIF test evidenced a maximum value of 1.655 for the variable size, so, confirming the absence of multicollinearity issues (Table 5).

The results evidenced that four variables (two main variables and two control variables) out of seven have a significant association with the OSDI: *board gender diversity*, *female Rector*, *CSR/Sustainability committee* and *size*.

Specifically, regarding the main variables, consistent with expectations, *gender diversity* and *female Rector* have a positive and significant impact ($p < 0.05$ and $p < 0.1$) on OSDI. Thus, *H3a* and *H3b* were accepted. These results confirm legitimacy theory arguments and align with prior literature in the university context (Ntim *et al.*, 2017; Andrades *et al.*, 2021). Accordingly, it appears evident that women's presence is vital to enhancing university governance mechanisms and fostering accountability and transparency on sustainability issues through websites. From the legitimacy theory standpoint, our findings evidence the potential of women in unlocking the board's ability to adopt a more long-term – sustainability based – vision and address the interests of a wider forum of social constituents through more voluntary online sustainability disclosure (Liao *et al.*, 2015; Fernandez *et al.*, 2019). In particular, the more ethical, CSR sensitive and philanthropic attitudes women directors hold help universities assume behaviours that reflect social norms and create legitimacy among their key stakeholders. This results in greater levels of voluntary sustainability disclosure that communicate the social contract fulfilment and mitigate external pressures (Jongbloed *et al.*, 2008; Liao *et al.*, 2015). The positive impact exerted by the presence of a female rector on university sustainability disclosure practices corroborates these arguments as the Rector chairs the board and impresses its mark on the university's strategic orientation. Accordingly, when a woman is appointed as a rector, she brings their participative and stakeholder-oriented orientation and leadership style to the board, fostering the provision of higher transparency and accountability about sustainability issues (Furlotti *et al.*, 2019; Andrades *et al.*, 2021).

Regarding control variables, OLS regression model results indicate a positive association ($p < 0.01$) between the presence of a *CSR/Sustainability committee* and the OSDI. This result is consistent with Larrán Jorge *et al.* (2019) and sheds light on the importance of constituting internal units or offices focused on managing sustainability issues. In particular, such units act as a driving vector for integrating social and environmental concerns into universities' strategies and policies. Consequently, their presence encourages universities to communicate their commitment to sustainability issues, ameliorating, in such a way, the dialogue with key stakeholders that confers legitimacy to the organisations' practices (Larrán Jorge *et al.*, 2019).

Last, a positive and significant relationship between university *size* and OSDI has been detected. Therefore, in line with previous studies (Larrán Jorge *et al.*, 2019; Nicolo' *et al.*, 2020; Nicolò *et al.*, 2021c), this positive association confirms that larger universities are more prone to provide voluntary sustainability information to mitigate the higher social and political pressures to which they are exposed and accommodate the interests of a greater number of stakeholders. This result also indicates that larger universities may benefit from greater financial and human resources devoted to improving sustainability disclosure practices through ICT communication tools such as websites (Larrán Jorge *et al.*, 2019).

Nevertheless, it is worth noticing that *board size* and *board independence* do not significantly affect the OSDI. Hence, *H1* and *H2* are not satisfied. Such results may be explained as follows. The board size of Italian universities has a limit fixed by law, and it follows that Italian universities tend to present the same number of board directors. Also, the association coefficient between board size and OSDI is negative, confirming that larger boards may experience communication and coordination problems over a certain threshold fixed by law, reflected in worse disclosure practices (Jain and Jamali, 2016). Regarding board independence, the high presence of women on university boards probably acts as a

mechanism of impartiality and independence that substitutes the function of independence/external directors. Further, external/independent directors are sometimes selected from neighbouring universities. This may limit their ability to discharge their responsibilities effectively and impartially, promoting transparency and accountability.

7. Concluding remarks

Even though there is a large consensus in mainstream accounting literature that corporate governance – particularly boards of directors – plays a pivotal role in ensuring that companies meet their CSR objectives, the impact of university governance mechanisms on voluntary sustainability disclosure practices still represents an underexplored topic in the literature.

This study is part of this scenario and aims to bridge this important gap by offering novel contributions to existing literature. Accordingly, first of all, it extends the understanding of university voluntary sustainability disclosure practices through alternative communication tools to stand-alone SRs or annual reports, such as websites. In doing so, this study is timely, as it coincides with a historic COVID-19-era that significantly impacted the social dimension of university sustainability. Hence, a significant strength of this study is the use of a disclosure index based on a well-established coding scheme enriched by items that account for the impact of COVID-19 on university activities.

Secondly, the present work delves into the significant role of university governance – in terms of board composition – in driving voluntary sustainability disclosure practices in the context of Italian public universities that has been profoundly affected by NPM-based reforms.

Findings evidence that websites represent a valid tool used by universities to communicate the social performance achieved in terms of employment, labour/management relations, occupational health and safety, training and education and the impact exerted on the community. In particular, websites play an important role during the pandemic. They allow universities to demonstrate their commitment to dealing with the pandemic's social, economic and political disruption and their support to stakeholders, *in primis* students. On the contrary, universities seem to undermine websites' potential when providing teaching or environmental information.

This study also provides evidence that board composition represents a key governance mechanism that drives universities to become involved with their stakeholders' forum by means of greater transparency and accountability about sustainability information. However, findings show that not all board attributes play a significant impact. Unlike board size and board independence, board gender diversity – in terms of percentage of women on board and female Rector's presence – constitutes a crucial factor in moulding a university's strategic posture towards the landscape of stakeholders and society at large. Women's presence provides the board with more effective and diligent monitoring tasks and greater sensitivity towards societal welfare and stakeholders issues, enabling, in turn, more comprehensive sustainability disclosure practices that enhance universities' chances of preserving their legitimacy.

Standing at the intersection between different literature streams, including SR and corporate governance, the study's findings also have practical implications for policymakers, regulators, universities' planners and academics.

Starting from Directive 95/2014, the European Union (UN) has embarked on a process to harmonise non-financial reporting among large European companies and improve the comparability of their information to benefit investors and other stakeholders. The new Corporate Sustainability Reporting Directive (EU Commission, 2021), which shall replace the previous 95/2014 EU Directive, will increase the disclosure requirements and target also

small and medium enterprises. Nevertheless, despite their relevance, public sector entities, including universities, are still excluded from this non-financial reporting harmonization movement. So, universities' latitude and flexibility in choosing what to disclose, where and to what extent in terms of sustainability information encouraged incomparable and unuseful SR practices for stakeholders' decision-making process. From this perspective, this study confirmed that, in the absence of mandatory requirements, Italian public universities are still at an early stage in terms of stand-alone SR practices. Only a limited number of Italian public universities are currently involved in regularly adopting stand-alone SR or other forms of non-financial reporting. They prefer to use the web channel to convey information on sustainability. This evidence calls policymakers and regulators to reflect on the need to regulate SR not only in the private sector but also in the university context. Also, in line with prior literature (Gamage and Sciulli, 2017; Sassen and Azizi, 2018a, 2018b; Larrán Jorge *et al.*, 2019), this evidence confirmed the limited applicability of GRI guidelines to the higher education sector. So, we concur with previous studies, emphasising the need to develop universal guidelines that specifically consider the two important universities' dimensions: education, research and community outreach.

Furthermore, although our study evidence that Italian universities have started to exploit the Web to communicate sustainability information, there is still much to do to reach a comprehensive level of online transparency to meet emerging stakeholders' needs. In recent years, European countries such as Spain and Italy have introduced transparency laws to regulate the content of public sector organisations' websites. However, such laws focused on organisational and financial information, neglecting sustainability disclosure. From this standpoint, this study showed that Italian public universities' websites still neglect some non-financial information, including environmental performance, green buildings and curriculum and teaching programs on sustainability topics. Thus, our study's findings may represent a stimulus for policymakers and regulators to increase website transparency requirements. A specific website section focused on university's social and environmental dimensions would be useful to meet current stakeholders' information needs and help them compare the sustainability performance of different universities. Attuned, considering the recrudescent pandemic status, a specific section to disclose information on how universities are coping with the COVID-19 emergency would also be helpful for stakeholders, *in primis* students, local communities, governments and industry, such as health care. The use of a disclosure index including items on COVID-19 lets us note that some relevant information for stakeholders (e.g. crowdfunding/fundraising for COVID-19; financial benefits for students; support for local/national community) have been quite disregarded on Italian universities' websites. This suggests policymakers pay more attention to regulating and promoting the use of websites as vehicles to improve the dialogue between universities and stakeholders during the pandemic.

This study also enriched the debate over the impact of improved corporate governance on disclosure practices, in general, and within the Italian public university context in particular. According to Adams (2013), integrating sustainability within academic activities and reporting practices necessary results from a collaborative process in which a sound governance structure plays a key role. Accordingly, our findings echoed recent EU policies such as "strategic engagement for gender equality 2016–2019" and "Gender Equality Strategy 2020–2025" that highlighted the need to promote gender equality at all political and economic decision-making levels. In particular, considering their higher sensitivity to stakeholders' concerns and non-financial issues, the presence of women on universities' boards may represent a fundamental lever to promote higher levels of sustainability disclosure. However, unlike in the private sector, Italian public universities have no mandatory gender quotas. So, from a practical perspective, our study's result would encourage policymakers to reflect on the need to promote urgent action that fosters the presence of women in universities' governance roles to increase their transparency and accountability on non-financial issues. Also in the absence of mandatory requirements,

universities might consider exploiting their organisational autonomy to insert a gender quota for the board of directors in their statutes. In contrast, the non-significant impact of the board size on the level of sustainability disclosure should elicit universities to reflect on the probable ineffectiveness of including a large number of directors within the board of directors. In fact, larger boards could have coordination and communication problems that would hamper the implementation of SR practices. Furthermore, our study's findings shed light on the relevance of establishing a specific CSR/sustainability committee within universities. Such a committee would be composed of experts in charge of defining policies, strategies and reporting practices on sustainability issues. So, its mandatory provision might be a positive lever to implement regular SR practices and, in turn, increase the level and comparability of sustainability disclosure among universities to benefit all stakeholders. A specific CSR/sustainability committee might also help increase the quality of stakeholder engagement, which is fundamental to supporting the process of SR in universities. In addition, such a committee may represent a catalyst for universities to "realize the transformative potential of the SDGs" (Hajer *et al.*, 2015, p.1652). Universities play a primary role in implementing the 2030 Agenda as innovation, research and sustainable education represent the most crucial drivers to achieving the SDGs (Leal Filho *et al.*, 2021a, 2021b). Therefore, implementing specific CSR/sustainability committees within universities would enhance the likelihood that universities place the SDGs at the core of their agendas.

Finally, this study has some implications for academics. Our study's results demonstrate that certain governance characteristics, such as board gender diversity, are positive determinants of online university sustainability disclosure. Academics may draw on this study's results to enrich such debate through further analyses that contemplate other governance characteristics, such as the number of board meetings and the educational background of the board members.

However, this study's evidence should be interpreted mindful of the following limitations that provide room for future investigations. Firstly, due to the labour-intensive nature of the data collection and processing, the sample is limited to Italian public universities. Future studies may consider conducting cross-country analysis that may increase the generalisability of their findings by carefully considering country-specific governance regulations and structures. Secondly, the research adopted a dichotomous approach to examining sustainability disclosures; thus – in future – it may be interesting also to analyse the quality of the information provided by universities through websites. Third, due to the peculiar nature of the websites, the research is limited to the year 2020. Future research may consider investing in gathering data for more years to conduct longitudinal studies on websites disclosure. Fourth, this study only analysed the influence of selected features of the board of directors retrieved from the official Italian public universities' websites due to the absence of databases or other data sources from which it was possible to gather other governance information. So, as aforementioned, future studies may consider the possibility of sending direct questionnaires to universities to collect further governance data related – for example – to the educational background, profession or the universities attended by the board members and test their impact on sustainability disclosure. Finally, considering the topic's relevance, future studies may pay specific attention to examining the extent to which universities provide information on SDGs.

References

Adams, C.A. (2013), "Sustainability reporting and performance management in universities: challenges and benefits", *Sustainability Accounting, Management and Policy Journal*, Vol. 4 No. 3, pp. 384-392.

Amran, A., Lee, S.P. and Devi, S.S. (2014), "The influence of governance structure and strategic corporate social responsibility toward sustainability reporting quality", *Business Strategy and the Environment*, Vol. 23 No. 4, pp. 217-235.

An, Y., Davey, H., Harun, H., Jin, Z., Qiao, X. and Yu, Q. (2019), "Online sustainability reporting at universities: the case of Hong Kong", *Sustainability Accounting, Management and Policy Journal*, Vol. 11 No. 5, pp. 887-901.

Andrades, J., Martinez-Martinez, D. and Larrán Jorge, M. (2021), "Corporate governance disclosures by Spanish universities: how different variables can affect the level of such disclosures?", *Meditari Accountancy Research*, Vol. 29 No. 1, pp. 86-109.

Carnegie, G.D., Guthrie, J. and Martin-Sardesai, A. (2022), "Public universities and impacts of COVID-19 in Australia: risk disclosures and organisational change", *Accounting, Auditing & Accountability Journal*, Vol. 35 No. 1, pp. 61-73.

Chan, M.C., Watson, J. and Woodliff, D. (2014), "Corporate governance quality and CSR disclosure", *Journal of Business Ethics*, Vol. 125 No. 1, pp. 59-73.

Deegan, C. (2002), "The legitimising effect of social and environmental disclosures", *Accounting, Auditing & Accountability Journal*, Vol. 15 No. 3, pp. 282-311.

Del Sordo, C., Farneti, F., Guthrie, J., Pazzi, S. and Siboni, B. (2016), "Social reports in Italian universities: disclosures and preparers' perspective", *Meditari Accountancy Research*, Vol. 24 No. 1, pp. 91-110.

Donina, D., Meoli, M. and Paleari, S. (2015), "The new institutional governance of Italian state universities: what role for the new governing bodies?", *Tertiary Education and Management*, Vol. 21 No. 1, pp. 16-28.

European Commission (2021), "Proposal for a directive of the European parliament and of the council amending directive 2013/34/EU, directive 2004/109/EC, directive 2006/43/EC and regulation (EU) no 537/2014, as regards corporate sustainability reporting", available at: https://ec.europa.eu/info/publications/210421-sustainable-finance-communication_en#csrd

Fernandez, W.D., Burnett, M.F. and Gomez, C.B. (2019), "Women in the boardroom and corporate social performance: negotiating the double bind", *Management Decision*, Vol. 57 No. 9, pp. 2201-2222.

Flórez-Parra, J.M., Lopez-Perez, M.V., López Hernández, A.M. and Garde Sánchez, R. (2021), "Analysing and evaluating environmental information disclosure in universities: the role of corporate governance, stakeholders and culture", *International Journal of Sustainability in Higher Education*, Vol. 22 No. 4, pp. 931-957.

Fonseca, A., MacDonald, A., Dandy, E. and Valenti, P. (2011), "The state of sustainability reporting at Canadian universities", *International Journal of Sustainability in Higher Education*, Vol. 12 No. 1, pp. 22-40.

Furlotti, K., Mazza, T., Tibiletti, V. and Triani, S. (2019), "Women in top positions on boards of directors: gender policies disclosed in Italian sustainability reporting", *Corporate Social Responsibility and Environmental Management*, Vol. 26 No. 1, pp. 57-70.

Gamage, P. and Sciulli, N. (2017), "Sustainability reporting by Australian universities", *Australian Journal of Public Administration*, Vol. 76 No. 2, pp. 187-203.

García-Sánchez, I.M. and García-Sánchez, A. (2020), "Corporate social responsibility during COVID-19 pandemic", *Journal of Open Innovation: Technology, Market, and Complexity*, Vol. 6 No. 4, p. 126.

García-Sánchez, I.M. and Martínez-Ferrero, J. (2018), "How do independent directors behave with respect to sustainability disclosure?", *Corporate Social Responsibility and Environmental Management*, Vol. 25 No. 4, pp. 609-627.

Garde Sanchez, R., Flórez-Parra, J.M., López-Pérez, M.V. and López-Hernández, A.M. (2020), "Corporate governance and disclosure of information on corporate social responsibility: an analysis of the top 200 universities in the shanghai ranking", *Sustainability*, Vol. 12 No. 4, pp. 1549-1571.

Gori, E., Romolini, A., Fissi, S. and Contri, M. (2022), "Sustainability reporting in higher education institutions: evidence from an Italian case", *Non-Financial Disclosure and Integrated Reporting*, Springer, Cham, pp. 139-152.

Hajer, M., Nilsson, M., Raworth, K., Bakker, P., Berkhout, F., Boer, Y.D., Rockstr€om, J., Ludwig, K. and Kok, M. (2015), "Beyond cockpitism: four insights to enhance the transformative potential of the sustainable development goals", *Sustainability*, Vol. 7 No. 2, pp. 1651-1660.

Helfaya, A. and Moussa, T. (2017), "Do board's corporate social responsibility strategy and orientation influence environmental sustainability disclosure? UK evidence", *Business Strategy and the Environment*, Vol. 26 No. 8, pp. 1061-1077.

Ikram, M., Zhang, Q., Sroufe, R. and Ferasso, M. (2020), "The social dimensions of corporate sustainability: an integrative framework including COVID-19 insights", *Sustainability*, Vol. 12 No. 20, pp. 8747.

Jain, T. and Jamali, D. (2016), "Looking inside the black box: the effect of corporate governance on corporate social responsibility", *Corporate Governance: An International Review*, Vol. 24 No. 3, pp. 253-273.

Jensen, M.C. and Meckling, W.H. (1976), "Theory of the firm: managerial behaviour, agency costs and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 4, pp. 305-360.

Jongbloed, B., Enders, J. and Salerno, C. (2008), "Higher education and its communities: interconnections, interdependencies and a research agenda", *Higher Education*, Vol. 56 No. 3, pp. 303-324.

Krippendorff, K. (2004), "Reliability in content analysis: some common misconceptions and recommendations", *Human Communication Research*, Vol. 30 No. 3, pp. 411-433.

Larrán Jorge, M., Andrades Peña, F.J. and Herrera Madueño, J. (2019), "An analysis of university sustainability reports from the GRI database: an examination of influential variables", *Journal of Environmental Planning and Management*, Vol. 62 No. 6, pp. 1019-1044.

Leal Filho, W., Frankenberger, F., Salvia, A.L., Azeiteiro, U., Alves, F., Castro, P. and Ávila, L.V. (2021a), "A framework for the implementation of the sustainable development goals in university programmes", *Journal of Cleaner Production*, Vol. 299, p. 126915.

Leal Filho, W., Salvia, A.L., Frankenberger, F., Akib, N.A.M., Sen, S.K., Sivapalan, S., Novo-Corti, I., Venkatesan, M. and Emblen-Perry, K. (2021b), "Governance and sustainable development at higher education institutions", *Environment, Development and Sustainability*, Vol. 23 No. 4, pp. 6002-6020.

Liao, L., Luo, L. and Tang, Q. (2015), "Gender diversity, board independence, environmental committee and greenhouse gas disclosure", *The British Accounting Review*, Vol. 47 No. 4, pp. 409-424.

Lopatta, K. and Jaeschke, R. (2014), "Sustainability reporting at German and Austrian universities", *International Journal of Education Economics and Development*, Vol. 5 No. 1, pp. 66-90.

Lourenço, L.M., Rosalia Ribeiro Silva, M. and Santana Galvão Oliveira, R. (2021), "University social responsibility and empathy in organisations during COVID-19 pandemic in Brazil", *Social Responsibility Journal*, Vol. 18 No. 4, pp. 806-824, doi: 10.1108/SRJ-09-2020-0371.

Low, M., Samkin, G. and Li, Y. (2015), "Voluntary reporting of intellectual capital: comparing the quality of disclosures from New Zealand, Australian and United Kingdom universities", *Journal of Intellectual Capital*, Vol. 16 No. 4, pp. 779-808.

Manes-Rossi, F., Nicolò, G. and Argento, D. (2020), "Non-financial reporting formats in public sector organisations: a structured literature review", *Journal of Public Budgeting, Accounting & Financial Management*, Vol. 32 No. 4, pp. 639-669.

Manes-Rossi, F., Nicolò, G. and Tartaglia Polcini, P. (2018), "New trends in intellectual capital reporting: exploring online intellectual capital disclosure in Italian universities", *Journal of Intellectual Capital*, Vol. 19 No. 4, pp. 1469-1930.

Mazzotta, R., Nardo, M.T., Pastore, P. and Vingelli, G. (2020), "Board composition and gender sensitivity approach in Italian universities", *Meditari Accountancy Research*, Vol. 28 No. 6, pp. 1013-1036.

Michelon, G. and Parbonetti, A. (2012), "The effect of corporate governance on sustainability disclosure", *Journal of Management and Governance*, Vol. 16, pp. 447-509.

Milne, M.J. and Adler, R.W. (1999), "Exploring the reliability of social and environmental disclosures content analysis", *Accounting, Auditing & Accountability Journal*, Vol. 12 No. 2, pp. 237-256.

Moggi, S. (2019), "Social and environmental reports at universities: a Habermasian view on their evolution", *Accounting Forum*, Vol. 43 No. 3, pp. 283-326.

Nicolò, G., Aversano, N., Sannino, G. and Tartaglia Polcini, P. (2021a), "Investigating web-based sustainability reporting in Italian public universities in the era of covid-19", *Sustainability*, Vol. 13 No. 6, p. 3468.

Nicolò, G., Aversano, N., Sannino, G. and Tartaglia Polcini, P. (2021b), "ICD corporate communication and its determinants: evidence from Italian listed companies' websites", *Meditari Accountancy Research*, Vol. 29 No. 5, pp. 1209-1232.

Nicolò, G., Raimo, N., Polcini, P.T. and Vitolla, F. (2021c), "Unveiling the link between performance and intellectual capital disclosure in the context of Italian public universities", *Evaluation and Program Planning*, Vol. 88, p. 101969.

Nicolo', G., Manes-Rossi, F., Christiaens, J. and Aversano, N. (2020), "Accountability through intellectual capital disclosure in Italian universities", *Journal of Management and Governance*, Vol. 24 No. 4, pp. 1055-1087, doi: 10.1007/s10997-019-09497-7.

Ntim, C.G., Soobaroyen, T. and Broad, M.J. (2017), "Governance structures, voluntary disclosures and public accountability: the case of UK higher education institutions", *Accounting, Auditing & Accountability Journal*, Vol. 30 No. 1, pp. 65-118.

Raimo, N., Nicolò, G., Tartaglia Polcini, P. and Vitolla, F. (2022), "Corporate governance and risk disclosure: evidence from integrated reporting adopters", *Corporate Governance: The International Journal of Business in Society*, Vol. 22 No. 7, pp. 1462-1490, doi: 10.1108/CG-07-2021-0260.

Rao, K. and Tilt, C. (2016), "Board diversity and CSR reporting: an Australian study", *Meditari Accountancy Research*, Vol. 24 No. 2, pp. 182-210.

Rao, K., Tilt, C.A. and Lester, L.H. (2012), "Corporate governance and environmental reporting: an Australian study", *Corporate Governance: The International Journal of Business in Society*, Vol. 12 No. 2, pp. 143-163.

Reale, E. and Primeri, E. (2014), "Reforming universities in Italy: towards a new paradigm?", In Musselin C. and Taixeira P.N. (Eds), *Reforming Higher Education*, Springer, Dordrecht, pp. 39-63.

Rodríguez Bolívar, M.P., Garde Sánchez, R. and López Hernández, A.M. (2013), "Online disclosure of corporate social responsibility information in leading Anglo-American universities", *Journal of Environmental Policy & Planning*, Vol. 15 No. 4, pp. 551-575.

Sassen, R. and Azizi, L. (2018a), "Voluntary disclosure of sustainability reports by Canadian universities", *Journal of Business Economics*, Vol. 88 No. 1, pp. 97-137.

Sassen, R. and Azizi, L. (2018b), "Assessing sustainability reports of US universities", *International Journal of Sustainability in Higher Education*, Vol. 19 No. 7, pp. 1158-1184.

Schaffhauser-Linzatti, M.M. and Ossmann, S.F. (2018), "Sustainability in higher education's annual reports: an empirical study on Australian and Austrian universities", *International Journal of Sustainability in Higher Education*, Vol. 19 No. 2, pp. 233-248.

Sepasi, S., Braendle, U. and Rahdari, A.H. (2019), "Comprehensive sustainability reporting in higher education institutions", *Social Responsibility Journal*, Vol. 15 No. 2, pp. 155-170.

Shan, Y.G., Zhang, J., Alam, M. and Hancock, P. (2021), "Does sustainability reporting promote university ranking? Australian and New Zealand evidence", *Meditari Accountancy Research*, Vol. 30 No. 6, pp. 1393-1418, doi: 10.1108/MEDAR-11-2020-1060.

Son-Turan, S. and Lambrechts, W. (2019), "Sustainability disclosure in higher education: a comparative analysis of reports and websites of public and private universities in Turkey", *International Journal of Sustainability in Higher Education*, Vol. 20 No. 7, pp. 1143-1170.

Steenkamp, N. and Northcott, D. (2007), "Content analysis in accounting research: the practical challenges", *Australian Accounting Review*, Vol. 17 No. 43, pp. 12-25.

Ter Bogt, H.J. and Scapens, R.W. (2012), "Performance management in universities: effects of the transition to more quantitative measurement systems", *European Accounting Review*, Vol. 21 No. 3, pp. 451-497.

Trireksani, T., Zeng, Y.T. and Djajadikerta, H.G. (2021), "Extent of sustainability disclosure by Australian public universities: inclusive analysis of key reporting media", *Australian Journal of Public Administration*, Vol. 80 No. 4, pp. 830-848.

United Nations General Assembly (2015), "Transforming our world: the 2030 agenda for sustainable development", New York, NY, available at: www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

Vitolla, F., Raimo, N. and Rubino, M. (2020), "Board characteristics and integrated reporting quality: an agency theory perspective", *Corporate Social Responsibility and Environmental Management*, Vol. 27 No. 2, pp. 1152-1163.

Further reading

EU Commission (2012), "Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on improving the gender balance among non-executive directors of companies listed on stock exchanges and related measures", available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52012PC0614

Author affiliations

Giuseppe Nicolò and Natalia Aversano are both based at the Management and Innovation Systems Department, University of Salerno, Fisciano, Italy.

Giuseppe Sannino is based at the Economics Department, University of Campania "Luigi Vanvitelli", Campania, Italy.

Paolo Tartaglia Polcini is based at the Management and Innovation Systems Department, University of Salerno, Fisciano, Italy.

Appendix. Coding framework

Categories

1. Organisation profile and governance
    - Statement from the rector
    - Description of the organisation
    - Governance structure or processes
    - Commitments to external sustainability initiatives
    - Stakeholder engagement
2. Economic performance
    - Economic performance
    - Contribution to local economy
    - Indirect economic impact
3. Environmental performance
    - Material
    - Energy
    - Water
    - Biodiversity
    - Emissions, effluents and wastes
    - Compliance with environmental legislation
    - Transportation
    - Environmental expenditures
4. Social performance
    - Employment
    - Labour/management relations
    - Occupational health and safety
    - Training and education
    - Diversity and equal opportunity
5. Human rights issues
    - Investment and procurement policy
    - Non-discrimination
    - Freedom of association and collective bargaining

- Child labour and forced labour
- Security practices
- Indigenous rights

6. Society issues

- Impacts on community
- Corruption
- Public policy
- Anti-competitive behaviour
- Compliance with general legislation

7. Research on sustainability topics

- Policies related to sustainability in research
- Research centers/labs related to sustainability
- Sustainability-related research programs
- Incentives to sustainability research
- Funding and grants for sustainability research
- Academic production related to sustainability
- Sustainability-related research projects

8. Curriculum and teaching on sustainability topics

- Policies related to sustainability in curriculum
- Courses related to sustainability
- Students taking sustainability related courses
- Sustainability literacy assessment
- Degree programs related to sustainability
- Non-curricular teaching initiatives related to sustainability
- Scholarships offered to sustainability-related education

9. Green buildings and procurement

- Green buildings and renovations
- Green spaces
- Food services
- Recycled paper
- Green electronics
- Green furniture

10. Sustainability and COVID-19

- Remote/online teaching activities
- Counselling and psychological support
- Prevention measures
- COVID-19 Research projects
- Smart working
- Crowdfunding/fundraising for COVID-19
- Online entrance exams and enrolment
- Digital support for students
- Financial benefits or students
- Support for local/national community

- Presence of online seminars and conferences on sustainability issues related to COVID-19

Source: Adapted from Fonseca et al. *(2011)*; *Moggi* (2019); An *et al.* (2019); Nicolò *et al.* (2021a)

About the authors

Giuseppe Nicolò, PhD Europaeus in Public Sector Accounting, is a Senior Researcher in the Department of Management and Innovation Systems at the University of Salerno (Italy). He is also a lecturer in Financial Accounting and Business Administration. His research is mainly focused on non-financial disclosure including, intellectual capital, integrated reporting, corporate social responsibility, risk management and other social and environmental issues. He is also interested in studying corporate governance mechanisms – including gender diversity – and their impact on corporate performance. Giuseppe is a corresponding member of the Italian Society of Ragioneria and Economia Aziendale (SIDREA) and the European Accounting Association (EAA). Giuseppe Nicolò is the corresponding author and can be contacted at: gnicolo@unisa.it

Natalia Aversano is an Associate Professor in Accounting at the University of Salerno and holds a PhD in Public Sector Accounting. She teaches courses in financial accounting and non-financial reporting. Her research interests are IPSASs, heritage assets, performance measurement in the university, intellectual capital, non-financial performance and gender diversity. She is a member of the SIDREA and European Academy of Management.

Giuseppe Sannino is a Full Professor in accounting and financial reporting at the University of Campania L. Vanvitelli where he teaches courses in financial accounting, managerial control and mergers and acquisitions. He holds PhD in international financial accounting from the University of Naples "Federico II". His primary research areas include financial reporting, disclosure, earning management, corporate governance, public sector accounting and performance management.

Paolo Tartaglia Polcini is a Full Professor of Accounting at Salerno University where he teaches accounting and management accounting. His research interests are performance measurement in the university, fair value, business combination, intellectual capital and international accounting standards in both the private and public sectors.