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Corporate governance and sustainability: a review of the existing literature

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Abstract
Over the last 2 decades, the literature on corporate governance and sustainability has increased substantially. In this study, we analyze 468 research studies published between 1999 and 2019 by employing three clustering analysis visualization techniques, namely keyword network clustering, co-citation network clustering, and overlay visualization. In addition, we provide a brief review of each cluster. We find that the number of published items that fall under our search criteria has grown over the years, having surged at various times including 2014. We identified three main thematic clusters, which we have called (1) corporate social responsibility and reporting, (2) corporate governance strategies, and (3) board composition. The weighted average years that major keywords appear in the literature published over the last 2 decades fall into a period of 4 years between 2014 and 2017. This is due to the massive increase in the number of publications on corporate governance and sustainability in recent years. By means of chronological analysis, we observe a transition from more abstract concepts—such as 'society,' 'ethics,' and 'responsibility'—to more tangible and actionable terms such as 'female director,' 'board size,' and 'independent director.' Our review suggests that corporate governance and sustainability literature is evolving from quite a conceptual approach to rather more strategic and practical studies, while its theoretical roots can be traced back to a number of foundational studies in stakeholder theory, agency theory and socio-political theories of voluntary disclosure.

Keywords Corporate governance · Sustainability · Corporate social responsibility · Board of Directors · Sustainability reporting · Clustering analysis

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1 Introduction

Corporate governance (CG) is a set of rules and organizational structures that are the basis for correct business operation, understood as compensation for the interests—sometimes divergent—of stakeholders (Du Plessis et al. 2018). CG encompasses different areas in a company. It can refer as much to a series of activities and rules aimed at making companies follow specific codes, as to the processes through which companies are directed and controlled; rules include both the laws of the country in which the company operates and internal company processes (Scherer et al. 2016). Therefore, the concept of the CG of a company includes all those rules and processes through which decisions are made; it also indicates the path to follow to achieve corporate objectives and consequently the means of achieving them as well as measuring results achieved.

Traditionally, corporate governance has been intended as a model designed to protect shareholder investments from the "claws" of opportunistic managers (Roberts and Van den Steen 2000). In recent years, however, governance has been increasingly applied to a more extensive form of monitoring of corporate activities, including the impact on society and the environment. This additional aspect related to corporate sustainability often arises in response to stakeholder requests. Indeed, sustainability is increasingly becoming an integral and decisive part of the strategies pursued by companies (Iansiti and Levien 2004), and of relationships they establish with various partners in the value chain.

Furthermore, this same concept of sustainability has evolved over time. Until a few years ago, there was widespread belief that attention to environmental impact was part of the company's social responsibility, with purely legal or even ethical and moral implications, while such an impact was disconnected from the firm's business model and market expectations. Over time, however, several factors have induced companies to revise their approach and increase investments in sustainability practices. Among these are sensitivity towards the sustainable goals of the companies themselves, the need to adapt to the regulatory evolution, the need to increase the quality of products and simultaneously reduce production costs, improve the image and reputation in the eyes of consumers—increasingly sensitive to environmental changes—and, finally, new market opportunities (Poddar et al. 2019). In turn, companies have become aware of the growing link between green practices and success (Fernando et al. 2019), so that sustainability has broadened its boundaries from being merely related to environmental issues to now encompass the company's overall business model.

This parallel evolution of the concepts of CG, on the one hand, and of sustainability, on the other, has been purposefully addressed by previous literature, which has analyzed the main aspects at the intersection of these two fields. These studies, however, often appear fragmented, and a comprehensive general framework that defines the common theoretical pillars, identifies the relationships between the different components and suggests areas of scrutiny for future research is missing. Accordingly, the objective of the paper is to shed light on how corporate governance literature that considers sustainability has evolved and to propose a theoretical framework that may become the basis for future studies in this field.

Following the methodology proposed by Van Eck and Waltman (2017), this paper employs text mining and co-citation-based clustering analysis of the literature over the last 2 decades, from 1999 to 2019. This methodology identifies the main theoretical building blocks of the studied field (in this case, CG and sustainability), by revealing the type and intensity of connections existing between them, thus uncovering the different paths that scholars have taken in the past to connect CG with sustainability. Based on the results of such an analysis, this paper then proposes possible theoretical extensions that might be explored in future research.

The paper proceeds as follows: Sect. 2 explains the criteria used for identifying past publications on corporate governance and sustainability as well as the three analytical methods employed to analyze them. Section 3 presents the results of the analysis. Section 4 briefly reviews the history of the three major clusters identified in the previous section. Finally, Sect. 5 discusses the implications of findings and draws conclusions.

2 Methodology

2.1 Criteria used to draw relevant literature

Past publications on corporate governance and sustainability have been drawn from Thomson and Reuters' Web of Science (WoS) core collection, which is a comprehensive and interdisciplinary bibliographic database with articles referenced from journals, books and conference proceedings. Publication searches have been conducted by using the tag "TS = ("Corporate Governance" AND "Sustainability")", where TS refers to the "topic" of the publication. We restricted the analysis to items published between 1999 and 2019, since WoS shows that the first publication on the mentioned topic was published in 1999. Moreover, we restricted the examination only to English-language texts. The result is a set of 468 publications. This sample selection criterion was used following earlier literature (Testa et al. 2020; Lazzeretti et al. 2017; Trujillo and Long 2018).

2.2 Analytical methods used for clustering

In this paper, we used the approach proposed by Waltman et al. (2010), which is referred to as the 'unified approach' for the mapping and clustering of bibliometric networks. This approach provides a basis for analyzing, clustering and visualizing large bibliometric data. We used Vos Viewer software (version 1.6.11), which incorporates the 'unified approach', for analysis and visualization.

2.2.1 Keyword clustering

One of the main goals of our study is to identify the main topics—in terms of keywords—that have most frequently been used in literature on CG and sustainability, and how they are interconnected. In other words, the occurrence of topics in literature and their co-occurrence structures which show the prominence of the topic and the strength of the connections between them, respectively. Both the prominence of topics and the strength of their connections can be represented as a network, where the former is depicted by the size of the nodes (circle), and the latter by the thickness of the lines between them. In this paper, the prominence of a keyword is simply the frequency of publications ('items' hereafter) containing the keyword. The strength of the connections between two keywords, say i and j, is the number of items that contain both keywords in their titles, abstracts, or list of keywords. Let us denote the frequency of co-occurrence for keywords i and j as c_{ij}, which is identical to c_{ji} (Van Eck and Waltman 2009).

There are various approaches to cluster networks that can be applied to bibliometric analysis. The 'unified approach' uses both the distance and strength of association between nodes as the basis for clustering, where the following term is minimized:

$$V\left(x_1, \ldots, x_n\right) = \sum_{i<j} s_{ij} d_{ij}^2 - \sum_{i<j} d_{ij} \tag{1}$$

where s_{ij} denotes the strength of association between keywords i and j are calculated by

$$s_{ij} = \frac{2mc_{ij}}{c_i c_j} \tag{2}$$

where c_i is the total number of co-occurrences of keyword i with all other keywords such that:

$$c_i = \sum_{j \neq i} c_{ij} \tag{3}$$

whereas m denotes the total number of co-occurrences for all keywords such that:

$$m = \frac{1}{2} \sum_i c_i \tag{4}$$

Note that ½ in the equation removes the double counting between c_{ij} and c_{ji}. Finally, d_{ij} is:

$$d_{ij} = \begin{cases} 0 & \text{if } x_i = x_j \\ 1/\gamma & \text{if } x_i \neq x_j \end{cases} \tag{5}$$

where γ is the resolution parameter, an arbitrary positive integer that determines the number of clusters to be obtained (Van Eck and Waltman 2007; Van Eck et al. 2010).

2.2.2 Chronological analysis

Another key question that our study is aiming to answer is whether the occurrence of the keywords in the sampled literature has changed over time. Chronological analysis of keywords shows the weighted average of the years that the items containing a keyword occur. The average year of occurrence for a keyword i is calculated by:

$$y_i = \frac{\sum_t (n_{it} t)}{\sum_t n_{it}} \tag{6}$$

where *nit* denotes the number of items that keyword *i* occurs in year *t* ($t = 1999$, 2000, …, 2019). For a mature field with no significant change in the volume of the literature, the average years of keyword occurrence tend to be concentrated toward the midpoint of the temporal window from which the literature is sampled. For the field with an upward trend in the volume of the literature, however, the average year of occurrence has a tendency to slant towards more recent years.

2.2.3 Co-citation network clustering

Lastly, we analyzed the most frequently cited items and corresponding journals in literature on corporate governance and sustainability and their co-occurrence network. The co-citation network is then clustered using the same method explained in Sect. 2.2.1. All the equations used in 2.2.1 apply to co-citation network clustering; the quantity in question here, however, is the citation in references in the literature instead of keywords. In turn, in this case clusters are composed of groups of publications that have been cited (backward references) by our sampled items. In other words, with respect to the keyword clustering technique explained above, the co-citation clustering technique looks at the theoretical foundations of sampled publications and seeks to identify which theoretical pillars have been recalled by sampled publications to address the topics of corporate governance and sustainability.

3 Results

Using the criteria explained in Sect. 2.1, we obtained a total of 468 items, including 375 journal articles and 78 conference proceedings. About half of these items were published over the last 3 years. These items were cited 5579 times until 2019, with 11.92 citations per item on average (Fig. 1). The Web of Science categories that harbor the majority of these items are 'Management' and 'Business' categories followed by 'Environmental Studies' and 'Business Finance' (Fig. 2).

Figure 3 shows the results of the keyword co-occurrence network clustering. Figure 3 highlights 48 major keywords selected from over 400 non-generic words (such as 'results' or 'shows') that appeared at least five times in the titles and abstracts of the 468 publications drawn from the Web of Science database. The

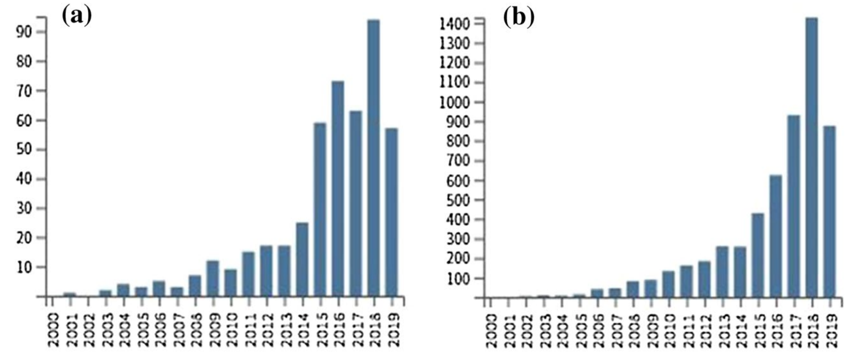

Fig. 1 Total number of publications by year (**a**) and the sum of times that published items were cited by year (**b**)

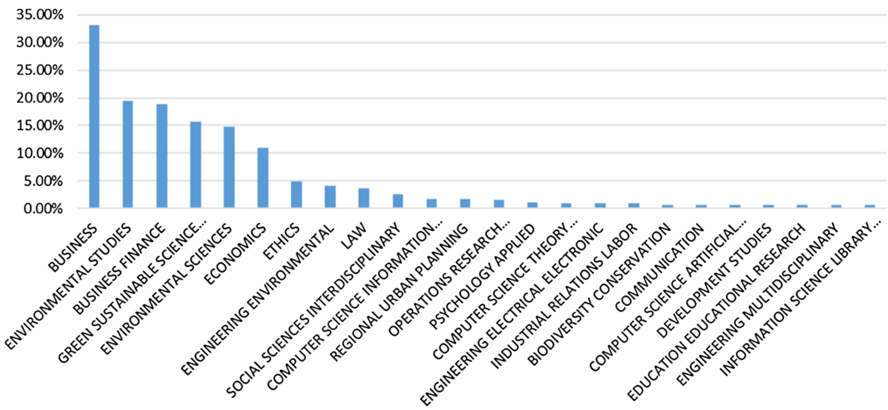

Fig. 2 Web of Science categories to which the 468 items belong

size of each circle represents the number of times of occurrence and the colors indicate the cluster to which each keyword belongs. As shown in Fig. 3, the most frequently used keywords are ‘Social Responsibility,’ ‘Board,’ and ‘Directors.’

For our clustering analysis, we identified four closely knit clusters that are colored in red, yellow, blue and green in Fig. 3. Although these clusters are closely connected to each other and show overlapping topics, it is possible to identify their main themes, which we have called ‘Corporate Social Responsibility’ (red), ‘Sustainability Reporting’ (blue), ‘Board of Directors’ (green), and ‘Corporate Governance Mechanisms’ (yellow), respectively. Overall, we observe two main structures in the network, namely ‘Corporate Social Responsibility’ and ‘Board of Directors,’ whose nodes (keywords) are connected both directly and indirectly through the ‘Sustainability Reporting’ cluster. By contrast, the ‘Corporate Governance Mechanisms’ cluster is more closely connected to the ‘Board of Directors’ cluster.

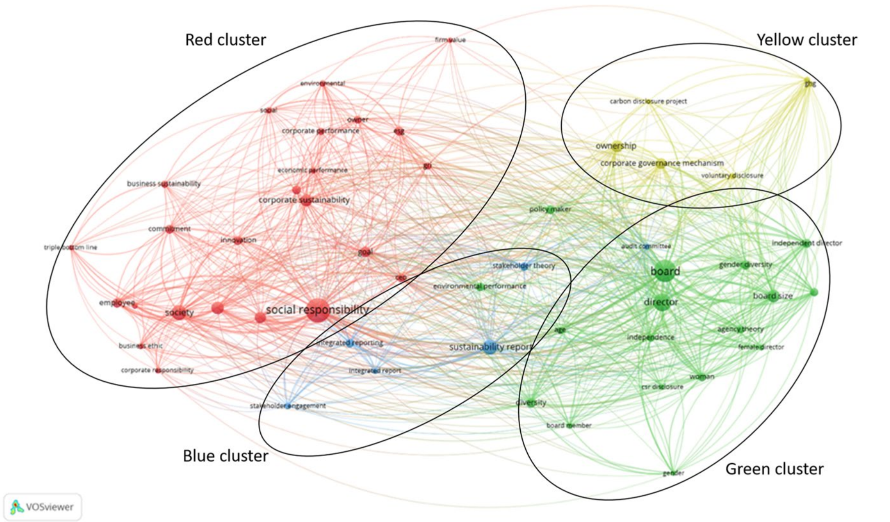

Fig. 3 Keyword network clustering results. (Color figure online)

The next result shows the weighted average year of keyword occurrence of the 468 items (Fig. 4). The transition from blue to dark green, light green and yellow represents the average year of keyword occurrence from 2014 to 2017. Due to the substantial increase in the volume of items published in recent years, the average years of occurrence lies within the 4-year window, 2014–2017. The transition within

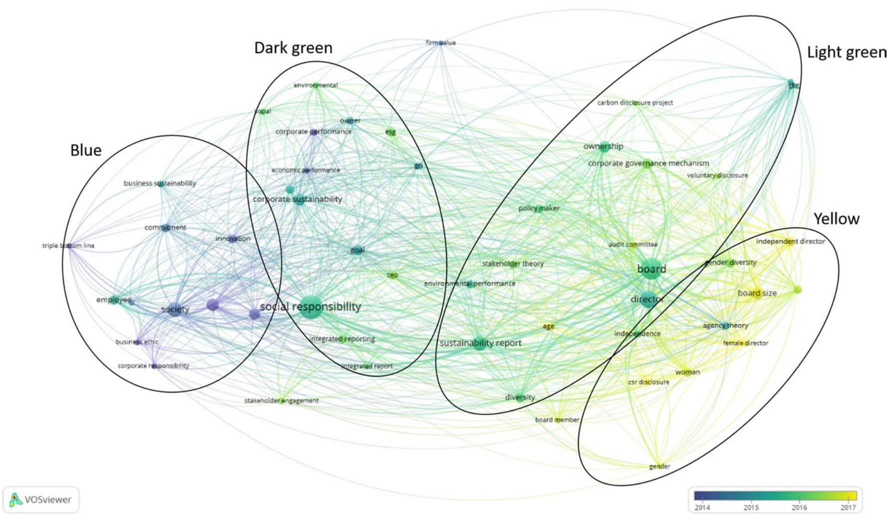

Fig. 4 Overlay visualization for chronological analysis of keywords

this period, nevertheless, reflects the evolution of topics in corporate governance and sustainability literature over the last 2 decades.

Overall, we observe that the main keywords of previous literature evolved from 'Society,' 'Innovation,' and 'Commitment' to 'Social Responsibility,' 'Sustainability Report,' 'Director,' 'Board,' and to 'Board Size,' 'Independent Director,' and 'Female Director' (Fig. 4). In turn, this analysis reveals how the focus of attention has shifted from more general and broader research questions (such as the impact of firms on society) to more specific aspects related to the inner mechanisms that explain and drive firms' sustainable behavior (such as the role played by the composition of the board of directors).

Finally, Fig. 5 shows the clustering results of the co-citation network, and reveals the existence of three main clusters (represented in green, blue and red, respectively). Jensen and Meckling (1976) indicates the most important node of the green cluster and the most frequently cited item in corporate governance and sustainability literature, overall. Similarly, Freeman (1984) indicates the most important node of the red cluster, and the second most cited overall. Clarkson et al. (2008) is the most cited publication of the blue cluster.

Each of these clusters covers diverse topics within corporate governance and sustainability literature, therefore identifying the main subject of each one is a challenge. However, it is possible to note that the red cluster—which is centered around the three studies by Freeman (1984), Waddock and Graves (1997), and Di Maggio and Powell (1983)—mainly addresses the topic of corporate social responsibility. Similarly, it is possible to conclude that the green cluster that includes Jensen and Meckling's work entitled "*Theory of the firm: Managerial behavior, agency costs and ownership structure"* (Jensen and Meckling 1976) mainly addresses the topic of corporate governance mechanisms. Finally, the blue cluster, which contains

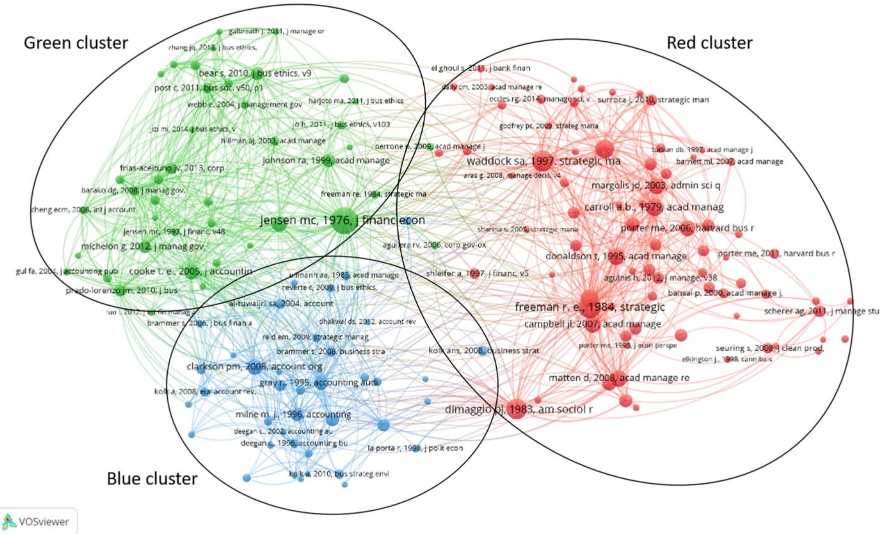

Fig. 5 Co-citation network clustering result. (Color figure online)

publications such as Clarkson et al. (2008), Gray et al. (1995) and Milne (1996), is mainly composed of items that cover sustainability reporting and related subjects. Thus, these three clusters represent the basic and most important theoretical pillars on which all corporate governance and sustainability literature stand. The first pillar (green cluster) concerns the so-called *agency theory*, and refers to the existence of principal-agent relationships at different levels of the company that affect decision-making, strategy formulation and implementation, as well as the pursuit of expected performance outcomes. These aspects are clearly important for the theoretical development of corporate governance, in general, and are also important for their effects on sustainability, in particular. The second pillar (red cluster) mainly concerns the *stakeholders' theory* and the *social capital theory*, which affect the way in which company goals and objectives are formulated. These theories have emphasized that economic and financial performance should not be the only concern for companies, and that company actions do have an impact on different groups of agents and on society at large. Finally, the third theoretical pillar (blue cluster) specifically addresses accounting theories that are the basis of sustainability reporting (such as socio-political theories of voluntary disclosure). According to such theories, disclosure of internal information (additional to accounting reports required by law) may have both positive and negative effects on companies. Finding a proper balance of the trade-off between advantages and disadvantages arising from disclosure of sustainability-related information thus represents a main concern for companies, which may affect social reputation and performance.

Connecting results of keyword clustering with those related to co-citation clustering is not straightforward, because many of the highly cited studies shown in the co-citation network clusters have influence across multiple keyword clusters. However, some of the obvious associations among them can be highlighted. For example, the red-colored co-citation cluster in Fig. 5—which most notably, is built around Freeman (1984), Waddock and Graves (1997), and Di Maggio and Powell (1983)—seems to be closely associated with the 'Corporate Social Responsibility' keyword cluster (in red) reported in Fig. 3. Likewise, the green co-citation cluster in Fig. 5—which refers, most notably, to studies by Jensen and Meckling (1976), Haniffa and Cooke (2005), and Michelon and Parbonetti (2012)—is closely aligned with the 'Corporate Governance Strategy' (yellow) and 'Board of Directors' (green) keyword clusters in Fig. 3.

4 A brief review of the literature

4.1 Corporate social responsibility and sustainability reporting

Although results of the keyword cluster analysis suggest that the red and blue clusters of Fig. 3 should be considered as formally separated, in corporate literature the topics addressed by the two groups of publications are logically linked and strongly connected. Furthermore, the number of items of the blue keyword cluster (sustainability reporting) is much smaller than that of the red cluster (Corporate Social Responsibility). Therefore, in order to simplify the interpretation of obtained results, we preferred to include the former with the latter and consider the two groups as a single item, comprehensive cluster, which we have called Corporate Social Responsibility (CSR).

The basic assumption of CSR is the concept of accountability, or the ability to communicate its social commitment to the vast audience of stakeholders and shareholders (Demirag 2018) in a complete and transparent way. The debate on social responsibility began in the 1960s, when the acclaimed economist Friedman (1970) defended the free market by asserting that the company's sole responsibility is to use its resources and devote itself to activities aimed at increasing profits as long as they remain within the rules of the game. Essentially, businesses are free to compete as long as they refrain from deceit or fraud (Friedman 1970). However, Friedman's thesis, defined by some scholars as "moral minimalism" (Freeman and Werhane 2005), has given rise to a vast literature on business ethics concerning the extent and content of social responsibility of economic subjects.

In 1987, the World Commission on Environment and Development gave the definition of Sustainability contained in the Brundtland report, which defined the world environment and development situation (Brundtland et al. 1987). Over the years, other conferences and appeals have followed, such as that of Rio de Janeiro in 1992 which defined sustainability as a concept integrated with environmental, economic and social dimensions. These series of recommendations and conferences, in addition to outlining the concept of sustainability, served to sensitize governments and businesses to take positive action to contribute to the progress of developing countries because this is possible only through the integration of sustainability with social responsibility.

The first theoretical framework strongly focused on the concept of stakeholders was proposed by Freeman (1984) in the "*Strategic Management volume: A stakeholder approach",* which outlines what has recently been referred to as "stakeholder theory". Based on a vision of the company rather more in the socio-economic context, the stakeholder theory allowed company goals and objectives to shift the perspective to meet the expectations of the company's most relevant stakeholders (Freeman 1984). Indeed, a company should be considered as an economic and social system populated by a plurality of actors. Therefore, companies must be guided to create the right balance between potentially contrasting economic objectives and social responsibilities. Lately, Hill and Jones (1992) have proposed a stakeholder-agency paradigm; from their point of view, managers may be seen as stakeholder agents. The focal point of this new vision is that stakeholders enter into a relationship with managers to carry out company tasks as efficiently as possible; in turn, the stakeholder model is connected to the performance of the company.

The role of managers within the stakeholder framework presented in the literature is contradictory. Aoki (1984), for example, only recognized investors and employees as significant stakeholders and saw managers essentially as judges between these two groups of stakeholders. Williamson (1985), instead, emphasized the fact that managers were one of the most important and powerful groups and that they could behave opportunistically, allowing them to increase their power. Moreover, according to Carroll (1991), managers have legal duties toward the company and moral responsibilities to company stakeholders. One of the consequences of this interpretation is that bidirectional communication between managers and stakeholders implemented through social reporting becomes essential in order to make the results of sustainable strategies known to the latter (Haniffa and Cooke 2005). In fact, financial statements, being exclusively focused on economic and financial assessments, need not necessarily be exhaustive to satisfy the information necessary to stakeholders (Gray et al. 1988).

Following this approach, in recent decades, many scholars have focused their attention on the profile of corporate social responsibility and sustainability reporting (Morhardt 2010; Amran et al. 2014; Epstein 2018), which has become a transversal and multifaceted research theme. In particular, previous research has addressed the need for accountability to stakeholders for the results achieved as well as the wider impact of a different nature that their activity determines on the reference context. The growing diffusion of social accountability tools is attributable to the recognition of corporate social responsibility (Kolk 2003).

Besides having a strictly economic dimension, company activity also has a socio-environmental dimension that impacts on the reality of diverse actors, namely stakeholders. Moreover, through its strategic-reflective role, the communication function has a greater effect on company behaviour than in the past (Invernizzi et al. 2004). As a consequence, through a high degree of coherence and synergy of all company communication initiatives, external expectations as well as management and production actions, the company reputation is strengthened. Therefore, the sustainability report assumes the dual value of being an effective tool for providing information of company policies (Schaltegger and Wagner 2006) in terms of enhancing and safeguarding human, natural and social resources. In turn, the sustainability report enables judgement of corporate social responsibility (Aras and Crowther 2009), the promotion of a business management image that has community consensus (Kolk 2008) and promotes reputation, which is fundamental for the generation of the broadest public trust of the firm (Zadek 2001).

4.2 Corporate governance mechanisms

As the bibliometric analysis has revealed, another research topic related to the relationship between corporate governance and sustainability emerges, corporate governance mechanisms (the yellow cluster in Fig. 3).

Strategic management of the company in relation to sustainability is essential to set long-term goals (Figge et al. 2002). According to Aras and Crowther (2009), there are two main reasons to think that corporate governance mechanisms are important for sustainability performance. Firstly, considerable investment and long-term strategies are required for performance sustainability and this implies a major impact on the company capital structure and profitability (Hart and Ahuja 1996). Secondly, the natural environment requires multiple levels of coordination, both at the organizational level as well as in the involvement of the entire supply chain and other stakeholders (Marcus and Geffen 1998). Therefore, governance is increasingly applied to a more extensive form of monitoring of corporate activities that includes the impact on the environment and society (Giddings et al. 2002). This additional aspect often arises in response to stakeholder requests and can potentially create tensions and conflicts among shareholders, boards of directors and managing directors, as it requires them to assume corporate responsibilities in a new way (Maignan 2001). The benefit derived from the adoption of sustainable strategies in the company context is represented by so-called sustainable profit (Lankoski 2006). Sustainable profit is linked to the creation of a direct economic value, therefore the practice of enhancing the environmental and social impact has become increasingly widespread (Seelos and Mair 2005).

A number of researchers have recently been investigating the relationship between corporate strategies and firm sustainable performance. For example, Kolk and Pinkse (2008), evaluating how firm strategic management addresses climate change, found that corporate climate strategy is related to the firm's management approach to stakeholders. Lee (2012) examined the relationship between corporate carbon strategies in developing countries and firm performance. He demonstrated that firms that implement more innovative strategies on climate change are able to explore new business opportunities and improve their competitive advantage without compromising their productivity.

Therefore, pushing companies to adopt sustainable strategies is not just embracing ethical responsibility, but rather the resulting positive returns in terms of economic performance, organizational efficiency, competitive ability and improved reputation make it particularly attractive (Kotabe and Murray 2004). As a result of this, it is clear that sustainability can become an integral part of governance strategies by being part of the best practice analysis (Cetinkaya et al. 2011). The difficulty in quantifying the spillovers in real terms of sustainable strategies is due to the nature of the benefits that derive from them, which are mostly made up of intangible assets. They allow the company to create a profile based on image enhancement, product quality or brand reliability. In this, it emerges how this cluster of publications is strictly related to the previous one, as far as the fraction of publications related to sustainability reporting is concerned. In fact, as expressed above, sustainability reporting allows companies to assess and quantify results of sustainability strategies in general, and of CSR policies in particular, by allowing a tangible quantification of intangible benefits arising from sustainability.

4.3 Board composition

The last cluster (green) that emerged from the keyword cluster analysis (Fig. 3) refers to the composition of the board of directors. The board of directors is the most important governance mechanism within the company and therefore its composition, in terms of gender, age, nationality and professionalism of the components is considered a crucial determinant of the performance of the organization (Rao and Tilt 2016) in general, and of sustainability performance, in particular. Boards have usually been studied as a homogeneous group, and, similarly, business practice has usually neglected the importance of the composition of the board of directors and its consequences on decision-making processes, strategy formulation and performance (Useem 1986). By following this approach over the last decade, researchers have been focusing on evidence regarding the role of the boards of directors, in particular on their efficiency (Hall 1993).

More recently, however, attention to board diversity has increased. Corporate governance reflects a balance between various proposed solutions within the company. In fact, according to the theory of social and psychological dynamics (Adams 2008), there may be compensatory effects within the board among directors belonging to minority entities (and gender) such as to affect the performance of a company. Many authors have found that the diversity of boards of directors can provide organizational benefits ranging from competitive advantages—related, for instance, to the possibility of pursuing stronger marketing strategies or attracting stronger human resources—to improved performance (Cox and Blake 1991). According to earlier literature (Erhardt et al. 2003; Kang et al. 2007; Pelled 1996), diversity can be defined as the variety of board composition related to observable demographic aspects such as gender, age, ethnicity, nationality, cultural background, religion and degree of independence (Aguilera et al. 2008; Filatotchev and Wright 2005; Uhlaner et al. 2007) and other less visible aspects (such as education, professional experience in the sector, skills). Diversity management has been part of the organization agenda since the early nineties, with numerous managers and scholars arguing that diversity has both a long and short term impact on various company dimensions (Robinson and Dechant 1997).

According to John and Senbet (1998) the most important features in determining a corporate governance model capable of protecting the holders of property rights are the number of independent directors, the presence of subcommittees, the separation of positions between CEO and Chairman and, finally, the number of shares held by directors. In fact, a board composed of a large number of administrators would have difficulty in coordinating its activities and would not allow active participation of all members, thus leading to an ineffective monitoring action. Furthermore, the division into subcommittees increases the supervisory power of non-executives and the separation of CEO and Chairman positions should ensure greater independence of the administrative body.

All these aspects have recently been associated with sustainability practices as well as performance. In particular, scholars have demonstrated that corporate governance structure should allow mechanisms to improve not only the firm financial performance, but also its sustainable performance, by supporting broader stakeholder participation (Rao and Tilt 2016; Carter et al. 2010; Naciti 2019). Moreover, financiers will be more inclined to interact with companies that show greater sensitivity to sustainability initiatives. In turn, through the concept of corporate sustainability, the role of the Board of Directors goes beyond the idea of simply maximizing the well-being of shareholders, as it also includes an ethical approach to stakeholders (Burke and Mattis 2013).

5 Discussion and conclusion

This paper reviews the literature on corporate governance and sustainability by means of a bibliographic analysis based on keyword co-occurrence and co-citation networks. We selected 468 single publications from the Web of Science database addressing both “Corporate Governance” and “Sustainability” published between 1999 and 2019. Such publications were analyzed by using three visualization techniques: keyword co-occurrence network clustering, chronological evolution of keywords, and co-citation network clustering. Moreover, we conducted a brief review of the literature for each of the major keyword network clusters identified.

We observed that the number of publications that fall under our screening criteria increased over time; about half of the 468 items selected from the period between 1999 and 2019 were published in the last 3 years. We believe that the increasing volume of literature on corporate governance and sustainability reflects not only the growing attention to sustainability in general, but also the growing recognition of the role to be played by corporates in sustainability. Such a trend can also be observed from corporate commitments under (among other policy instruments) the Sustainable Development Goals (SDGs) framework, where corporate leaders are committed to addressing such issues as safety and environmental protection, climate change, innovative solutions to community needs as well as sustainable value creation approaches (UN 2015). We also believe that the increasing awareness of problems related to climate change—such as the Paris climate agreement reached in 2015 by 195 countries and the last Conference of the Parties (COP25) held in Madrid in 2019—provides further impetus for corporate governance literature to focus on sustainability (Rogelj et al. 2016). Under the Paris agreement, countries have committed to reducing their greenhouse gas emissions following Nationally Determined Contributions (NDCs), many of these involve corporate participation (UNFCC 2008).

Moreover, we have noticed that, despite the first reference to Sustainable Development being in 1987, when Gro Harlem Brundtland, President of the Word Commission on Environment and Development (WCED) presented “Our common future” report, publications on these two topics started only a decade later, from 1999. We believe that the delay in addressing these two topics in an interconnected way is due to the fact that in the early years immediately after the Brundtland report scholars and practitioners focused more on examining technical and legal aspects (Davidson 1996; Robinson 1998) and only later began to realize that these issues also had to be addressed at the corporate level.

Furthermore, the chronological analysis of keywords shows a transition from more conceptual topics to a more strategic and actionable dimension. For example, more abstract keywords such as ‘society,’ ‘business ethics,’ and ‘corporate responsibility’ show average years of occurrence close to 2014, while the average years of occurrence for more tangible keywords such as ‘independent director,’ ‘board size,’ and ‘female directors’ are closer to 2017. We believe that this trend reflects the increasing stakeholder demand for tangible actions in sustainability (Barnett et al. 2018). Companies that implement sustainability strategies are increasing at an annual growth rate of over 20 percent. Over the next 15 years the millennials will inherit $24 trillion overall—the greatest transfer of wealth in history (Hildebrand and Deese 2019).

The co-citation network clustering shows that the stakeholder theory still forms the basis of the growing literature on corporate governance and sustainability. In Freeman’s stakeholder theory, the company is seen as a mix of different and conflicting interests due to the multitude of subjects that are part of the 'family' of stakeholders, and it is the nature of the entity itself that has the ability and duty to coordinate and cooperate with various stakeholders. The early emphasis on corporate social responsibility and business ethics and the prominence of Freeman (1984) in the co-citation network reflect the foundational influence of the stakeholder theory in the early development of corporate governance and sustainability literature, while the emergence of the keywords related to board compositions such as board of directors, independent directors, and female directors is reflective of the more recent influence of the stakeholder/agency theory in literature.

By analyzing the three clusters more deeply, it has emerged that to date some aspects have received less attention in literature (or, only recently studies have started to deal with them) and, therefore future research should focus on these aspects. Specifically, we maintain that future research should particularly address the following aspects. Firstly, a deeper analysis of the cluster related to CSR and sustainability reporting reveals that the latter should not only respond to an informative need, according to which companies communicate to stakeholders whose sustainability policies and practices have been adopted and whose goals have been met. In contrast, sustainability reporting seems to be functional to the pursuit of those same goals, as completeness and reliability of reporting affects the reputation of the company and hence impacts on the behavior of various stakeholders, among them customers, suppliers and partners. In turn, future studies should focus on the effects of sustainability reporting on company (sustainability) performance, mediated by the company (sustainability) reputation and/or stakeholder motivation and satisfaction regarding company sustainability practices.

Secondly, as is shown by chronological analysis of keywords (Fig. 4), more recent research addressing the topic of corporate governance and sustainability seems to be interested in analyzing how each component of corporate governance affects company sustainability practices, strategies and performance. In particular, gender issues related to the composition of the board of directors and independent-related issues relative to the board of directors itself during the decision-making process and their relationship with sustainability seem to attract most of the interests of recent research. Surely, these aspects should be studied in greater depth, either by addressing additional and novel aspects (e.g., the cultural dimension in multinational companies), or by analyzing the interplay between individual aspects, or by studying how diversity issues are reflected in strategy formulation, followed by how strategy formulation is converted into strategy implementation and eventually into performance.

Thirdly, our analysis revealed that policy-related aspects seem to be a neglected area of interest in both past and current research. Truth to tell, policy aspects related to firm environmental behavior (such as policies to stimulate the adoption of environmental technologies by firms—Kemp 1997) have been the focus of a great deal of past research. However, scholars have paid less attention to how policy regulation might affect the relationship between corporate governance (mechanisms and strategies) and sustainability (strategies and performance). In turn, this could become an interesting focus for future studies, with relevant theoretical and practical insights. Finally, is the issue related to the theoretical foundations of studies addressing the corporate governance–sustainability relationship. As our research has revealed, most studies in this field mainly base their considerations on stakeholder theory and agency theory. Such theories are certainly helpful in addressing issues related to the functioning of corporate governance structures and mechanisms and their effects on sustainability as a whole, but are of less help when more specific aspects must be analyzed. For instance, the need to transform (translate) a corporate sustainability strategy adopted at the board level into concrete actions by company employees should be addressed by specific organizational theories. Similarly, the effect of the institutional framework on corporate governance and its relationship to company sustainability actions should be addressed by recalling ad-hoc institutional theories. Also, how diversity of board composition affects the board decision-making process related to sustainability goals seems to be an aspect that cannot be addressed by only leveraging on stakeholder and agency theories; rather, psychological theories or theories related to organizational behavior might provide useful insights in this respect. Thus, overall, a need for new theoretical development of dominant issues in the field has emerged.

Not only will management studies benefit from these efforts to go beyond current theoretical pillars, but such work will also provide useful suggestions for policy and practice on how to answer the pressing questions of company sustainable behavior.

Based on these considerations, we believe that literature on corporate governance and sustainability is likely to see continuous growth in the future. An important future research question might be whether and to what extent alternative corporate governance practices improve sustainability. Our review identified few empirical analyses on the performance of governance practices in corporate sustainability in literature, and more effort to link governance questions to sustainability performance would be desirable. In particular, we believe that future research should respond to the urgent call for the corporate community to address global climate change and SDGs, as recent dramatic events in various regions of the world have underlined.

Despite its valuable contribution, this study also has some limitations. The complete set of papers was indexed solely in the WoS database, which indeed is one of the most relevant and prestigious in the academic environment. Thus, contributions from several other outlets were not included even though these may be relevant to identify emerging topics.

Furthermore, this study is but a starting point for further analyses that should aim at a better understanding of the research topic on corporate governance and sustainability. It would be interesting to apply some alternative bibliometric and non-bibliometric methodological approaches, such as content analysis or the PRISMA model.

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