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Title	Board of Directors and Corporate Social Reporting: A Systematic Literature Network Analysis
Author(s)	Giovanna Afeltra - University of Cattaneo (LIUC) Alireza Alerasoul - University of Cattaneo (LIUC) Berto Usman - University of Bengkulu
Corresponding author	gafeltra@liuc.it, University of Cattaneo (LIUC), Corso G. Matteotti, 22, 21052 Castellanza (VA), Italy.
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# **Board of Directors and Corporate Social Reporting: A Systematic Literature Network Analysis**

## **Abstract**

Over the last decade, the body of literature on the relationship between corporate governance mechanisms (board composition and its characteristics) and “corporate social reporting” has seen increasing attention from academics. However, no significant studies attempt to systematise the body of literature highlighting the advancement of knowledge in this field. The main objective of this study is to identify the flow of knowledge in this area by applying a chronological approach to the traditional Systematic Literature Review (SLR), which is called Systematic Literature Network Analysis (SLNA). We found 21 papers that constitute the Main Path of knowledge and four clusters from the co-occurrence analysis of authors’ keywords: i) “The influencing factors of social disclosure”; ii) “Assurance practices and CSR reporting”; iii) “Integrated reporting and Sustainability reporting”; iv) “The relationship between intellectual capital disclosure and corporate governance”; v) “The relevant theories.” Finally, future avenues of research are suggested.

*Keywords:* the Board; corporate social reporting; sustainability; bibliographic analysis

## **1. Introduction**

Organisational managers have long acknowledged that harmony between organisational actions and stakeholder values is crucial to the organisation’s survival (Dowling & Pfeffer, 1975; Meyer & Rowan, 1977). As previously highlighted by Singh et al. (1986), organisational legitimacy helps the business entity to ensure the sustainable capital inflow, labour, and customers necessary for viability. Organisational legitimacy, however, is deemed precarious. Contradictions invariably exist between the organisational activities used to generate profits in a competitive global economy and other social values (Elsbach & Sutton, 1992). Accounting researchers have suggested that Corporate Social Responsibility (CSR) disclosures help to resolve some of the problems of organisational legitimacy.

Based on previous studies claiming that disclosure policies emanate from the Board (Ho & Kar Shun Wong, 2001; Gul & Leung, 2004; Haniffa & Cooke, 2005; Cheng & Courtenay, 2006; Cerbioni & Parbonetti, 2007), it appears possible that the characteristics of the corporate governance model adopted by the company are fundamental determinants of companies’ disclosures. As the role of the Board is mainly to oversee the management, board members have long understood the critical role they play in strategic and risk oversight. The Board is deemed able to oversee management by challenging the manager to consider whether and to what extent the firm has promoted corporate social reporting strategy and the extent of the associated activities. The Board is required to challenge, question, as well as to review how these strategies are executed. Correspondingly, the Board should notice what drives the firm not to deal with corporate social strategy by considering the reasoning and challenging it.

Due to the multi-faceted nature of the current study addressing the links between the Board and corporate social reporting, we decided to apply an approach that pinpoints not only the main streams in the discipline but also identifies the interdisciplinary research trends that can provide directions for future research.

To achieve our goal, we apply the chronological literature method called Systematic Literature Network Analysis (SLNA), developed by Colicchia and Strozzi (2012). This new approach combines a Systematic Literature Review (SLR) and Citation Network Analysis (CNA), and it allows for the identification of the critical papers that determine the flow of knowledge in a specific area of interest. Compared to the traditional literature review, the SLNA also facilitates a broader view of the knowledge of a field through a rigorous identification of critical issues as well as the main path of the related field of studies. As mentioned by Colicchia et al. 2018, this is of great interest for us since we can directly focus on those scientific contributions that constitute the backbone of the field under investigation (i.e., section 2 of research methodology comprehensively exhibits the process and procedure of SLNA). The SLNA is also deemed able to overcome some of the limitations of the traditional literature review (content analysis based), which relies on subjective criteria for the paper selection and classification of the research contributions according to pre-defined coding schemes, where the evolutionary aspects of the field under investigation are not detected. This method has been successfully adopted in several studies with different contexts, e.g., Kim et al. (2018); Kajikawa et al. (2007), confirming the potential of the methodology and its usefulness for the determination of the evolutionary trajectories and key issues influencing the development of knowledge within the field.

Our paper contributes to the development of literature by applying methodological rigour in delineating the scientific works that have investigated the concept of board role and corporate social reporting. To do so, we use a unique method that allows us to map, evaluate, and classify the works of literature by highlighting the boundaries of knowledge. We also try to answer the questions about what has been done and what potential work can be done on the future research agenda. As SLNA is an iterative process, this approach uses two research techniques by combining the systematic literature review (SLR) and citation network analysis (CNA). Compared to the traditional literature review, SLNA is considered more powerful in analysing the concept of board role and its relationship with corporate social reporting in a more scientific and objective method. Given that, by providing a foundation to the research field, our study may help researchers to evaluate and assess the available source of studies more objectively. To the best of the authors' knowledge, this is the first attempt to apply this method to the particular issue of board role and corporate social reporting.

The remainder of this paper is structured in five sections. Following the introduction, section 2 describes the research methodology (SLNA method) and explains the data collection process. In sections 3 and 4 we present and discuss, respectively, the results of the first and second phases of the SLNA method. Finally, the last section includes the discussion of findings, conclusions, and future research trajectories in this area.

## **2. Research Methodology**

A systematic literature review (SLR) is a structured procedure aimed at mapping and assessing all key contributions in a specific subject area based on research questions, search terms and resources, selection criteria, data extraction, and data synthesis. Compared to a narrative literature review, a systematic literature review is less biased, more transparent, and reliable (Tranfield et al., 2003). As Tranfield et al. (2003) suggest, a systematic literature

review is a process of planning, conducting, reporting; its depth can be further increased to give a better understanding of the potential development of the knowledge by visualizing the connectivity in the network of citations, references, and keywords (Colicchia & Strozzi, 2012).

A Citation Network Analysis (CNA) is a method that can complete SLR in terms of investigation of research trends, knowledge creation, and development (Hummon & Dereian, 1989). The underpinning assumption of the CNA is that fields of research are not just formless sets of articles in terms of citations. It considers a citation network as a system of channels that transforms scientific knowledge or information as researchers in the same field tend to cite each other in order to position their work in the field based on previous knowledge (Hummon & Dereian, 1989). An article that uses information from many other articles and adds new knowledge will cause an increase in the citations of the previous articles and will receive many citations itself. Consequently, it will be an important junction between channels of knowledge. The most important citations constitute the backbone of a research tradition and can be organised in different paths. The method proposed by Hummon & Dereian (1989) for studying the connectivity of the citation network, i.e., Main Path Analysis, explicitly focuses on the identification of specialities, the evolution of research traditions, and changing paradigms.

By integrating SLR and CNA, Colicchia and Strozzi (2012) introduced a new method known as "Systematic literature Network Analysis (SLNA)" to provide a more objective and scientific way of analysis. In this review, the SLNA methodology is used to maximise the advantages related to both the SLR and CNA methodologies. As represented in Figure 1, SLNA consists of two phases. In the first phase, the SLR is performed, including three steps: i) the scope of the analysis (Context, Intervention, Mechanism and Outcome (CIMO)), ii) locating studies (time, keywords, type of documents, language), and iii) study selection and evaluation.

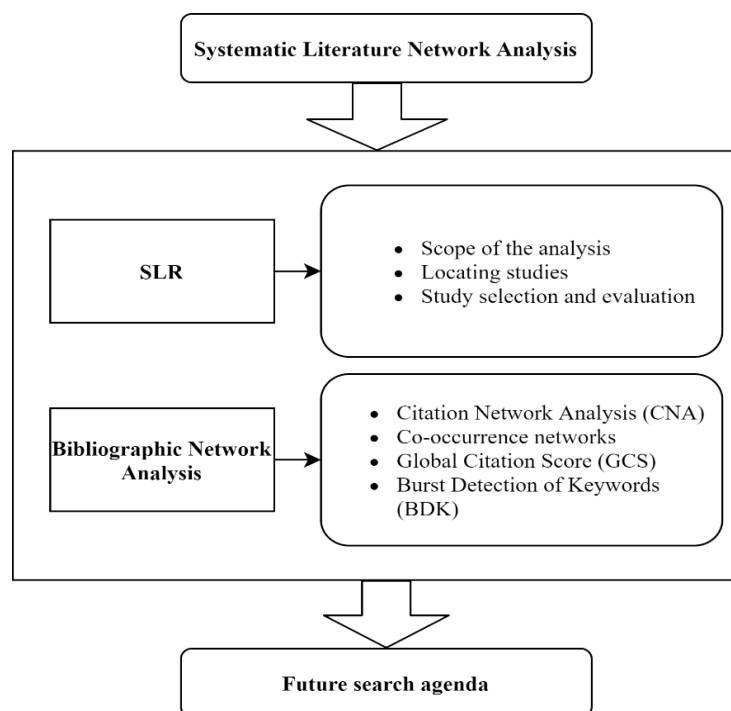


Figure 1. SLNA framework

The second phase of SLNA methodology is characterized by the visualisation of the bibliographic network analysis (CNA-main path, co-occurrence networks, clustering-GCS-BDK).

## **2.1 The first phase of SLNA methodology: SLR**

### *2.1.1. Scope of the analysis*

According to the papers falling within the Main Path (see section 2.2.1.1), corporate disclosure policies are aimed at legitimising the company's activities to stakeholders, given their many diverse expectations. Companies manage their legitimacy by signalling to stakeholders that their behaviour is appropriate and desirable (Suchman, 1995). Corporate Sustainability Disclosure (CSD) represents a strategy companies can use to respond to the expectations of society (Dowling & Pfeffer, 1975; Guthrie & Parker, 1989; Gray et al., 1995). CSD is part of the dialogue between the company and its stakeholders, as it provides information to stakeholders on the social and environmental impacts of corporate activities (Gray et al., 1995).

Concerning organisational legitimacy and stakeholder engagement, we can identify two different roles the Board of directors may play in corporate governance. Besides being itself a mechanism of legitimacy and reputation, the Board might also enhance corporate disclosure towards stakeholders. Regarding the former role, sound corporate governance can convey the image to the whole of society that the company is well managed, that top managers properly oversee the firm, and that stakeholders' interests are considered. At the same time, the Board of directors can play an essential role in managing the provision of information to stakeholders since it is they who enact and oversee disclosure strategies and policies in corporate reports (Gibbins et al., 1990; Gul & Leung, 2004; Haniffa & Cooke, 2005).

### *2.1.2 Locating studies*

Following Lawrence (2014), our strategy is to search and collect the data of relevant studies in the so-called scientific 'white literature'. All peer-reviewed journals indexed in the Scopus database were chosen as the primary source of the review given their high standards that result in top-quality articles with validated knowledge and higher impact (Light and Pillemer, 1984). We excluded other types of publications in Scopus (e.g., conference proceedings, book chapters/reviews) that are not categorised as peer-reviewed journals. Scopus citation data is also chosen as it is deemed a significant source of citation information, and according to Zhao & Strotmann's (2015) study, Scopus's coverage is relatively wider than other databases such as Web of Science. We paid particular attention to the leading academic and managerial practice-based journals, which provide us with the same keywords as the topics in our study. We identified the leading academic journals that are graded as four stars according to the ABS (the association of business schools) ranking. This ranking could change over the years as the journals might perform differently during the time span of our analysis. However, as long as the journals are still indexed in the Scopus database, and the keywords of the articles match the

topic we search, we still take the articles in the affiliated journal into account. A similar approach was performed for the managerial practice journal. There are several journals that mostly focus on publishing managerial practice articles, such as Harvard Business Review and Review of Managerial Science. However, in some cases, we also consider a number of case study articles published by other academic journals, such as the International Journal of Business Research, Journal of Business Ethics, and Strategic Management Journal. We consider that these journals are a credible source in terms of the production of either empirical or managerial-based practice articles. Moreover, the initial search of the Scopus database was conducted based on the keywords selected by reviewing previous literature reviews and after discussing with experts within the field. The final enquiry was made as follows: Title "board\*" AND ( "corporate social reporting" OR "integrat\* reporting" ) AND ("sustainable development" OR "CSR" OR "corporate\*social\*responsibility" OR "sustainability" OR "corporate governance" OR "stakeholder\*"). The identified keywords were used as search terms in Scopus (advanced textual content search-all fields) at the beginning of 2020.

### *2.1.3. Study selection and evaluation*

The timeframe considered for the sample extraction included all years available in the bibliographic database at the time of the research (winter 2019). The initial sample obtained thanks to the keywords selection, and the timeframe was made up of 1774 documents (Figure 2). We then applied further filters (document type; subject area and language) to exclude conference proceedings, editorial materials, book reviews, meeting abstracts, non-English documents, and limit the sample to articles, and the subjects of “business, management, and accounting,” “social sciences,” “economics, econometrics, and finance”, and “environmental science.” The final sample was thus made up of 1406 papers (Figure 2).

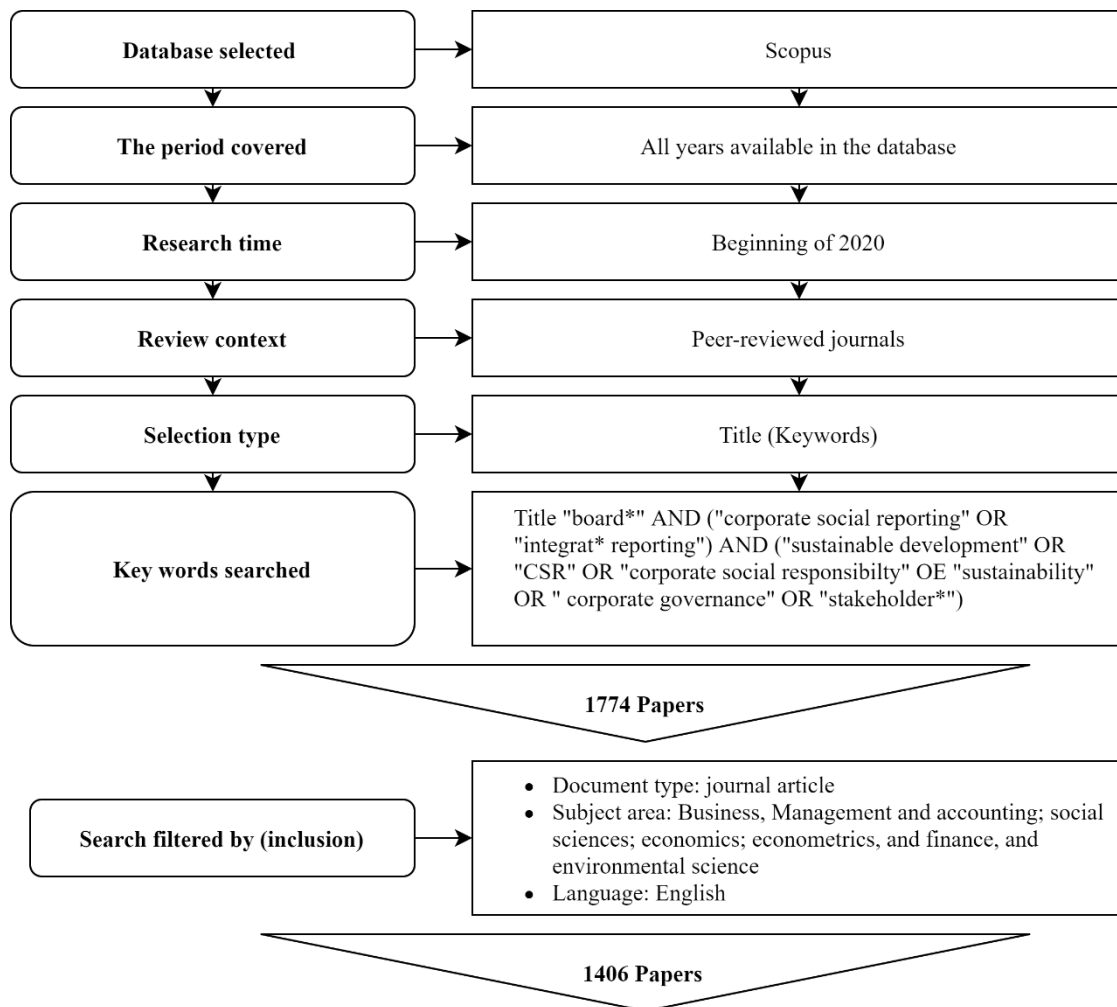


Figure 2. The review framework

Figure 3 and table 1 represent the Scopus descriptive analysis, showing respectively the number of published papers per year and the number of published papers in the ten top journals. Figure 3 is included in the study to visualise the increasing interest of authors in this field over time, while, table 1 is added to show the most relevant journals publishing in this field.

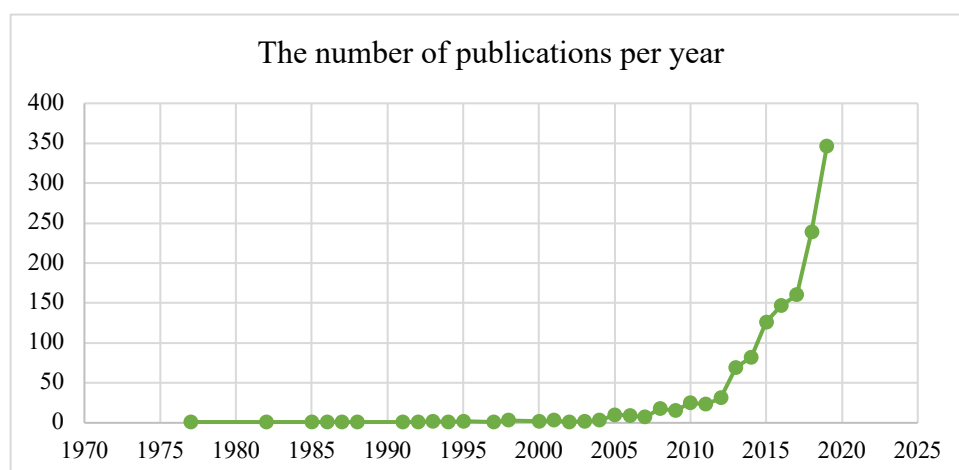


Figure 3. The number of published papers per year

Table 1. The number of published papers in the top 10 journals

No	Journal Title	N. of publications	Rank
1	Corporate Social Responsibility and Environmental Management	77	1
2	Journal of Business Ethics	70	2
3	Sustainability Switzerland	59	3
4	Journal of Cleaner Production	53	4
5	Accounting Auditing and Accountability Journal	47	5
6	Social Responsibility Journal	47	6
7	Business Strategy and The Environment	46	7
8	Sustainability Accounting Management and Policy Journal	31	8
9	Corporate Governance Bingley	30	9
10	Accounting Forum	23	10

## 2.2. The second phase of SLNA methodology: CNA

### 2.2.1 CNA (Citation Network Analysis)

The next phase of SLNA consists of CNA, which aims to find networks made of nodes (papers) and links (citations) (Strozzi et al., 2017). The final output is a set of papers showing the flow of knowledge within the field represented by a network of articles from the oldest reference to the most recently published article. The final sample we considered to extract the main path is made up of 1406 papers, among which there are some isolated nodes (that is, disconnected papers); it is necessary to remove these unlinked papers (isolated nodes). The removal of uncited papers is important given the nature of CNA that only requires the citation data to be considered in the analysis. In this way, we finally obtain the biggest connected component (all connected papers). In this study, there is only one, and it is very representative of the field as it is made up of 1229 articles out of 1406. It is worth noting that the most significant results are obtained when the number of nodes in the biggest connected component is high. As pointed out by Strozzi et al. (2017), the extracted information is deemed more representative for the broader field under investigation, as we excluded isolated (non-connected) papers from the analysis.

Once we extracted the biggest connected component (1229 papers), we extracted the Main Path (MP), which represents the evolutionary change of knowledge in the field of interest. In order to perform this analysis, the *Pajek* software was used (Lucio-Arias & Leydesdorff, 2008). The first step consists in the determination of the citation traversal weights, and we applied the Search Path Count (SPC) weights which use an acyclic network as input data (Batagelj et al., 2017). The second step includes the extraction of the papers that constitute the MP, which in this study was made up of 21 relevant articles. All the steps of the MP extraction are illustrated in Figure 4. The final output that constitutes the flow of knowledge is shown in Figure 5. It is worth noting that the MP analysis identifies the contributions that are the most relevant in terms of dissemination rather than quality and the number of citations per se. For this reason, papers that achieve important results and even got significant citations by others might not be included in the results (see Table 2). For instance, among the top ten papers ranked according to their

number of citations, a paper written by Bansal in 2005 published in Strategic Management Journal with 1010 times citations did not fall into one of the 21 Main Path (MP) analysis papers. However, during the process of bibliometric analysis, a number of articles that did not fall into the main analysis were still extremely useful in supporting the dynamic analysis, especially for the development of the knowledge within the field (Colicchia & Strozzi, 2012).

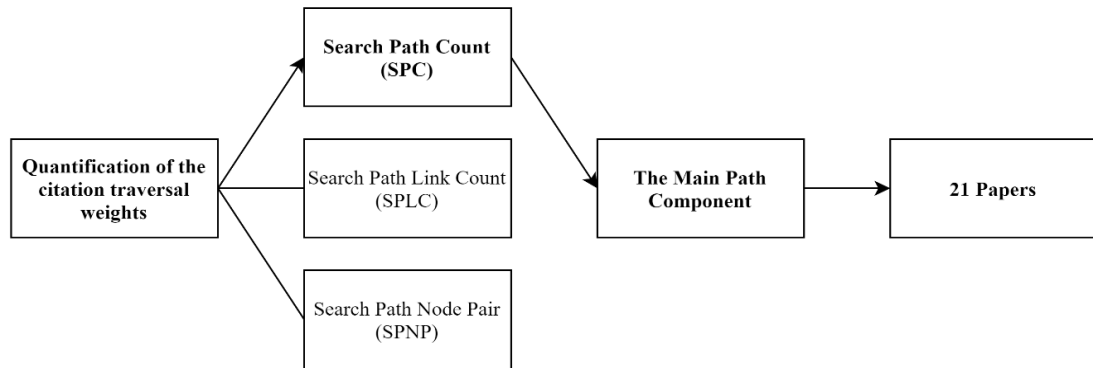


Figure 4. Main Path extraction process

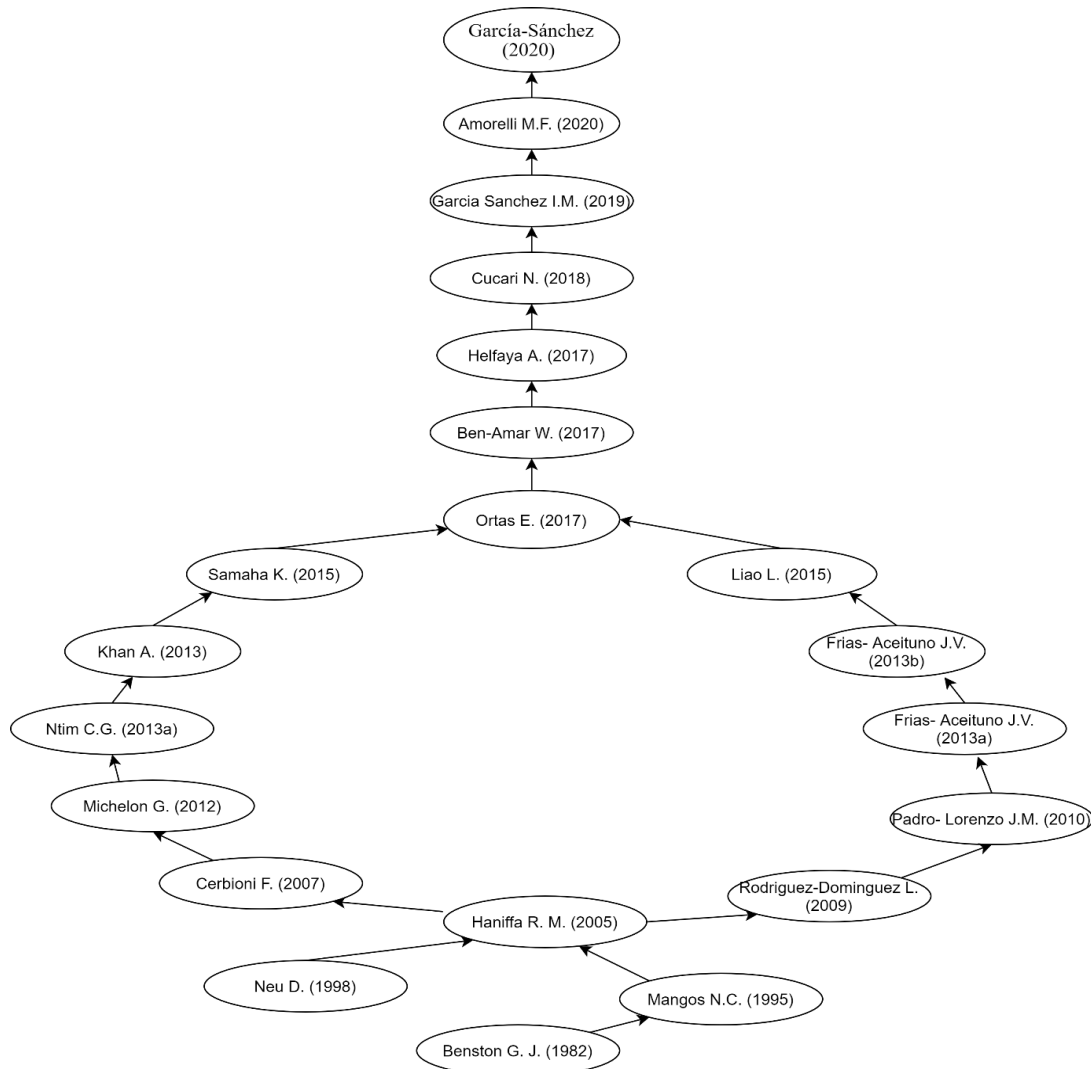


Figure 5. Main Path of the biggest connected component

### 2.2.1.1. Main Path (MP) papers

As can be seen in Figure 5, the Main Path (MP) papers consist of 21 papers (see table 5 in the appendix for the full list of the MP papers) which appeared in the most published journals in the field (table 1) such as: *Corporate Social Responsibility and Environmental Management* journal and *Journal of Business Ethics*. The MP extraction starts from the bottom of figure 5, indicating the oldest paper that constitutes the backbone of the following studies under investigation. The oldest paper of the MP is by Benston (1982) and investigates the role of social responsibility accounting in controlling and measuring externalities. This study mainly showed that shareholders are well served by the voluntary accounting procedures adopted by directors and corporate managers. However, this study did not really classify the types of externalities it investigated and whether they are positive or negative. The next study by Mangos & Lewis (1995) reported that the adoption of a socio-economic perspective to analyse managers' selection of accounting practices could provide a richer and more comprehensive explanation of factors influencing information supplied to the capital markets. Neu et al. (1998) attempted to better understand the role and functioning of environmental disclosures. Their analyses focused on three issues; (i) how external pressure might affect environmental disclosures in annual reports, as well as the amount and types of strategies used in the disclosure, (ii) what the characteristics of environmental disclosure are vis-a-vis other "social" disclosures, and (iii) what the relationship is between environmental disclosures and actual performance. The study investigated these issues in the context of public companies in just four of the more environmentally sensitive industries: mineral extraction, oil, and gas, chemicals, and forestry. They concluded that organisations apply a combination of acquiescence, compromise, and defiance strategies within their environmental disclosures to respond to public concerns and that the strategies adopted are influenced by the relative power of the public concerned. Moving forward in our analysis, Haniffa & Cooke (2005) attempted to increase the understanding of the potential effects of corporate governance and the embedded culture on corporate social disclosures. The research method included a sample of non-financial companies listed on the Kuala Lumpur Stock Exchange in 1996, selected randomly on a proportional allocation basis. The authors examined the relationship between CSR and the different characteristics of corporate governance. Their findings revealed that corporate social disclosure corresponds to boards dominated by Malay directors, boards dominated by executive directors, chairs with multiple directorship positions, and foreign share ownership. This study is a crucial one as it gave rise to two branches of knowledge.

The first branch considers the role played by Boards of Directors in planning and monitoring the corporate code of ethics. Following this branch, Rodriguez-Dominguez et al.'s (2009) study selected 351 public corporations from Italy, Spain, and the UK, all similar in size and activity; they found that a greater number of female directors does not necessarily lead to more ethical companies. However, their study is inconclusive since the results obtained indicated that the European and Anglo-Saxon markets are pretty divergent in terms of ethical motivations and corporate law context. The study by Prado-Lorenzo & Garcia-Sanchez (2010) appeared as one of the studies trying to advance the field of the board of directors context. They used the population of companies listed on the FTSE Global Equity Index Series since these companies have the highest consumers of resources and generate the largest negative externalities. They

found that the Boards of Directors are more focused on the traditional responsibility to create economic value rather than dealing with the concept of social responsibility.

So far in the literature, there has also been controversy regarding the relationship between the independence of the Board and the disclosure of information. For instance, Haniffa & Cooke (2005) and Prado-Lorenzo & Garcia-Sanchez (2010b) found an inverse relationship. Frias-Aceituno et al. (2013a) tried to prove the presence of certain features of the Board of Directors in the integrated dissemination of information. In the paper “The Role of the Board in the Dissemination of Integrated Corporate Social Reporting”, published in the journal *Corporate Social Responsibility and Environmental Management*, they selected the population of the 2000 largest international companies from the Forbes Global 2000 list from 2008 to 2010; the final sample included companies from 15 countries in 23 activity sectors. Among the relevant factors that emerged from the study, they found features such as gender diversity, the size of the company and its management bodies, growth opportunities, and company size. Furthermore, in the paper “Is integrated reporting determined by a country’s legal system? An exploratory study”, Frias-Aceituno et al. (2013b) again take into consideration the corporate sustainability reporting from the sample population of companies, but in this case, they particularly investigated how the legal system as one of the most important institutional factors might have an impact on the development of integrated reports. The results revealed that companies located in civil law countries are more likely to create and publish a broad range of integrated reports to help the decision-making process of the different stakeholders. Ultimately, they proposed two policy recommendations: firstly, the need to establish national laws and protection mechanisms to enhance holistic transparency; secondly, managers should be able to decide the appropriate disclosure practices by integrating it with their legal environment to obtain the maximum benefits of the decisions made. The next study by Liao et al. (2015) collected data from the 329 largest companies in the UK to investigate the association between the characteristics of the Board of Directors and the company’s CSR assurance decision in China. They found that Boards of Directors characterised by large board size, separation of CEO and chairman positions are more likely to adopt CSR assurance. In another study, Ortas et al. (2017) investigated how the board independence of the organisation can influence corporate social performance using a meta-analytic approach. They found that the independence of a company’s Board positively influences corporate social performance. They also found that this positive relationship is stronger in civil law countries, and when CSP is measured by self-reporting data, and the strength of this influence varies considerably in different market conditions.

The other branch of knowledge generated by Haniffa & Cooke's (2005) article begins with the study by Cerbioni & Parbonetti (2007). In this study, they investigated the relationship between governance variables and voluntary intellectual capital disclosure, considering all the biotechnology companies listed on the stock market of a European country. As Haniffa and Cooke (2005) previously developed categories into which content units that are at the base of content analysis can be classified. This methodology applied to analyse annual reports is widely adopted in the literature. The results showed a positive relationship between profitability and disclosure policies, as ROE is related to the degree of disclosure. However, they found that board structure is negatively related to most of the items on the disclosure index, but it helps to improve the annual report’s overall readability. They also contributed to the agency theory

by indicating that voluntary disclosure and corporate governance mechanisms can be used to reduce agency conflicts. Furthermore, the study by Michelon & Parbonetti (2012a) elaborates more on the functionality of stakeholder theory by providing empirically based evidence about where companies should promote stakeholder engagement to promote firms' legitimacy. The focus is now on sustainability disclosure; thus, they investigated how the board composition, leadership, and structure can influence the level of sustainability disclosure. In order to explain this relationship, they suggested the importance of overcoming the traditional distinction between insider and independent directors by focusing on more specific directors' characteristics. Given that, they argued that stakeholder theory in this matter is positioned as a complementary mechanism of legitimacy that may allow companies to use the sustainability report and its disclosure as a communication tool with stakeholders.

Following the main path analysis, Ntim & Soobaroyen (2013a) investigated how the voluntary disclosure of information affects black economic empowerment in both annual and sustainability reports of South African listed companies. They refer to some of the variables previously identified by Haniffa and Cooke (2005) that can promote CSR disclosure; thus, they did not just consider ethnic background, but they expected that boards that are more diversified in terms of age, ethnicity, education, gender, nationality and occupation might influence the level of black economic empowerment activities and disclosures. The results are consistent with stakeholder predictions of agency, legitimacy, and resource dependence theories. Khan et al. (2013a) again examined the relationship between corporate governance and the level of CSR disclosures in the annual reports of companies in Bangladesh, an emerging Asian economy. They found that internal governance structure through environmental and social disclosures can play a crucial role in reducing the legitimacy gap. With this study, they contribute to the literature drawing attention also to managerial motivations beyond CSR disclosures, whereas previous studies mainly focused on the extent, content, and motivational factors. They found, for example, that managerial owners have a negative perspective on CSR while public and foreign owners have a positive perspective. Samaha et al. (2015a) applied a meta-analysis to a sample made up of 64 empirical studies to try to determine the potential variables that act as a moderator in the relationship between Board, audit committee characteristics and voluntary disclosure. The results revealed that country geographic location could moderate the association between board size, board composition, voluntary disclosure and CEO duality. Furthermore, disclosure method, disclosure type and the level of investor protection seem to moderate the relationship between board composition and voluntary disclosure. However, from this study, the need to understand better the endogeneity problems between voluntary disclosure and corporate governance emerged. Then Ortas et al. (2017a) developed their study, as already mentioned above, adopting a meta-analysis to investigate the impact of organisations' board independence on corporate social performance.

The literature now seems to focus on sustainability disclosure, as confirmed by the next study by Ben-amar et al. (2017a). The attention is on the sustainability initiative of the Carbon Disclosure Project, which is promoted by institutional investors. Based on their data from firms in Canada, the authors found that voluntary climate disclosure increases with a greater number of women on the Board. This study is included in that branch of literature that aims to promote gender diversity in corporate governance. Despite previous studies such as Padro-Lorenzo and Garcia-Sanchez (2010), which did not find any effect of gender diversity, they were able to

demonstrate that the presence of more women directors can promote climate change disclosures. The increasing awareness of the environmental implications of companies' economic activities is leading to greater demands for firms and the boards to implement sustainable strategies. Helfaya & Moussa (2017a) investigated the impact of a board's CSR strategy on the dissemination of information about the environmental impact of their economic activities. The results revealed that CSR-oriented directors are more likely to positively impact on the quality of disclosure of environmental sustainability information. However, this relationship was not confirmed for the quantity of information disclosed. Cucari et al. (2018) investigated the association between the diversity of directors in terms of gender, CSR committees, board average, independent directors and environmental, social and voluntary governance disclosure in the Italian context. As stated by Michelon & Parbonetti (2012a), the composition of the Board of directors plays a crucial role in influencing CSR disclosures. This study contributes to the literature by investigating for the first time the association between corporate governance and CSR disclosures. However, Michelon & Parbonetti (2012) did not find a significant relationship between the CSR committee and CSR disclosure. The results revealed that the presence of women due to regulation rather than expertise does not positively influence disclosure on environmental, social and governance matters. They support the idea that the presence of independent directors can promote transparency and voluntary disclosure, but they did not find a significant relationship between average age and environmental, social and governance disclosure.

García-Sánchez et al. (2019) tried to go a step further on the analysis of the determinants of integrated reporting by demonstrating that the voluntary disclosure of integrated reporting is influenced by factors that are linked to decisions at the firm level and some other external forces and environmental conditions which should also be taken into account when determining why companies decide to disclose integrated reporting. As already pointed out by Frias-Aceituno et al. (2013a), integrated reporting presents various benefits. More accurate non-financial information is disclosed, thus helping investors to make better resource allocation decisions and allowing better opportunity exploitation. In this study, they were able to associate environmental munificence with managerial discretion and integrated reporting. The results contributed to resource-dependency theory by confirming that the firm's disclosure strategy is affected by the external environment. Amorelli & García-Sánchez (2020) used a panel data set of 9,744 firm-year observations to overcome the low explanatory level common to cross-sectional and time-series analysis and to obtain more informative results. They investigated the influence of the presence of female directors on boards on CSR disclosure and the moderating role of the human capital of board members. They found support for the assertion that the greater the female presence in the boards, the higher the commitment to transparency of CSR information, which supports the resource dependency and social identity theories. The latest study of the main path is the article by García-Sánchez et al. (2020), "Sell recommendations by analysts in response to business communication strategies concerning the Sustainable Development Goals and the SDG compass," published in the *Journal of Cleaner Production*. This study is based on a sample of 989 international companies which disclose CSR information; they provided data from 2015 to 2017 and financial information from 2013 to 2017 for an unbalanced data panel of 2615 observations. The authors analyze, on the one hand, the impact of the recommendations to sell by analysts in response to companies' adoption of

communication strategies in line with the Sustainable Development Goals (SDGs), and on the other hand, the effect of these communication strategies on the perception of analysts' recommendations. However, this study did not take into consideration the pressures coming from other stakeholders and only focused on those strategies adopted by companies as a response to pessimistic (sell) recommendations.

#### *2.2.1.1 The relationship between MP and the biggest connected component*

In order to better investigate the “boundaries of knowledge” regarding the Board of directors and corporate social reporting literature, we created the co-occurrence map based on text data (titles and abstracts) of the papers that constitute the biggest connected component for a total of 1208 articles after having excluded the Main Path (MP) papers (Figure 6). We, then, compared it with the map of text data made by only the MP papers (Figure 7). The results revealed mainly four different clusters dealing with board composition; gender diversity; disclosure practice; corporate social reporting and strategy (Figure 6). This big picture of the entire body of knowledge is very close to the one obtained considering just the 21 papers of the MP. Even though these MP papers represent just 1.8% of the entire sample (biggest connected component), the co-occurrence map based on text data enables us to say that they properly represent the field. However, although these results support the significance of the MP as a good representation of the “Boundaries of Knowledge”, it is not exhaustive in representing the entire body of knowledge. It does provide an initial idea of the evolution of the literature over time in the field with the most relevant studies, but it needs to be complemented with other analyses, such as the Global Citation Score (GCS) and the co-occurrence analysis of authors keywords.



We also performed the Global Citation Score (GCS) analysis, which shows the total number of citations that a paper has received in Scopus. In general, papers that have received many citations are influential or seminal papers within the flow of knowledge (Knoke and Yang, 2008). The total number of citations for the 1,406 papers is 27,897. Table 2 shows the list of the ten most cited papers (including the corresponding information of publication year, authors' names, journal title, and the number of citations before and after the year 2016) which account for about 17% of total citations.

The most cited paper on the list is the study by Bansal (2005). Her study focuses on operationalising the concept of sustainable corporate development and further seeks its organisational determinants. Using the data of Canadian firms from several environmentally sensitive industries (e.g., mining, oil and gas, forestry) with the observed data spanning from 1986 to 1995, she found that both resource-based and institutional factors influence sustainable corporate development. Digging deep into time-related effects, she also discovered that media pressures were essential in the early periods and resource-based opportunities endured over time. This finding challenges the presumptions that the organisation is more likely to first adopt the innovations as the response to institutionalised rewards. These counter-intuitive results could be attributable to the unique characteristics of sustainable corporate development.

The second research paper of Neu et al. (1998) and the third paper of Haniffa & Cooke (2005) are two of the most cited papers and have already been commented on as part of the Main Path. Neu et al. (1998) provided an effort to understand better the role and function of voluntary environmental disclosure. Taking the sample from Canadian publicly listed companies from 1982 to 1991, they reported that the external pressure of environmental issues on the annual report, the type of strategies and amount of information being disclosed, and the characteristics of environmental disclosure are positively related to stakeholders' concerns (i.e., profit). While the study of Haniffa & Cooke (2005) showed that culture and corporate governance are associated with CSR disclosure of Malaysian firms, they notably provided a shred of empirical evidence that there is a significant association between culture (i.e., measured by ethnic background of directors & shareholders), corporate governance (i.e., measured by board composition, type of shareholder and multiple directorships) and CSR disclosure.

Burchell et al. (1985), the fourth most cited work, reviewed some theories of the social nature of accounting practice and identified a few significant conceptual problems. Using the case of the rise of interest in value-added accounting in the United Kingdom in the 1970s, they conducted a social analysis and then sought to draw out the theoretical issues and problems which emerged from this exercise. Finally, the authors discussed the implications of these for the social analysis of accounting. Eccles et al. (2014) studied the association between corporate sustainability and organisational processes as well as performance. Employing a matched sample grouping of 180 US companies, they found that firms that had voluntarily adopted sustainability-related policies by 1993 were considered as high sustainable companies, whereas those firms adopting by 2009 were the matched sample with less sustainable-related policies and termed as low sustainable firms. In particular, the boards of directors of high sustainable firms are more likely to be formally responsible for sustainability-related issues, and the incentives of top executives are more likely to be the function of sustainability metrics. The high sustainable firms are inclined to have more established processes and long-term

stakeholder engagement to exhibit higher disclosure of non-financial information. High sustainable firms also reportedly outperformed their counterparts, both in terms of accounting and long-term stock market performance.

Marquis and Qian (2014) focused on how and why firms strategically respond to government signals on appropriate corporate activity. By integrating the institutional theory and political strategy context, they developed the so-called political dependence model to explain (i) the difference in government dependency in assisting companies to deal with CSR reporting, and (ii) how the risk of governmental monitoring may influence the extent to which CSR reports are published symbolically or substantively. First, they examined firms' dependency on government by considering characteristics such as ownership (private vs state), executives serving on political councils, financial resources, political legacy, and the likelihood of CSR publication. Second, they focused on how the symbolic nature of CSR reporting as well as the variance risk concerning government monitoring (i.e., via the channel of bureaucratic embeddedness and regional government institutional development) might affect the extent to which symbolic CSR communications dissociated from substantive CSR actions. Their database included all CSR reports issued by the approximately 1,600 publicly listed Chinese firms between 2006 and 2009. They also stressed that the political perspective contributes to organisational theory through (i) government signals reflecting the essential mechanism of political effect, (ii) different government dependency types of exposure to different legitimacy pressure, and (iii) decoupling risks faced by the firms leading them to establish substantive CSR actions in the circumstances where they will be monitored.

Table 2 The ten most cited papers (ranked according to number of citations)

Publication Year	Document Title	Authors	Journal Title	<2016	2016	2017	2018	2019	2020	subtotal	total	MP
2005	Evolving sustainably: A longitudinal study of sustainable corporate development	Bansal P.	Strategic Management Journal	494	109	99	130	146	32	516	1010	No
1998	Managing Public Impressions: Environmental Disclosures in Annual Reports	Neu D., Warsame H., Pedwell K.	Accounting, Organizations and Society	526	67	70	54	84	15	290	816	Yes
2005	The impact of culture and governance on corporate social reporting	Haniffa R.M., Cooke T.E.	Journal of Accounting and Public Policy	221	61	75	95	121	20	372	593	Yes
1985	Accounting in its social context: Towards a history of value-added in the United Kingdom	Burchell S., Clubb C., Hopwood A.G.	Accounting, Organizations and Society	342	17	26	26	13	2	84	426	No
2014	The impact of corporate sustainability on organisational processes and performance	Eccles R.G., Ioannou I., Serafeim G.	Management Science	11	30	60	84	117	30	321	332	No
2014	Corporate social responsibility reporting in China: Symbol or substance?	Marquis C., Qian C.	Organization Science	25	44	52	66	107	28	297	322	No
2008	Factors influencing the quality of corporate environmental disclosure	Brammer S., Pavelin S.	Business Strategy and the Environment	115	30	49	62	45	13	199	314	No
2013	W(h)ither ecology? The triple bottom line, the global reporting initiative, and corporate sustainability reporting	Milne M.J., Gray R.	Journal of Business Ethics	35	38	49	87	82	15	271	306	No
2008	Sustainability, accountability and corporate governance: Exploring the multinationals' reporting practices	Kolk A.	Business Strategy and the Environment	153	34	36	39	30	4	143	296	No
2006	Voluntary environmental disclosures by large UK companies	Brammer S., Pavelin S.	Journal of Business Finance and Accounting	109	37	30	44	35	6	152	261	No

Brammer and Pavelin (2008) examined the quality content of voluntary environmental disclosure of 450 large UK companies drawn from various sectors. They employed five facets of quality as the distinctive parameters and took into account the wide-group of environmental policies, impact target, and their audit. They mainly explored how the firms' decisions associated with each facet of quality are determined by firm and industry characteristics. They also pointed out how the disclosure quality is determined by the firm's size and the nature of its business activities. They concluded, correctly, that high-quality disclosure is primarily associated with larger firms and those in sectors most closely related to environmental concerns. The results revealed that there is no relationship between media exposure of related companies and the propensity to higher voluntary disclosure.

Milne and Gray (2013) further introduced a critique on the modern disconnection between sustainability reporting practice and the urgent issue of sustaining the life-supporting ecological system on which humans depend. By tracing and identifying the evolution of sustainability reporting, they noted that the triple bottom line (TBL) idea is the core concept that is maintaining business reporting and its engagement with sustainability-related topics. They argued that integrating economic, environmental, and social performance indicators into management and reporting processes has become synonymous with corporate sustainability; in the process concern for ecology has become side-lined. Correspondingly, this process has turned into reinforcement and been further institutionalised through the CSR semi-annual report, KPMG's survey, and GRI reporting guideline. As a result, the processes may support the business routines as usual, with a higher level of unsustainability.

Kolk (2008) analysed to what extent and how sustainability reporting of Fortune Global 250 companies incorporates corporate governance aspects. The Author indicated underlying dilemmas and complexities for managers in dealing with accountability to shareholders and stakeholders and the role of auditors. In the tenth most cited paper, Brammer and Pavelin (2006) analysed the voluntary disclosure of environmental information made by a sample of large UK companies. They made a distinctive analysis by separating the decision made to disclose environmental information from the decisions about the quality of disclosure, as well as testing how firms' decisions are driven by firm specifics and industry characteristics. They found that larger, less indebted companies with dispersed ownership characteristics are significantly more likely to make voluntary environmental disclosures and that the quality of disclosures is positively associated with firm size and corporate environmental impact. They also found significant cross-sector variation in the determinants of both the participation and quality decisions. Furthermore, the manner of this variation differs between the two.

### *3.2 Co-occurrence analysis of authors' keywords*

The co-occurrence of keywords can describe the main clusters of topics in terms of content and context. In this study, we performed the co-occurrence analysis of the author's keywords by applying a co-word network analysis (Callon et al., 1991). An essential assumption behind this is that the author's keywords of a paper represent an adequate description of the content. It can be useful to detect patterns and trends in a field by measuring the association strength of words (Ding et al., 2001),

The steps of the co-occurrence analysis are the following. First, the authors' keywords of the 1406 papers selected in Scopus were extracted; second, they were 'normalised'. As a result, a 'co-word' network was built, considering all keywords that appear together at least 18 times. In this work, the co-occurrence keyword network was analysed using VOSviewer software (Van Eck and Waltman, 2010) which implements the Scopus (Visualization of Similarities) clustering technique. The analysis resulted in a network of author keywords which is made up of five clusters (as shown in Figure 8, and Table 3). The appearance of these keywords together in each cluster represents a pattern of research that has been followed by researchers in the field. In other words, each cluster, characterised by a set of relationships, can be interpreted based on a specific concern and concentration in the overall body of knowledge in the field.

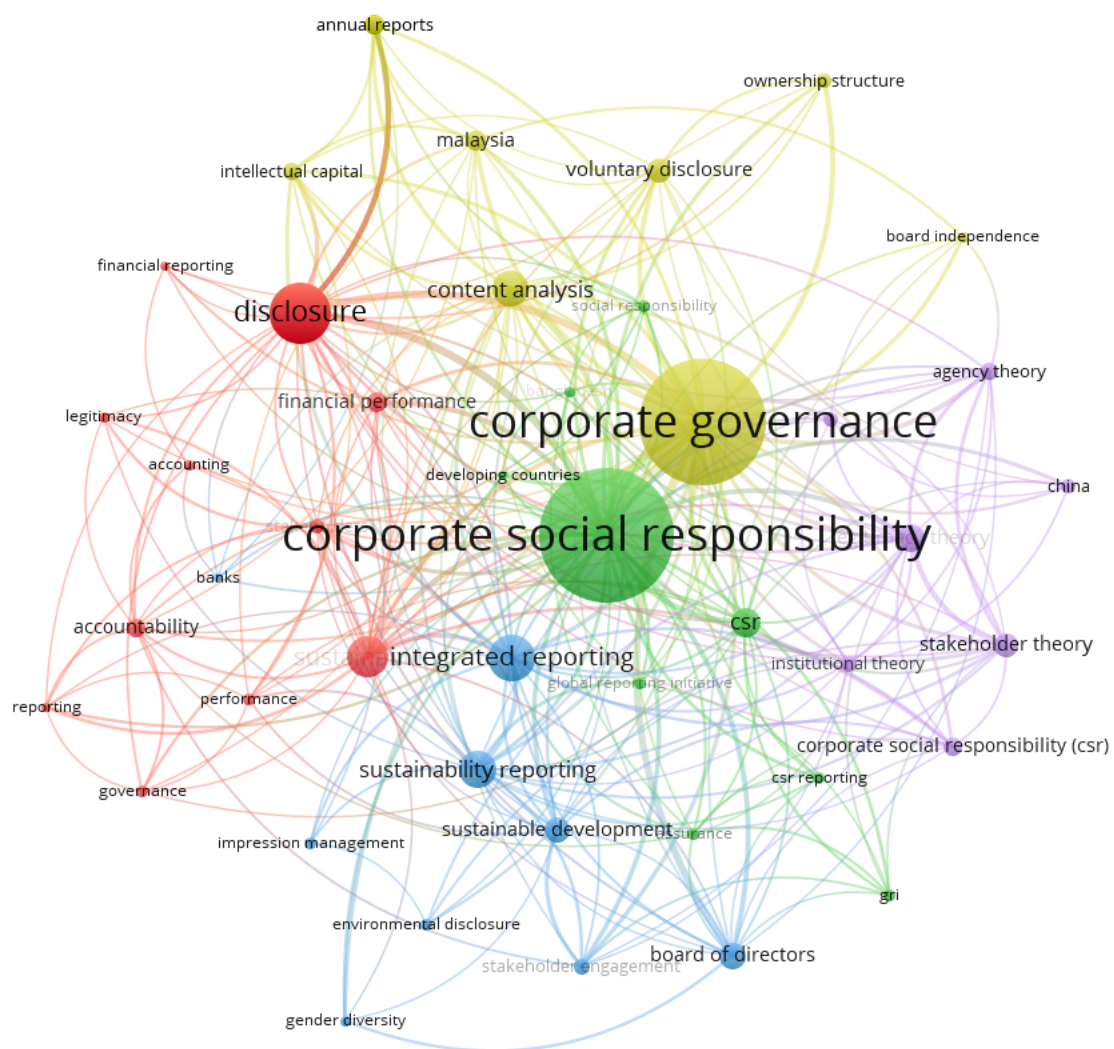


Figure 8. Clusters of Author's keywords using VOSviewer

Table 3. Results of the cluster analysis

Topic 1	Topic 2	Topic 3	Topic 4	Topic 5
"The influencing factors of social disclosure"	"Assurance practices and CSR reporting"	"Integrated reporting and Sustainability reporting"	"The relationship between intellectual capital disclosure and corporate governance"	"The relevant theories"

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Accountability	Assurance	Banks	Annual reports	Agency theory
Accounting	Bangladesh	Board of	Board independence	China
Disclosure	Corporate social	directors	Content analysis	Corporate social
Financial	responsibility	Environmental	Corporate governance	responsibility
performance	CSR	disclosure	Intellectual capital	CSR disclosure
Financial	CSR reporting	Gender	Malaysia	Institutional
reporting	Developing	diversity	Ownership structure	theory
Governance	countries	Impression	Voluntary disclosure	Legitimacy theory
Legitimacy	Global reporting	management		Stakeholder
Performance	initiative	Integrated		theory
Reporting	GRI	reporting		
Stakeholders	Social	Stakeholder		
Sustainability	responsibility	engagement		
		Sustainability		
		reporting		
		Sustainable		
		development		

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### 3.2.1 General comments

**Topic 1** deals with “*the influencing factors of social disclosure*”. A way to reduce the gap between a company and its stakeholders is by reporting activities with information disclosure. In their study Said et al. (2009) examined the relationship between corporate governance characteristics and the extent of CSR disclosure. The results showed that government ownership and the audit committee are positively and significantly correlated with the degree of CSR disclosure. Cormier et al. (2004) found a relationship between environmental managers' attitudes toward some groups of stakeholders (investors, lenders, suppliers, customers, governments and public) and how these managers react by disclosing information. Thus, the annual financial statements are complemented by other reports such as corporate governance, CSR and intellectual capital and some corporate governance mechanisms such as the Board of Directors are found to play an essential role in good practices of CSR (Frias-Aceituno et al., 2013). Frias-Aceituno et al. (2013) found that larger Boards with more experienced directors and more diversified in terms of backgrounds positively promoted the implementation of different reports made by their companies, both mandatory and voluntary.

**Topic 2** deals with “*assurance practices and CSR reporting*”. A component of reporting quality is the assurance of CSR reports, which aims to improve their credibility and the GRI (Global Reporting Initiatives) database does not tell whether the IR has been assured. In their study based on 7144 observations Sierra-García et al., (2015) found that 20.5% of companies which present integrated reporting have also assured their CSR reports and more than half of them are based in Europe. Liao et al. (2018) investigated the association between the company’s CSR assurance decision in China and board characteristics and they found that board size, gender diversity and the separation of CEO and chairman positions have an influence on the CSR assurance decision. In their study Deegan et al. (2006) compared

assurance statements from European and UK companies and found that while those in the UK indicated the responsibility of the reporting organisations to prepare sustainability or CSR reports and the responsibility of assurance providers to prepare assurance statements, this was not common in the European context. Perego & Kolk (2012) explored the assurance practices adopted by multinational corporations to develop and sustain organisational accountability for sustainability within a sample of Fortune Global 250 firms across ten years. The results revealed different practices; however, the relevance of external institutional pressures as well as internal capabilities emerged as driving factors in the adoption of assurance.

**Topic 3** focuses on “*IR and sustainability reporting*”. More and more companies are integrating all their information statements into one document of integrated reporting (IR) to provide a cohesive form of information on the company's performance, corporate governance and strategy (Frias-Aceituno et al., 2013). Many scholars state that the Global Reporting Initiative (GRI) is the most widely used global standard for sustainability reporting (Marimon et al., 2012; Tsang et al., 2009). Given the rising concern about environmental issues, sustainability reporting has been increasingly implemented in recent years (Alonso-Almeida et al., 2014) as it makes sustainable development a higher priority for companies (Ioannou & Serafeim, 2017).

**Topic 4** deals with “*the relationship between intellectual capital disclosure and corporate governance*”. Intellectual capital (IC) is of great interest, as it includes the possession of knowledge and experience, good relationships and technological capacities, which will build competitive advantage for organisations (Tayles et al., 2007). Most of the studies on IC employ content analysis as a research method (Dumay & Cai, 2015; Li et al., 2008). Li et al. (2008) investigated the relationship between IC disclosure and corporate governance within a sample of 100 UK listed firms. They used content analysis and found that corporate governance variables, firm size, profitability and listing age are associated with one or more of the IC disclosures measures. There is an increasing number of empirical studies on emerging countries such as Malaysia, where IC disclosure is rather new (Rashid et al., 2012).

**Topic 5** regards “*the relevant theories*” in this field of interest. From the analysis of this topic the potential importance of institutions in organisational disclosure decisions has emerged; this represents an opportunity to extend the domain of institutional theory in explaining reporting decisions (Carpenter & Feroz, 2001) and both individual and organisational actions (Dacin et al., 2002). According to Aerts et al. (2006), institutional pressures for conformity create mimetic isomorphism pressures where organisations imitate each other's practices trying to gain legitimacy. IR as an institutional practice may be linked to a society's values, norms and boundaries and therefore, IR may connect an organisation to the society in which it operates (Velte & Stawinoga, 2017). Furthermore, legitimacy theory was found to be the most successful theory to explain sustainability disclosures (Reverte, 2009). It extends the principal-agent relationship by including a wider group of stakeholders; managers thus seem to be more willing to disclose information to support their concerns about legitimacy (M. Shamil et al., 2014).

### 3.2.1 Co-occurrence analysis of authors' keywords of MP papers

Finally, to further investigate how the MP papers properly represent the body of knowledge, we performed a co-occurrence analysis of the author's keywords of the 21 papers falling in our MP. The results show several clusters and many keywords (for example: corporate governance, CSR, Board of Directors; Malaysia; stakeholder theory; legitimacy theory; voluntary disclosure; etc.) common to the two-final outputs (Figure 8 and 9). In particular the “boundaries of knowledge” place significant attention on corporate governance and corporate social responsibility, as emerged from the study by Haniffa & Cooke (2005) which examined the relationship between CSR and the different characteristics of corporate governance. The MP also stressed the increasing tendency of companies to integrate all their information statements in the IR with studies aiming to prove that certain features of the Board of Directors influence the integrated dissemination of information (Frias-Aceituno et al., 2013), which is also topic 3 of the previous analysis. For the full description of the clusters see table 6 in the appendix.

These results have increased our understanding and confidence concerning the goodness of the MP results and the “boundaries of knowledge” about the Board of directors and corporate social reporting.

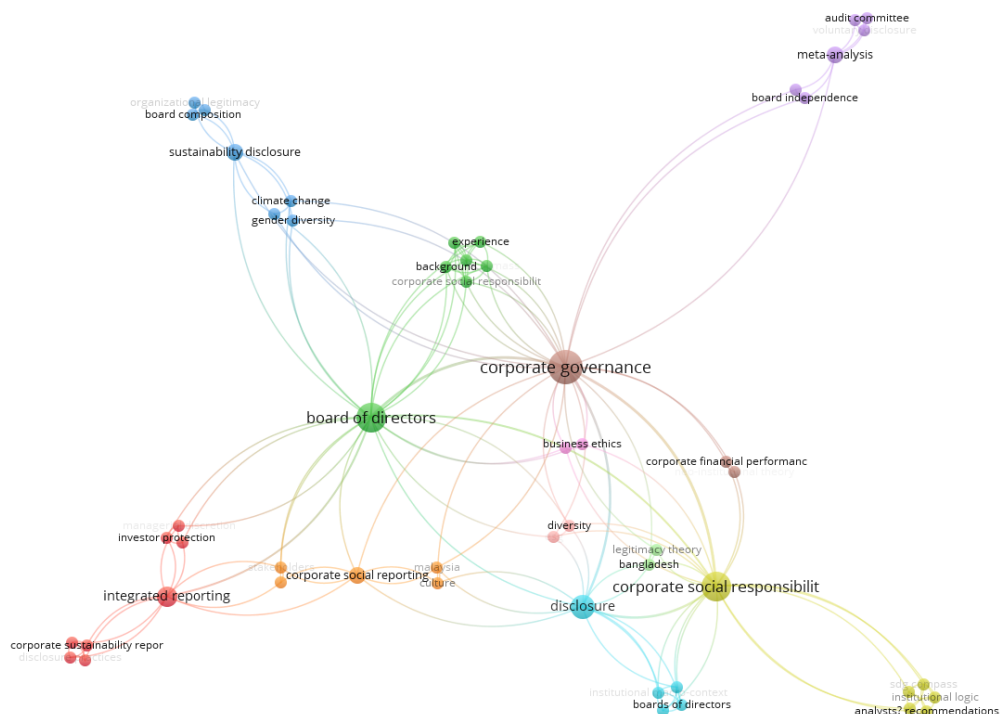


Figure 9. Clusters of Author's keywords of MP papers using VOSviewer.

### 3.3 Burst detection analysis and emerging topics

We then performed the Burst detection analysis, which enables us to identify a sequence of topics that emerge in the literature, grow in intensity, and then disappear (Strozzi et al., 2017). When a topic appears and becomes well developed, it is no longer a burst (Kleinberg, 2003). In this study, we applied Kleinberg's algorithm to the author keywords of all papers after normalizing them using Sci2 software. The result is a list of topic bursts over time, and the weight is the degree of change in their frequency (Figure 10).

The three most recent word bursts detected by the Kleinberg algorithm (Figure 10) are respectively: 'ceo', 'esg' and 'gender'. They refer to three important emerging topics as listed in Table 4, which are 'CEO,' 'Environmental, social, governance (ESG)', and gender diversity. The interest in CEO by practitioners and academics is evident also from the analysis of the MP. The paper by Samasha et al. (2015) applied meta-analysis to a sample of 64 empirical studies to identify potential moderators to the relationship between Board, audit committee characteristics, and voluntary disclosure. The results showed that CEO duality has a negative impact on voluntary disclosure. As García-Sánchez (2020) concluded in her paper, proactive promotion of social and environmental concerns only occurs in firms with efficient internal corporate governance mechanisms. She pointed out the moderating role of the board monitoring power, board independence, and non-duality of CEO on the association between environmental conditions and corporate social responsibility.

The topic of gender diversity constantly appears in many papers of the MP, confirming the relevance of and interest in the topic. Elmagrhi et al. (2018) investigated the extent to which corporate board gender diversity (i.e., board proportion, board members' age, and the level of education of female directors) affects the environmental performance of Chinese publicly listed corporations. The results showed that the proportion and age of female directors have a positive effect on the overall corporate environmental performance. Moreover, the proportion and age of female directors also have a positive effect on the three individual environmental performance components, namely, (a) environmental strategy, (b) implementation, and (c) disclosure. The topic of ESG is also investigated by Cucari et al. (2018), whose attention is on the association between ESG disclosure and diversity of the Board of directors in terms of gender, CSR committees, board average, and independent directors in Italian listed companies. The results suggest that CSR disclosure is associated with independent directors and CSR committees, while women on the Board of directors are negatively correlated, and the age of the Board is insignificant.

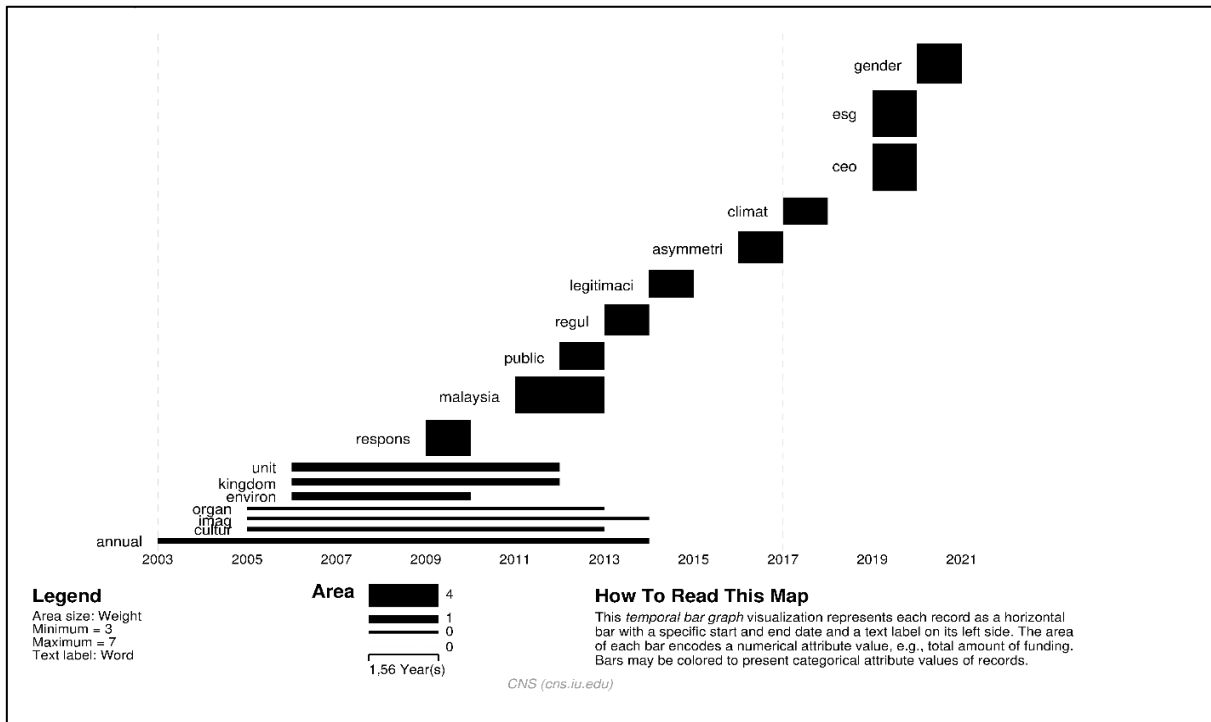


Figure 10. Kleinberg's Burst detection analysis output

Table 4: The list of word bursts

Burst word	Start date	End date	Meaning
ceo	2019	-	CEO
esg	2019	-	Environmental social and governance (ESG)
gender	2020	-	Gender diversity
climat	2017	2018	Climate change
asymmetri	2016	2017	Asymmetric information
imag	2005	2014	Corporate image
annual	2003	2014	Annual reports
regul	2013	2014	Regulation
legitimaci	2014	2014	Legitimacy
cultur	2005	2013	Culture
organ	2005	2013	Organisation
malaysia	2011	2013	Malaysia
public	2012	2013	Public sector
unit	2006	2012	United Kingdom
kingdom	2006	2012	United Kingdom
environ	2006	2010	Environment
respons	2009	2009	Corporate social responsibility

#### 4. Discussions

This paper provides a first step towards the rationalization of the body of scientific literature around the relationship between the concept of board role and corporate social reporting. Despite the increasing number of studies in the CSR arena, to the best of our knowledge, a bibliometric study on the relationship between the Board and corporate social reporting has so far received little attention among scholars. For this reason, this paper investigates both academic and managerial papers from the Scopus database and performs a Systematic Literature Network Analysis (SLNA) to trace the evolution of Board and corporate social reporting research, the scholarly trend of these two concepts, the emergence of themes, as well as the potential call of scholars' attention to the emerging research lines. Moreover, we present the wider picture of theoretical and practical understanding of CSR chronological development and dynamism by identifying the major trends as well as a plausible future research agenda.

Methodologically, the SLNA approach was used to systematise the research findings more chronologically, specifically regarding the relationship between Board and corporate social reporting. Our results show increasing interest in corporate governance, CEO duality, ESG, and gender diversity linked to corporate social reporting in recent years. However, the main trend identified in the last two decades is the association between the composition and general characteristics of the Board of directors, and the quantity and quality of sustainability (environmental and social) information provided in the annual reports. This main research stream was extracted by performing each analysis of the SLNA (i.e., MP, GCS, clusters of authors keywords, burst detection analyses).

Going through the flow of knowledge detected via the MP papers extractions, the results mainly show that shareholders are well served by the voluntary accounting procedures adopted by directors and corporate managers (Benston, 1982). Moreover, the factors influencing information disclosed to the capital markets are also under investigation. The socio-economic paradigm is considered helpful in analysing managers' selection of accounting practices (Mangos and Lewis, 1995). Neu et al. (1998) attempted to answer some questions as to why environmental information is disclosed in annual reports, who the audience is, and the effects of disclosing such information. While they provided a better understanding of the effect of external pressure on environmental disclosures; the characteristics of environmental disclosure vis-a-vis other "social" disclosures; and the association between environmental disclosures and actual performance, they also highlighted the need of additional research to examine the micro-legitimation strategies applied within these disclosures. Some authors found a positive relationship between the composition and characteristics of Board of directors and corporate social disclosure and that a greater number of female directors does not necessarily lead to more ethical companies (Haniffa & Cooke's, 2005; Rodriguez-Dominguez et al., 2009). However, it seems that the Boards of Directors are still too focused on the traditional responsibility to create economic value instead of dealing with the concept of social responsibility (Prado-Lorenzo and Garcia-Sanchez, 2010).

The most important factors in the integrated dissemination of information emerged to be the growth of opportunities, the size of the company, the management bodies as well as gender diversity. Regarding the latest factor, female members seem to be more likely to promote environmental disclosure and CSR reporting (Frias-Aceituno et al., 2013; Ben-amar et al., 2017) and also companies with more independent directors or an environmental committee are more interested in stakeholder engagement, environmental preservation, and community well-being and therefore perform with higher ecological transparency (Liao et al., 2015; Ortas et al., 2017). This is particularly true in countries adopting civil law; however, differences emerge according to different market conditions (Ortas et al., 2017).

Cerbioni and Parbonetti (2007) extended the previous researches by considering the board structure, the proportion of independent directors, the board dimensions, and CEO duality in relation to intellectual capital voluntary disclosure. The results show that these governance variables can significantly influence the amount of information being disclosed by companies. Samaha et al. (2015) also concluded that board size, board composition, and audit committee are positively linked to voluntary disclosure while CEO duality is not. Later authors have stressed the necessity to go beyond the traditional distinction between insider and independent director to investigate each director's characteristics on the board thoroughly (Michelon and Parbonetti, 2012). Therefore, later studies have investigated the association between the diversity of the Board of directors (in terms of gender, CSR committees, board average, and independent directors) and environmental, social, and governance disclosure of companies in different contexts (e.g., Italy, China) (Elmagrhi et al., 2019; Cucari et al., 2018). Furthermore, the industry concentration is found to negatively affect developing a more pluralist report that considers stakeholders, sustainability issues, business ethics, transparency, and responsible investments simultaneously (Frias-Aceituno et al., 2014). Corporate governance attributes also emerged to promote organisational legitimacy through CSR disclosures (Khan et al., 2013).

In terms of quality of the disclosed information, the analyses have shown that CSR-oriented directors and effective board CSR strategy do not have a significant positive impact on the number of environmental sustainability disclosures but rather on the quality (Helfaya and Moussa, 2017; Elmagrhi et al., 2019). The most recent works mainly consider the case of information disclosure in managerial discretion and how the company manages the stakeholders' relationships. Respectively, the findings showed that managers have fewer incentives to disclose an integrated report in contexts where managerial discretion is greater. They contributed to the literature by concentrating on how managers less focused on discretionary strategies can achieve a significant level of transparency in voluntary integrated reporting. Ultimately, they contributed to the resource-dependency theory by supporting the assertion that the disclosure strategy is influenced by the external environment in which it operates (García-Sánchez et al., 2019). Finally, scholars have shown how the CSR/sustainability practices of the Board and the disclosure of CSR-related non-financial information affect the legitimacy and accountability of the firms and represent ways to manage the company's relationships with its stakeholders (Helfaya and Moussa, 2017; García-Sánchez et al., 2020). The CGS analysis revealed that scholars are drawing attention mainly to: how and why firms strategically respond to government signals on appropriate corporate activity (Marquis and Qian, 2014); the quality content of voluntary environmental disclosure (Brammer and Pavelin, 2008); the modern disconnection between sustainability reporting practice and the urgent issue of supporting the ecological system on which humans depend (Milne and Gray, 2013).

Finally, it is confirmed the strong interest in the association between culture, corporate governance (i.e., measured by board composition, type of shareholder and multiple directorships) and CSR disclosure (Haniffa & Cooke, 2005). The co-occurrence analysis of authors keywords has revealed five major clusters, where the typology of each cluster mainly focuses on 1) the influencing factors of social disclosure, 2) assurance practices and CSR reporting, 3) integrated reporting and sustainability reporting, 4) the relationship between intellectual capital disclosure and corporate governance, and 5) the relevant theories. The Burst detection analysis was used to identify the sequence of recently emerging topics in the literature, that grow in intensity, and then disappear (Strozzi et al., 2017). The analysis revealed that the three important emerging topics are 'CEO,' 'Environmental, social, governance (ESG)', and gender diversity. These findings resulted also from the previous analyses, constituting an important confirmation of these emerging trends in the field.

In sum, the purpose of this section is to highlight the overview of MP, GCS, clusters of authors keywords and burst detection analyses. It is also worth noting that each word as indicated in the cluster group and burst analysis is not discussed in-depth in our discussion, as we are more concerned with the main pattern shown by the literature. A more comprehensive discussion and further synthesis of the related literature would undoubtedly result in a richer and more holistic understanding of the Board and corporate social reporting studies.

## **5. Conclusions, Limitations, and Future Research**

Our study contributes to the advancement of literature in several ways. First, it presents a new approach to systematic literature review studies by utilizing the citation analysis and shows a more comprehensive method by considering primary research studies on the role of board members and corporate social reporting literature in the CSR arena. Second, we provide the classification and labels for the clustered papers and generate the typology of cluster groups, therefore encouraging the theoretical and practical establishment of CSR research. Third, our study deliberately highlights the prominent research in the Scopus database with a relatively long period of dataset collection, which not only presents the evolution of the process of Board and CSR reporting studies but also reflects the high impact and important works in the investigated fields. Fourth, our cluster analysis shows five major groups of Board and CSR typological groups studies, which indicates the main research streams within the academic studies. Finally, the implementation of the SLNA approach illustrates a replicable and effective method to study the relevant topics in the CSR arena.

With respect to the limitations of the study, the more obvious caveat relates to our concern that it focuses more on targeting the leading academic journals covered in the Scopus database. Given that, we do acknowledge that our bibliographical dataset may not adequately capture all the developments in the fields of Board and CSR studies. We also included some inputs from leading managerial practice journals as these journals mainly provide the solutions and address specific managerial-related problems in the field. Given the combination of academic and managerial practice journals, our review reveals that while on the one hand, scholars are progressing with the empirical investigation of the board-CSR nexus, on the other hand, they are paying less attention to and investigation of the managerial perspective. For this reason, even though the number of managerial practice papers is less adequately highlighted in the SLNA approach, we believe that having the combination of leading academic and managerial practice journals might outweigh our limitation. The last limitation relates to the methodological approach. Our study highlights the rising interest in the investigation of the relationship between Board and CSR. However, the analysed papers were mostly provided from empirical (quantitative) investigation, and very few are from exploratory research. As a result, there is a potential for researching the extent of board role and CSR using qualitative or triangulation design.

We ultimately suggest future research avenues that have emerged from our analyses. During recent years, the analysis of the Main Path has shown an increasing interest in the integration of both financial and non-financial information to represent the business holistically. This need has led to the development of integrated reporting, which shows the interconnections between the business areas (Vitolla et al., 2020). Implications for practice from the published literature in the field are notably progressive across time, topics, geographical settings, and research

methods. In several studies, the integrated reporting variable has been measured as a dummy variable which takes value 1 when firms disclose this report and value zero otherwise (Frias-Aceituno et al., 2013a; García-Sánchez et al., 2019) with low attention to integrated reporting quality (Pistono et al., 2018). However, future studies could consider alternative and complementary measures that consider not just the quantity of information disclosed, but also the quality and its positive impacts. This could be achieved with direct collaboration with practitioners to better understand how to evaluate the quality of integrated reports. Furthermore, scholars are invited to conduct analyses that include samples with firms from different countries and with additional institutional values to improve the representativeness of the results. Gender diversity has also emerged as a new exciting research line and how this impacts the quality of CSR reporting (Amorelli & García-Sánchez, 2020). However, other attributes of the boards should also be considered so as to better understand the role of gender in this relationship. From the GCS analysis, the need has emerged to better understand why and how firms should transit from low sustainable practices to high sustainable ones. As suggested by Eccles et al. (2014), starting from the conceptual model developed by Zollo & Winter (2002), future research might investigate how the mechanisms of organisational learning develop those dynamic capabilities (Teece et al., 1997) necessary to overcome cognitive inertia to adopt sustainable business models. Finally, the increasing interest in the quality of environmental information is encouraging future research to investigate with longitudinal studies how firms are disclosing their non-financial information over time to resolve the issue concerning causality.

## Appendix

*Table 5 List of Main Path papers*

<b>Authors</b>	<b>Title</b>	<b>Year</b>	<b>Source title</b>	<b>N. of citations</b>
Benston G.J.	Accounting and corporate accountability	1982	Accounting, Organisations and Society	96
Mangos N.C., Lewis N.R.	A socio-economic paradigm for analysing managers' accounting choice behaviour	1995	Accounting, Auditing & Accountability Journal	16
Neu D., Warsame H., Pedwell K.	Managing Public Impressions: Environmental Disclosures in Annual Reports	1998	Accounting, Organisations and Society	813
Haniffa R.M., Cooke T.E.	The impact of culture and governance on corporate social reporting	2005	Journal of Accounting and Public Policy	590
Rodriguez-Dominguez L., Gallego-Alvarez I., Garcia-Sanchez I.M.	Corporate governance and codes of ethics	2009	Journal of Business Ethics	57
Prado-Lorenzo J.-M., Garcia-Sanchez I.-M.	The Role of the Board of Directors in Disseminating Relevant Information on Greenhouse Gases	2010	Journal of Business Ethics	163

Frias-Aceituno J.V., Rodriguez-Ariza L., Garcia-Sanchez I.M.	The role of the board in the dissemination of integrated corporate social reporting	2013	Corporate Social Responsibility and Environmental Management	176
Frías-Aceituno J.V., Rodríguez-Ariza L., García-Sánchez I.M.	Is integrated reporting determined by a country's legal system? An exploratory study	2013	Journal of Cleaner Production	105
Liao L., Luo L., Tang Q.	Gender diversity, board independence, environmental committee and greenhouse gas disclosure	2015	British Accounting Review	191
Ortas E., Álvarez I., Zubeltzu E.	Firms' board independence and corporate social performance: A meta-analysis	2017	Sustainability (Switzerland)	8
Cerbioni F., Parbonetti A.	Exploring the effects of corporate governance on intellectual capital disclosure: An analysis of European biotechnology companies	2007	European Accounting Review	183
Michelon G., Parbonetti A.	The effect of corporate governance on sustainability disclosure	2012	Journal of Management and Governance	197
Ntim C.G., Soobaroyen T.	Corporate governance and performance in socially responsible corporations: New empirical insights from a neo-institutional framework	2013	Corporate Governance: An International Review	117
Khan A., Muttakin M.B., Siddiqui J.	Corporate Governance and Corporate Social Responsibility Disclosures: Evidence from an Emerging Economy	2013	Journal of Business Ethics	255
Samaha K., Khlif H., Hussainey K.	The impact of board and audit committee characteristics on voluntary disclosure: A meta-analysis	2015	Journal of International Accounting, Auditing and Taxation	46
Ben-Amar W., Chang M., McIlkenny P.	Board Gender Diversity and Corporate Response to Sustainability Initiatives: Evidence from the Carbon Disclosure Project	2017	Journal of Business Ethics	74
Helfaya A., Moussa T.	Do Board's Corporate Social Responsibility Strategy and Orientation Influence Environmental Sustainability Disclosure? UK Evidence	2017	Business Strategy and the Environment	41
Cucari N., Esposito De Falco S., Orlando B.	Diversity of Board of Directors and Environmental Social Governance: Evidence from Italian Listed Companies	2018	Corporate Social Responsibility and Environmental Management	35

García-Sánchez I.-M., Martínez-Ferrero J., Garcia-Benau M.-A.	Integrated reporting: The mediating role of the board of directors and investor protection on managerial discretion in munificent environments	2019	Corporate Social Responsibility and Environmental Management	10
García-Sánchez I.-M., Aibar-Guzmán B., Aibar-Guzmán C., Rodríguez-Ariza L.	“Sell” recommendations by analysts in response to business communication strategies concerning the Sustainable Development Goals and the SDG compass	2020	Journal of Cleaner Production	
Amorelli M.-F., García-Sánchez I.-M.	Critical mass of female directors, human capital, and stakeholder engagement by corporate social reporting	2020	Corporate Social Responsibility and Environmental Management	5

Table 6. Clusters of Author’s keywords using VOSviewer MP papers

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7	Cluster 8	Cluster 9	Cluster 10	Cluster 11
Corporate sustainability	Background	Board composition	Analysts? Recommendations	Audit committee	Boards of directors	Corporate social reporting	Corporate financial performance	Business ethics	Diversity	Bangladesh
Cultural systems	Board of directors	Climate change	Corporate social responsibility	Board characteristics	Disclosure	Culture	Corporate governance	Codes of ethics	Esg	Legitimacy theory
Disclosure practices	Corporate social responsibility disclosure	Community influential	Institutional logic	Board independence	Economic theories	Malaysia	Neo-institutional theory			
Financial statements	Critical mass	Gender diversity	Sdg compass	Corporate social performance	Institutional macro-context	Stakeholders				
Integrated reporting	Experience	Greenhouse gas emissions	Sustainability reporting	Meta-analysis	Socio-political theories	Sustainable development				
Investor Protection	Female directors	Organisational legitimacy	Sustainable development goals	Voluntary disclosure						
Managerial Discretion Munificence	Skills	Sustainability disclosure								

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