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Article

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Board of directors and business transformation: a bibliometric analysis

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Abstract

Purpose – This paper aims to analyze the thematic content of research addressing the relation between board of directors (BoD) and business transformation (BT) to obtain better understanding of status and to derive future areas of study.

Design/methodology/approach – This paper reviews literature through a bibliometric analysis based on co-occurrence of articles published in Web of Science Core Collection™ (WoS) between 1990 and 2022, identifying key concepts, setting network of relations and identifying the strategic importance of clusters of concepts. Findings and implications are discussed, future lines of research are presented and limitations are noted.

Findings – Thematic research on boards addressing transformation shifted from the analysis of individuals' traits to an organizational approach with majority of research centered on the role of boards under different theories and the consequences of strategic changes on firm's performance. Further research is around gender diversity, sustainability and the moderating role of ownership structure and business culture.

Research limitations/implications – Some limitations are also noted. This analysis considered articles indexed by WoS for Q1+Q2 publications as source of literature, while including others such as Scopus would increase knowledge base. Also, to identify main streams of research, the authors considered keywords with cumulative occurrence spanning from 30% to 40% while increasing this percentage would add terms that might improve precision to the connections among keywords. Other techniques could have been used such as co-citation or bibliographic coupling, although the authors find these as better suited to investigate the basic structure behind the foundational knowledge of the topic while the authors' intention was to understand the positioning of study fields regarding the degree of research progress.

Practical implications – This paper presents some practical implications for future researchers. Those who wish to leverage previous evidence to address new research questions might look into principal themes covering BoD dynamics and composition to exert CG, and the relation between strategic decisions and performance measured by different variables. Those who wish to position their research as new findings to shed light on dilemmas, might find opportunities in the fields of climate change-sustainability, R&D for growth and innovation under the perspective of intangible assets.

Originality/value – This paper, is the first to the best of the authors' knowledge, to identify research clusters for the intersection of boards and transformation and to determine their stage of development.

Keywords Board-of-directors, Corporate-governance, Transformation, Bibliometric-analysis

Paper type Research paper

1. Introduction

Business transformation (BT), although traditionally present in corporate debates and academic research, gained exponential attention since 2015, when the UN published the Sustainable Development Goals (SDGs) 2030, a framework for sustainable development of economies and societies. In this environment, the role of business is key (Mio *et al.*, 2020) with



JEL Classification — G3, G34

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board of directors (BoD) facing great complexity as strategic decision makers leading BT toward sustainable development models.

The economic consequences of Covid-19 pandemic led organizations to rethink their business models, and different authors share that companies need to go through some sort of transformation either to return to previous situation or to adapt to new scenarios (Carracedo *et al.*, 2021; Seetharaman, 2020; Yeganeh, 2021) as a consequence of an accelerated digitalization (Amankwah-Amoah *et al.*, 2021), alternative management systems (Dwivedi *et al.*, 2020) or opportunities derived from new ways of consuming products, the need to learn new skills and the agility of some organizations to adapt to uncertainty (Belitski *et al.*, 2022).

Since organizations will adopt transformation strategies, it is relevant to understand how BoDs relate to BT, given accountability of boards in strategy formulation. This accountability can be approached both from an institutional perspective and from the different theories that explain the role BoDs play in corporate life.

Different institutions turned their attention to BoD as the main body to exercise corporate governance (CG) starting in 1992 with the Cadbury Report. The UK CG Code 2018 [1], Section 1, principle B states that *“the board should establish the company’s purpose, values and strategy, and satisfy itself that these and its culture are aligned”*, and the EU Commission Green Paper dated April 5th 2011, concluded that *“high performing, effective boards are needed to challenge executive management. This means that boards need non-executive members with diverse views, skills and appropriate professional experience. Such members must also be willing to invest sufficient time in the work of the board”* [2]. In 2012, The Institute Risk Management (www.theirm.org) stated that BoDs are to determine what risks and to what extent they should be assumed, and specifically mentions “changes” within the responsibilities to monitor by directors. Also, OECD Principles of CG state that boards are responsible for strategic guidance, proving that it is up to BoD to undertake an active role regarding BT. Furthermore, in some countries such as in Spain, this has become a legal requirement when the Spanish Capital Company Law (2010), rules in article 249-bis that *“board of directors will not delegate under any circumstances . . . The formulation of general rules and strategies of the company”*. Therefore, it is up to directors to decide and lead BT.

Traditional CG theories help to understand the engagement of BoD in BT strategic decisions, namely agency, resource dependency (RDT), and stewardship theories. The agency theory explains the relation between firm’s ownership (the principal) and management (the agent) in terms of the first engaging the latter to perform a service in their name (Fama and Jensen, 1983; Jensen *et al.*, 1976). Since there is a risk that management might pursue different goals from those of ownership by behaving in self-interest at the owners’ cost (Ferkins *et al.*, 2005), BoD would play a control role with management focusing on strategy execution while BoD focuses on strategy formulation, and both working in close collaboration when significant changes to strategy are favored by BoD (Hendry *et al.*, 2010).

On the contrary, the stewardship theory sees managers (“stewards”) acting in full defense of owners’ interests because there is no collision of interests between the two groups and, therefore, resources entrusted to managers are well managed (Donaldson, 1990; Donaldson and Davis, 1991). These authors argue that inside directors are in a better position to make optimal decisions than outside directors given their superior knowledge of internal practices and therefore, BoDs play a service role by encouraging managers to do their best, including strategy formulation and execution (Pugliese *et al.*, 2009). Under this perspective, BoD role in BT would be to facilitate strategic achievements pursued by management.

RDT sees BoD providing access to resources needed by firms and the ability of directors to generate connections between the firm and its environment (Pfeffer and Salancik, 1978). These authors state that board members also minimize the dependencies between firms and environment leveraging four types of resources brought by directors to companies: (1) advice and counseling; (2) access to channels of information; (3) preferential access to physical

resources; and (4) legitimacy. These contributions are essential to define and to lead BT leveraging external experiences offered by outside directors (Pfeffer and Salancik, 1978), whose social ties to other diverse business contexts would enhance BoD role in relatively unstable environments frequently seen in BT (Carpenter and Westphal, 2001). One of these resources would be recognition, and in this line, Díez-Martín *et al.* (2021) suggest that an organization achieves legitimacy when (among others) it is driven by a particular mission, led by prestigious leaders or it is linked to high prestigious entities with all this disseminated by media (Díez-Martín *et al.*, 2021). Therefore, when BoDs preserve owners' mission (agency theory), nominate and support adequate firm's officials (stewardship theory) and cooperate in generating ties with other organizations (RDT), they not only build legitimacy but lay grounds to change and transformation.

Other perspectives challenge traditional theories and offer complementary views on BoD's role. The managerial hegemony theory supports the idea of BoD as *de jure* corporate government with legal but not real power which resides on management, a *de facto* corporate government. This would imply that BoD are in the hands of management and therefore, BT would entirely be the consequence of managerial decisions (Stiles, 2001). Other authors move away from formal theories to present BoD as a group of individuals that gather, process and share information under a jungle of barriers that compromise either an effective monitoring role or a service role (Boivie *et al.*, 2016).

On the other hand, different authors believe that BoD's full potential is achieved when they play different roles (Macus, 2008), that there is little theoretical consensus regarding the contribution of BoD to strategizing (Pugliese *et al.*, 2009), that the effectiveness of a BoD depends as much on the individual traits of its members as on the dynamics generated within BoD (Barroso *et al.*, 2011), and that BoD added value is originated when board plays a combined role consistent with both the stewardship theory and RDT (Arzubiaga *et al.*, 2018).

Regarding how BoDs address BT gets complicated due to other factors. Transformation is a risky endeavor with high levels of failure due to misalignments among organizational values, individual values and change initiatives (Burnes and Jackson, 2011), the lack of a holistic approach that integrates all factors at play (Errida and Lotfi, 2021), the risk aversion by owners and managers (Asensio-López *et al.*, 2019) or the absence of a change process that leverages change drivers (Whelan-Berry and Somerville, 2010). For the latter, the first vital step to initiate change is the acceptance of a vision at individual level by both employees and stakeholders, and some authors emphasize the need of collaboration between BoD and CEO to foster a share vision (Miles and Watkins, 2007). Additionally, Goldstrom (2019) highlights ten reasons explaining transformations failures including poor tracking of initiatives, which resembles the monitoring role of BoD.

For some authors, successful transformations depend on well positioned leaders within organizations, that go beyond the norm, requiring a proactive move by companies to install the right managers in leading positions and empower them (Walls *et al.*, 2021). Whether empowerment is a resource to be leveraged under RDT or a means to support adequate managers under the stewardship theory, BoD would have much to say in successful BT. Also de Waal (2018) reviews literature on factors for successful transformations, concluding that the low matching between theoretical and practical factors might explain the reason for high failure in transformation interventions (de Waal, 2018). This author highlights eight theoretical and practical factors that are present in successful transformations with six of them clearly associated to managerial domains, and two factors (connected company; high performance partnerships) potentially leveraged by BoD under RDT in the form of adequate networking.

Generally, this framework provides the basis to understand the balance of power among individuals, the relevance of personal characteristics in BoD effectiveness and the contribution of BoD to organizational legitimacy. However, some authors ask for a holistic model that helps boards and managers to prepare organizations for the future in view of megatrends-

disruptors that imply changes (de Waal and Linthorst, 2020), for further research on how BoD leadership relates to diversity, CSR and innovation (Zheng and Kouwenberg, 2019) and on how the sequence CG-strategy decisions-performance better explains the true relationship between CG mechanisms and sustainable results (Medina-Salgado *et al.*, 2020). Our intention is to address these calls by analyzing the intersection between BoD and BT.

Given that literature surrounding this topic is vast, we decided to use bibliometric techniques to understand the themes that shape the content, as suggested by previous authors that leverage this approach to obtain large amounts of keywords as data from incumbent papers (Kumar *et al.*, 2022) to analyze the output obtained from broad and large data sets and summarize the intellectual framework behind a topic (Donthu *et al.*, 2021; Garfield *et al.*, 2006; Vošner *et al.*, 2017). Therefore, the aim of our work is to: (1) obtain an overview of this field of study, (2) identify and understand the themes that give content to the relation between BoD and BT and (3) derive future lines of analysis. To do so, we will focus on three research questions:

RQ1. who are top authors covering BoD and BT?

RQ2. which areas were previously analyzed?

RQ3. which of those areas constitute developed areas of study and which offer opportunities for further research?

The content of this work can be used in different ways. Prospective researchers on the topic will quickly identify key authors when searching for references (*RQ1*), will understand the pillar themes that constitute the intellectual basis for this topic (*RQ2*) and will be able to position their research contributions either as validation of a well-covered area or as a breakthrough to an undeveloped area. Also, practitioners and professionals can gain access to experts in the field for further consultation (*RQ1*), understand the theory behind the practical issues they face in corporate life (*RQ2*), and identify where to look for validated solutions in areas already analyzed (*RQ3*). We believe that in fulfilling the above, a starting point is initiated to be complemented with further studies that would yield theoretical contributions (Mukherjee *et al.*, 2022).

The structure of this work is as follows: Section 2 summarizes methodology, Section 3 presents the output of our analysis, Section 4 discusses findings and Section 5 contains our conclusions, future lines of research and limitations.

2. Methodology

Our methodology is based on two categories of techniques: performance analysis, to highlight most influential authors, and science mapping, to uncover areas of knowledge. To answer *RQ1*, authors' performance is evaluated according to productivity and impact (Donthu *et al.*, 2021). Additionally, we have analyzed most influential articles measured as citations per year to understand most relevant contributions around BoD and BT.

The content of science mapping will be a co-word analysis, a technique that enables to uncover relations among keywords that converge into compact clusters sharing a common theme of analysis, facilitating answers to *RQ2* and *RQ3* (Escamilla-Fajardo *et al.*, 2020; Martín-Peña *et al.*, 2017; Mukherjee *et al.*, 2022). We have discarded other techniques, namely bibliographic coupling, co-citation, and co-authorships, because we believe these are more suited to understand the institutional background of the topic or to uncover social relations among incumbents, while our interest rests upon unveiling themes built up by keywords as components (Paule-Vianez *et al.*, 2020).

2.1 Search protocol

The data used in this analysis was retrieved from WoS indexed in the database of Social Science Citation Index. We preferred WoS over SCOPUS since WoS started to collect

scientific papers in 1900 while Scopus started in 1966 (Paule-Vianez *et al.*, 2020) although supremacy of one database over the other is difficult to assert (Aghaei Chadegani *et al.*, 2013).

In order to capture all relevant papers dealing with the topic, we built a search string that included the different meanings to address transformation found in the fields of business and management, with the final string being (“board” OR “boards”) AND (“transformation” OR “restructuring” OR “change” OR “innovation” OR “business development” OR “renewal”).

The search was completed on December 23rd, 2022 covering the period between January 1st, 1990, and December 23rd, 2022, a 32-year interval that is considered adequate, since it constitutes an important segment of time that has witnessed the stages of growth and maturity of an academic discipline. Other filters that we applied include area of study (business, management, finance, economics and marketing), type of documents (articles, review articles) and source (220 publications rated Q1 or Q2 by Journal Citation Report). As a result, we obtained 1,023 articles upon which we conducted the process of analysis.

2.2 Analysis process

Given the techniques behind our methodology, we draw our analysis on authors and keywords from the 1,023 articles obtained in our filtered search.

Authors were ranked and assessed according to publications as a measure for productivity, and citations as a measure of impact. Although citations do not tell us all, it is an objective indicator of relevance (Bornmann and Leydesdorff, 2013). Citations per publications and h-index were also considered as combined measures of productivity and impact (Donthu *et al.*, 2021).

For keywords analysis, we considered both author’s and KeyWords plus® (those generated automatically by WoS based on article’s title) retrieving 10,553 keywords. Further deduplication left 4,634 unique items (Cobo *et al.*, 2011), focusing our study on those terms achieving a significant rate of occurrence, being 42 in 1990–2007 with more than four times (39.2% of cumulative occurrence) and 65 in 2008–2022 with more than nineteen times (31.9% of cumulative occurrence).

In order to identify relations among top keywords, we formed a co-word matrix using Bibexcel™, a piece of software designed to assist bibliographic data analysis. Then, groups of related keywords and networks were identified using Ucinet™ software. We favored this last tool over others (namely VOSviewer) because it facilitates co-occurrence matrix formation and enables data processing for further analysis through strategic graphs (Cobo *et al.*, 2011). Ucinet™ enables analysis of social networks, with degree of closeness as a key indicator of a node’s contribution to the network, so the greater this degree, the greater the keyword’s importance in the network. This helps categorize keywords as central (those shaping the network due to their strength and position), semi-peripheric and peripheric (those poorly linked within the network), depending on their location in the network of relations (Callon *et al.*, 1991; Diaz-Garrido *et al.*, 2018).

Given our aim to understand the composition and relevance of themes around the intersection of BoD and BT, most cited keywords were clustered, and their importance classified in strategic graphs according to the technique introduced by Callon *et al.* (1991). Each cluster represents a theme characterized by a pair of data (centrality; density) with centrality measuring the intensity of its links to other clusters in the network (the higher the centrality, the more connected to other fields of study) and density measuring the inner strength of the links that tie the words within the cluster (the higher the density, the more developed is the research). The sum of centrality and density generates an Equivalence-Index (E-I) with the higher this E-I, the greater the strategic importance of a cluster in a network (Callon *et al.*, 1991; Cobo *et al.*, 2011). Plotting the pair of data centrality-density in a XY graph, we obtain four categories of themes with distinctive meaning for each one (Table 1).

Isolated themes

Unconnected and developed themes. Here, we usually find themes with strong internal connections (high density) but poorly connected to other themes (low centrality), which would be the case of once principal themes and now of marginal relevance

Dilemma themes

Peripheral and undeveloped themes. Here, we find declining themes with low interest to researchers mixed up with emerging themes still to develop and showing little connection to other areas of study

Source(s): Table by authors

Principal themes

Interconnected and developed themes show high density (robust and internally coherent) and high centrality (highly related to others). These themes have concentrated the core of the research efforts and are essential to the topic at study

Secondary themes

Interconnected but undeveloped themes, show low density but high centrality. Themes in this quadrant are mentioned in numerous papers but research is in a basic stage given weak inner connections

Table 1.
Categories of Themes
in Strategic Graph

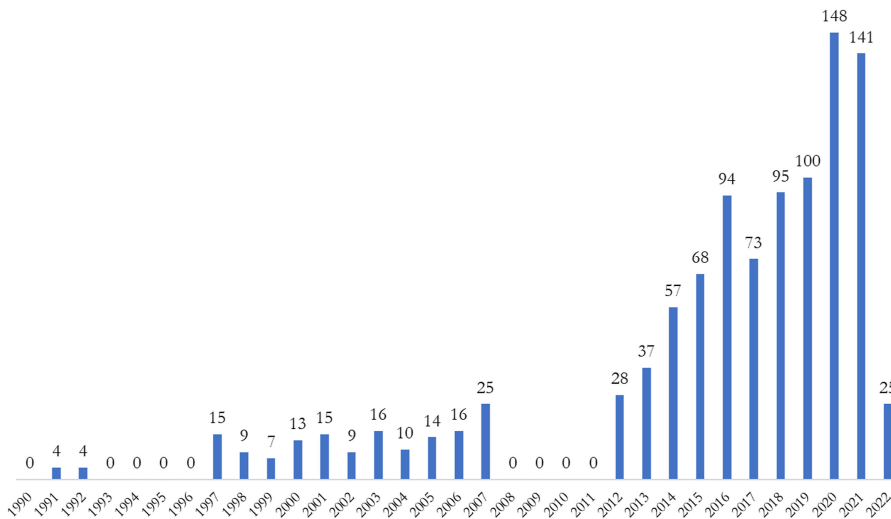
3. Results

Although our initial intention was to analyze the entire period 1990–2022, results suggested that there might be two patterns of research (Figure 1). We decided to approach the study in two subperiods (1990–2007; 2008–2022) in order to detect changes in research patterns if they had occurred.

3.1 Performance analysis

Production around the topic has increased in recent years with 85.7% of articles concentrated in 2008–2022, revealing a growing interest by researchers on the topic.

A total of 323 authors published during 1990–2007 with only seven producing more than two articles. Most productive author is James D Westphal with five articles on the interrelations between directors and CEO and how these two influence each other at boards for large US corporations. However, most influential authors are Robert E. Hoskisson (largest h-index) and Richard A. Johnson (largest citations) (Table 2), who co-authored two papers on



Source(s): Figure by authors

Figure 1.
Publications per year,
1990–2022

the roles of institutional investors and BoD in relation to international diversification, and the preference for either internal or external innovation of different types of institutional investors and directors' profiles.

The subperiod 2008–2022 sees 2,256 authors with 26 of them publishing more than two papers and two authors to highlight: Isabel M. Garcia Sánchez as the most productive with eight papers on board independency issues, and Alfredo de Massis as the most influential with highest citations and h-index (Table 3), who researches on BoD involvement in innovation at small and medium sized enterprises (SMSE).

Most of cited articles during 1990–2007 (Table 4) focus on government intervention in Chinese privatized companies (Fan *et al.*, 2007), the impact of different institutional ownership on corporate social performance (Johnson and Greening, 1999), the distinctive preferences for different types of innovation by inside and outside directors (Hillman *et al.*, 2000), the bias for different type of R&D funding by directors (Hoskisson *et al.*, 2002) and the impact of tensions among management and boards on not fulfilling stock repurchasing programs widely announced during the 90s (Westphal and Zajac, 2001).

The subperiod 2008–2022 sees a growing attention to societal issues (Table 5), and although they do not address BT directly, they delve into corporate changes related to sustainability (Eccles *et al.*, 2012; Lozano, 2015) environmental aspects (Liao *et al.*, 2015) and diversity at boards (Dezső and Gaddis Ross, 2012).

3.2 Analysis of science mapping

Network of relations among top keywords were created according to their role to the network, using closeness degree (Figures 2, 3).

Core terms (largest red icons) are highly connected to other terms, setting the personality of the network and the research. In 1990–2007, we found concepts relating to different layers of power across the enterprise (ownership; directors; management), the framework of rules to

Table 2.
Authors with highest
number of publications
(>2), 1990–2007

Author	# Articles	Citations	Citations per article	H index	Total publications
Westphal, James D	5	1.133	226,6	41	60
Filaltotchev, Igor	4	466	116,5	45	138
Hoskisson, Robert E	3	862	287,3	53	93
Barker, Vincent L	3	450	150,0	20	42
Johnson, Richard A	3	1.617	539,0	12	62
Hitt, Michael A	3	1.010	336,7	49	121
Zajac, Edward J	3	912	304,0	17	32
Source(s): Table by authors					

Table 3.
Authors with highest
number of publications
(>4), 2008–2022

Author	# Articles	Citations	Citations per article	H index	Total publications
Garcia Sanchez, IM	8	310	38,7	44	186
Krause, R	6	263	43,8	19	30
De Massis, A	5	405	81,0	48	139
Martinez-Ferrero, J	5	185	37,0	22	52
<i>Co-authored 4 of 5 with Garcia Sanchez, IM</i>					
Withers, MC	5	119	23,8	19	37
Source(s): Table by authors					

Ref	Aim	Key words	Contribution	# Citations per year
Fan <i>et al.</i> (2007)	To examine the role of government intervention in China's newly partially privatized firms	political connections; corporate governance; IPO; performance; partial privatization; China; operating performance; share; market; state	The presence of politically connected CEO's in newly partially privatized in China in the period 1993–2001 reaches 27%. These companies vs. similar companies with non-politically connected CEO's: (a) underperform long-term post-IPO stock returns by –18% with poorer accounting performance; (b) IPO initial (first day) returns are negatively related to the CEO's political connections; (c) boards show fewer professionals than others with more presence of other bureaucrats, less gender and age diversity. In summary, government intervention through politically connected CEO's isn't a driver of shareholder value maximization	72,9
Johnson and Greening (1999)	To examine relationship among types of institutional investors, board composition, top management equity, and specific Corporate Social Performance dimensions	organizational attractiveness; shareholder activism, firm innovation; investors; directors; incentives; boards; environment; intensity; strategy	Certain types of institutional ownership and government mechanisms are positively related to a pair of isolated aspects of corporate social performance such as product quality and people. Pension fund equity relates positively to both dimensions, while mutual and investment banks equity show no relation to those aspects. Outside directors show positive relation while cases where Top Management holds equity has a positive impact on product quality but no effect on people dimension	36,2
Hillman <i>et al.</i> (2000)	To present a taxonomy for classifying directors that reflects the resource dependence role as distinct from the agency role, and to explore the role of resource dependence by examining the changing nature of board composition in the US air line travel industry	performance; governance; top; firm; perspective; management; ownership; turnover; impact; model	A taxonomy of four types of directors (Insiders, Business Experts, Support Specialists and Community Influentials) that reflects the distinctive role that directors play under resource dependence theory as opposite to their role under agency theory perspective. Given an environmental change such as moving from regulation to a deregulation in US air lines sector, boards replacements were more likely to come from the business expert and community influential types, while during regulation board replacements were more likely from the insider and support specialist categories	28,9

(continued)

Table 4.
Top most cited articles
published, 1990–2007

Table 4.

Ref	Aim	Key words	Contribution	# Citations per year
Hoskisson <i>et al. (2002)</i>	To explain how different types of owners often have distinct and potentially conflicting preferences for corporate innovation strategies	R&D; agency costs; diversification strategy; firm; investors; board; management; directors; impact; incentives	Agency theory should be amended to consider that not all owners have the same preferences toward corporate governance and innovation strategies - Institutional pension (public) fund ownership has a stronger positive relationship with internal innovation as well as stronger inside director incentives and ownership, than does professional investment fund manager ownership - Professional investment fund manager ownership has a stronger positive relationship with external innovation through acquisition than does institutional pension (public) fund ownership - Inside board member ownership and incentives are more strongly positively related to internal innovation than is the degree of representation (director ratio and ownership) of independent outside board members - The degree of representation (director ratio and ownership) of independent outside board members is more strongly positively related to external innovation than are inside board member ownership and incentives	24,3
Westphal and Zajac (2001)	To explain the response of firms to answer external pressures to demonstrate corporate control over managerial behavior regarding the implementation of Stock repurchase programs in USA during 80s and 90s	corporate governance; CEO compensation; inter-organizational imitation; golden parachutes; management; adoption; performance; director; firm; embeddedness	The greater the CEO's power over the board, the greater the extent to which firms decouple financial investments from formally adopted repurchase programs, so that the programs remain more symbolic than substantive. Board network ties to firms that have decoupled their buyback programs can increase managers' awareness of the potential to engage in symbolic action (i.e. actual decoupling) vs substantive action (i.e. actual fulfilling formally adopted programs)	18,6
Source(s): Table by authors				

Ref	Aim	Keywords	Contribution	# Citations per year
Eccles <i>et al.</i> (2012)	To understand whether organizations that voluntarily adopt environmental and social policies show distinctive corporate profiles regarding governance structure, financial performance and stakeholder management process	organizational studies, strategy; effectiveness performance; behavior; sustainability; social-responsibility; stakeholder theory; charitable contributions; management; associations; capabilities; issues	Through a sample of 180 US companies, authors prove that companies that pay high attention to social policies and environmental issues in comparison to those who don't, show a distinctive organization profile with ad-hoc governance mechanisms where boards undertake direct responsibility over social and environmental issues, link executive compensation to sustainable objectives, show a longer term time horizon in communications, robust reporting and pay greater attention to non-financial metrics regarding interests for stakeholders (both shareholders and non-shareholders such as employees or suppliers)	68,3
Liao <i>et al.</i> (2015)	To answer whether board composition characteristics is related to voluntary disclosure of greenhouse gas emissions	female director; independent director; environmental committee; GHG disclosure; corporate social-responsibility; voluntary disclosure; institutional ownership; executive-compensation; stakeholder theory; women directors; governance; performance; attitudes; companies	The existence of environmental committees within boards together with a high level of diversity measured as gender diversity and a large number of independent directors favors the disclosing of greenhouse gas emissions which suggests that this board composition might balance different types of goals within organizations and reduce the risk of conflicts among different groups of stakeholders posing different interests	51,0

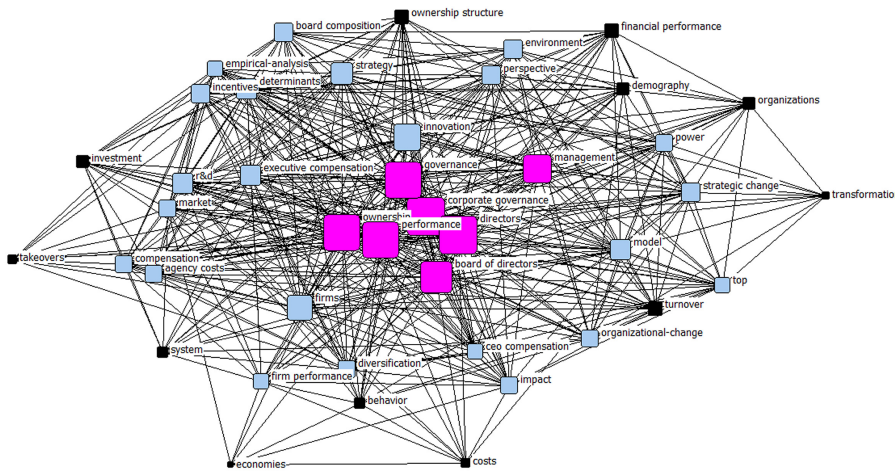
Table 5.
Top most cited articles
published, 2008–2022
(continued)

Ref	Aim	Keywords	Contribution	# Citations per year
Dezső and Gaddis Ross (2012)	To answer whether female representation in top management has a positive effect on firm performance, and, if so, to understand whether the effect is general or confined to particular contexts	Gender; diversity; top management teams; firm performance; innovation; corporate boards; research agenda; competitive advantage; intrinsic motivation; employee creativity; leadership-style; upper echelons; tobin-q; women	Female representation in top management has positive impact on management (information and social diversity; enhanced behavior through management and increased motivation for women at middle management) that would lead to a better firm performance, only to the extent that a firm's strategy is focused on innovation and a high innovation intensity is deployed, measured as the ratio of R&D expenses to assets	43,8
Lozano (2015)	To provide a holistic perspective on the different corporate sustainability drivers in order to drive change toward a more sustainable-oriented state	corporate sustainability; change management; drivers; leadership; leverage; organizational culture	A model for better Corporate Sustainability (CS) adoption based on a larger awareness of the three types of drivers for CS: internal (ethical leadership; business case; company's culture), external (customer demands and expectations; regulation and legislation; society's raising awareness) and connecting drivers (reputation, sustainability reports, access to resources, environmental/social crises, market opportunities; market positioning). Despite deep attention to internal and external, connecting drivers can go unnoticed and limit the change required to adopt CS initiatives	37,1

Table 5. Source(s): Table by authors

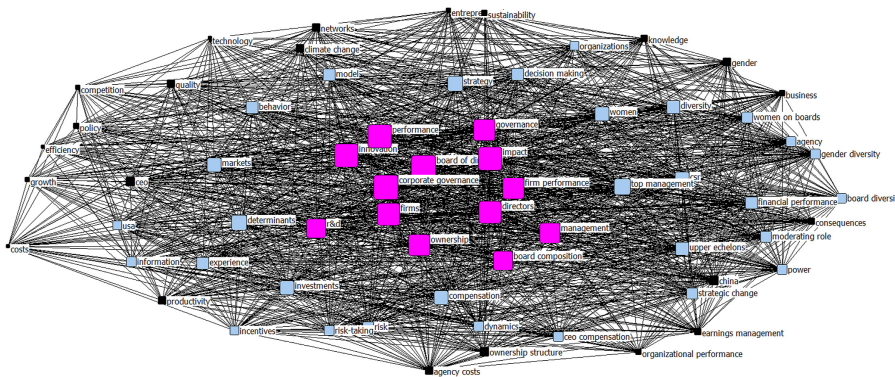
follow (CG) and the impact on business (performance). During 2008–2022, those terms remain central with researchers seeking the connection between those and innovation, R&D, firm performance and board composition.

The rest of most occurring keywords are located either in a semi-peripheral position (medium size blue icons) surrounding the core of the network with average importance, or in a peripheral position (smallest black icons), achieving less occurrence frequency due to either a lower importance for researchers or because they are emerging concepts with analysis still to grow. Table 6 shows for each subperiod, the complete list of top keywords with closeness degree.



Note(s): Red = Core; Blue = Semi-peripheral; Black = Peripheral
Size of nodes = Centrality Degree
Source(s): Figure by authors

Figure 2.
Network of Relations
for Keywords,
1990–2007



Note(s): Red = Core; Blue = Semi-peripheral; Black = Peripheral
Size of nodes = Centrality Degree
Source(s): Figure by authors

Figure 3.
Network of Relations
for Keywords,
2008–2022

These keywords form clusters that enclose thematic areas of research and plotted in a strategic graph where size of the bubble represents relevance as measured by E-I (Figures 4 and 5). Also, keywords characterizing the content of clusters are shown in Tables 7 and 8.

As **principal themes** in 1990–2007: *CG* (set of rules driving changes, investments, takeovers), *BoD* (its relation toward innovation and R&D strategies) and *Directors* (as members in the organization and its relations to top management). In 2008–2022, two principal themes with increased complexity: *CG-BoD* (composition as determinant of board's dynamics and engagement with ownership) and *Firm's Performance* (consequences of decisions by upper echelons on organizations and financial performance).

	First period: 1990 to 2007		Second period: 2008 to 2022	
Central to the Network	corporate governance 93,182		board of directors 100,000	ownership 95,522
	directors 93,182		corporate governance 100,000	firm performance 95,522
	governance 91,111		performance 98,462	governance 95,522
	ownership 91,111		innovation 98,462	management 92,754
	performance 91,111		impact 98,462	board composition 91,429
	board of directors 85,417		directors 96,970	R&D 91,429
	management 82,000		firms, 96,970	
Semi-peripheral	innovation 78,846	agency costs 68,333	top management 86,486	moderating role 79,012
	firms 77,358	compensation 68,333	determinants 85,333	risk 78,049
	strategy 73,214	diversification 68,333	strategy 85,333	strategic change 78,049
	determinants 71,93	impact 68,333	compensation 84,211	women on boards 78,049
	executive 71,93	market 68,333	CSR 84,211	ceo compensation 77,108
	compensation 71,93	organizational-change 67,213	women 84,211	information 77,108
	model 71,93	power 67,213	markets 83,117	agency 77,108
	randd 71,93	CEO compensation 66,129	upper echelons 82,051	power 77,108
	incentives 70,69	empirical analysis 66,129	diversity 82,051	risk-taking 77,108
	board composition 69,492	firm performance 66,129	decision making 81,013	board diversity 77,108
	environment 69,492	top 66,129	financial performance 81,013	gender diversity 77,108
	perspective 69,492		behavior 80,000	dynamics 77,108
			experience 80,000	incentives 76,190
			model 80,000	USA 76,190
Peripheral	ownership structure 65,079		China 75,294	organizations 76,190
	turnover 65,079		ownership structure 75,294	knowledge 72,727
	financial performance 64,063		CEO 75,294	sustainability 71,111
	demography 63,077		climate change 74,419	organizational performance 70,330
	investment 62,121		productivity 74,419	policy 70,330
	organizations 62,121		agency costs 73,563	business 70,330
	behavior 61,194		quality 73,563	competition 69,565
	system 61,194		gender 73,563	entrepreneurship 69,565
	takeovers 58,571		networks 73,563	growth 69,565
	costs 57,746		earnings management 72,727	costs 67,368
	transformation 56,944		consequences 72,727	technology 67,368
	economics 54,667			efficiency 67,368

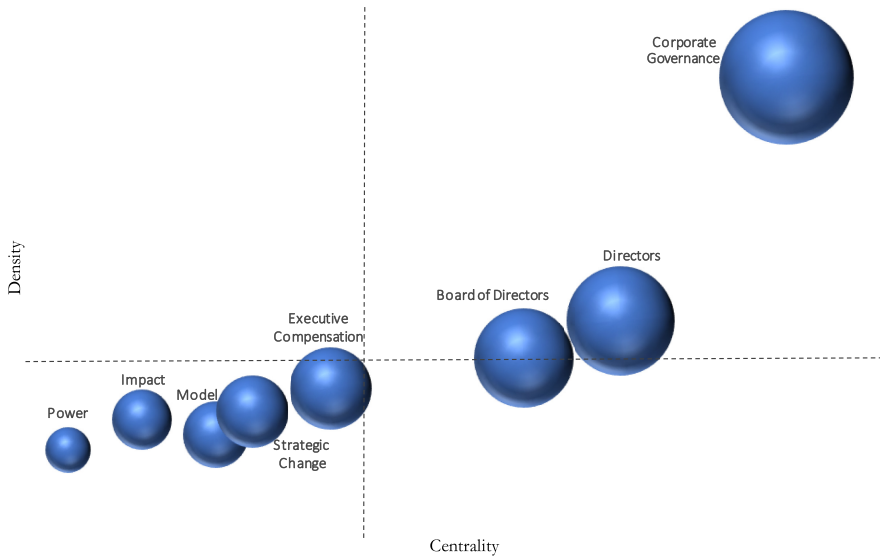
Table 6.

Keywords by period and degree of closeness

Source(s): Table by authors

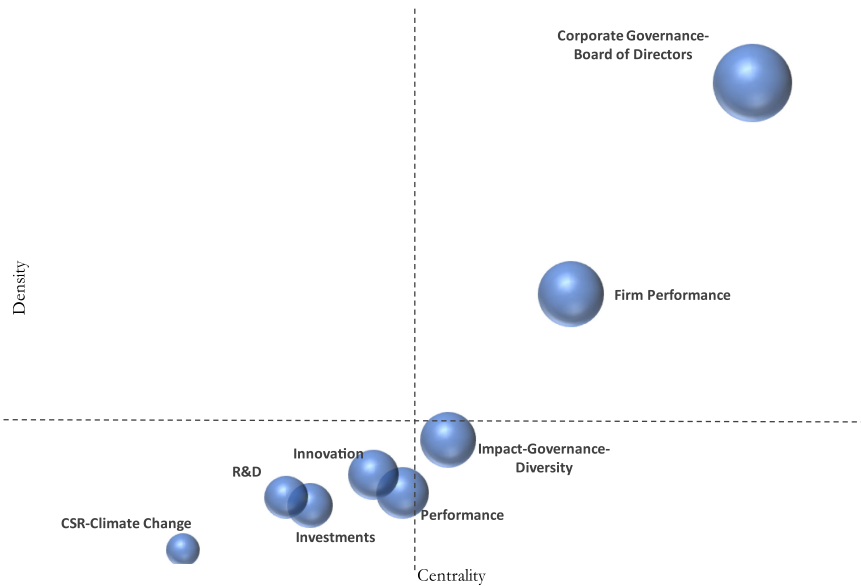
No **secondary themes** were identified in 1900–2007, with one cluster in 2008–2022: *Impact*, dealing with gender diversity at boards and corporate life.

As **dilemma themes**, five clusters in 1990–2007: *Impact* (how individuals’ behavior are reflected on economics), *Executive Compensation* (on management reward schemes), *Model* (business model), *Strategic Change* (changes on organizations and financial performance) and *Power and Transformation*. In 2008–2022 another five clusters with different thematic content: *CSR* (climate change; sustainability); *Performance* (risks affecting business results), *Investments* (coupled with incentives and costs affecting efficiency), *R&D* (technology driving productivity gains), *Innovation* (intangible assets such as knowledge, networks and organizations as source of newness).



Source(s): Figure by authors

Figure 4.
Strategic Graph for
Thematic Clusters in
1990–2007



Source(s): Figure by authors

Figure 5.
Strategic Graph for
Thematic Clusters in
2008–2022

4. Discussion

This analysis shows that principal research themes have grown from more internal-individual aspects to more societal-collective matters. In 1990–2007 the core of the analysis was positioned on internal perspectives of BoD namely the approach of directors as

Table 7.
Thematic Clusters per
Quadrant in 1990–2007

Quadrant: Dilemma Themes
Impact: behavior; costs; economies; impact (68.33)
Executive Compensation: compensation;
executive compensation (71.93); firm performance;
market; system
Model: model (71.93); perspective; turnover
Strategic Change: environment; financial
performance; organizations; strategic change (70.69)
Power: power (67.21); transformation
Source(s): Table by authors

Quadrant: Principal themes
Corporate Governance: Agency costs; board
composition; corporate governance (93.18);
determinants; diversification; firms; governance;
incentives; investments; ownership; takeovers
Board of Directors: Board of directors (85.41);
empirical analysis; innovation; ownership structure;
R&D; strategy
Directors: CEO compensation; demography;
directors (93.18); management; organizational change;
performance; top

Table 8.
Thematic Clusters per
Quadrant in 2008–2022

Quadrant: Dilemma Themes
CSR: climate change; CSR (84.21); sustainability
Performance: behavior; business; firms;
performance (98.46); quality; risk; USA
Investments: costs; efficiency; incentives;
information; investments (84.21); markets
R&D: competition; growth; policy; productivity;
R&D (91.42); technology
Innovation: entrepreneurship; innovation (98.46);
knowledge; model; networks; organizations; strategy
Source(s): Table by authors

Quadrant: Principal Themes
Board of Directors-Corporate Governance:
agency; agency costs; board composition; board of
directors (100); CEO; CEO compensation; China;
compensation; corporate governance (100);
determinants; directors; dynamics; earnings
management; management; ownership; ownership
structure
Firm Performance: consequences; decision
making; experience; financial performance; firm
performance (95.52); moderating role; organizational
performance, power; risk-taking; strategic change; top
management; upper echelons
Quadrant: Secondary Themes
Impact: board diversity; diversity; gender; gender
diversity, governance; impact (98.46); women; women
on boards

individuals toward change (Brunninge *et al.*, 2007; Chatterjee *et al.*, 2003; Le *et al.*, 2006; Luan and Tang, 2007; Westphal and Fredrickson, 2001; Yawson, 2006), while in 2008–2022, the principal themes take a more public perspective focusing research on corporate responses from BoD, as an organizational body, to sustainability risks (Ben-Amar *et al.*, 2017;

Bernile *et al.*, 2018; Buyl *et al.*, 2019; Haque, 2017; Husted and Sousa-Filho, 2019; McGuinness *et al.*, 2017) or to significant alterations on competitive landscape (Karaevli and Zajac, 2013; Oehmichen *et al.*, 2017; Yang and Zhao, 2014). This orientation can also be seen in most cited papers in 2008–2022 with research focusing on group behavior rather than individual traits of directors (Table 5).

All the above implies that principal themes have rather changed than evolved since we cannot consider both thematic clusters being originated under similar cultural frameworks. To identify this, we have conducted consensus analysis (CA), a methodology previously applied to different fields such as cultural diversity within social movements (Borgatti and Halgin, 2011) or climate change (Crona *et al.*, 2013) which helps to identify similarities (consensus) between definitions. Borgatti and Halgin (2011) highlight that this methodology assesses consensus in responses to multiple types of answers, and state that a low consensus would indicate that definitions (i.e. the terms forming clusters) are drawn from different cultures with systematically different beliefs. This methodology evaluates the “agreement” between clusters through a correlation index, with this index above 0,7 when they share a conceptual background. Table 9 shows most strategic theme in 2008–2022 (BoD-CG) sharing low correlation versus any other from previous period, indicating it constitutes a standalone stream of reasoning, and therefore, we can not say that principal themes for both subperiods are the same.

We argue that this change of perspectives goes beyond the theoretical background discussion. Most influential papers when the topic focuses on individual characteristics, show connections to both agency theory (Fan *et al.*, 2007; Hoskisson *et al.*, 2002; Westphal and Zajac, 2001) as well as RDT (Hillman *et al.*, 2000; Johnson and Greening, 1999). This also happens when the perspective turns more organizational, with research connected to both agency theory (Eccles *et al.*, 2014; Liao *et al.*, 2015) and RDT (Dezsö and Ross, 2012; Lozano, 2015).

Regarding the secondary theme (diversity), the analysis of gender diversity at BoD is connected to a broad variety of topics including firm’s innovation performance, response to ESG-CSR challenges, stock volatility, corporate results, consequences of gender quotas, or the quality of accounting. However, as in the case of principal themes, the variable under scrutiny is the “who” (the association between an individual attribute and a performance variable) with deeper research needed regarding the “how” (processes and organizational aspects), namely the deployment of innovation initiatives across organizational structures (Dezsö and Ross, 2012), how gender diversity is moderated by cultural, institutional and legal settings (Husted and Sousa-Filho, 2019; McGuinness *et al.*, 2017) or competitive environment (Bernile *et al.*, 2018), the impact of diversity on processes (Conyon and He, 2017; Haque, 2017) and how gender quotas at BoD is actually translated into a more diverse management (Bertrand *et al.*, 2014) and more accurate financial reporting (García Lara *et al.*, 2017).

A potpourri of theories underlay the roles played by BoD in the above literature including the agency theory (García Lara *et al.*, 2017; Husted and Sousa-Filho, 2019), RDT (Bernile *et al.*, 2018; Bertrand *et al.*, 2014; Dezsö and Ross, 2012), both agency theory and RDT (Haque, 2017) or the integration of theories from other domains such as social psychology and labor economics (Conyon and He, 2017).

Above shows that the themes surrounding BoD and BT enclose a complexity that goes beyond the theoretical roles played by directors at BoD and that the topic should consider both composition features and functioning mechanisms with unclear relations between BoD composition and innovation (Asensio-López *et al.*, 2019).

5. Conclusions, implications and future lines of research

To the best of our knowledge, this paper is the first to identify clusters for research on BoD and BT, to clarify their thematic content and to determine the stage of development for those

Table 9.
Agreement (correlation
index) between
Clusters by period

	Board of directors-corporate governance	2008–2022						
		Firm performance	Impact	CSR	Performance	Investments	R&D	Innovation
1990–2007	Corporate Governance	<0,7	<0,7	<0,7	0,718	<0,7	<0,7	<0,7
	Board of Directors	<0,7	<0,7	0,769	<0,7	0,718	0,769	0,744
	Directors	<0,7	<0,7	0,821	0,795	0,821	0,718	0,744
	Impact	<0,7	<0,7	0,795	0,718	0,744	<0,7	0,718
	Executive Compensation	<0,7	<0,7	0,744	0,718	<0,7	<0,7	<0,7
	Model	<0,7	<0,7	0,846	0,769	0,846	0,744	0,769
	Strategic Change	<0,7	<0,7	0,821	0,744	0,769	0,769	0,744
	Power	<0,7	0,718	0,872	0,795	0,821	0,769	0,795
Source(s): Table by authors								

clusters. Research shows that BoDs are connected to BT, and this is key to achieve high performance organizations. This will help future researchers to position further analysis either as validation of findings or as new contributions to enhance undeveloped themes.

For this purpose, we took stock of 1,023 articles dealing with the topic that have been published between 1990 and 2022 in prestigious publications and unveiled that previous literature is not a uniform body of knowledge. Production splits in two separated subperiods (1990–2007; 2008–2022) with researchers focusing on distinctive themes. Using Bibexcel™, keywords were extracted and using Ucinet™, we plotted graphs to identify themes that have concentrated most of the research efforts (principal themes), those with connections to a broad variety of corporate aspects but with deeper research needed (secondary themes) and those themes with little connections to other fields and undeveloped (dilemma themes).

Regarding the first research question (top authors covering BoD and BT), we focused on the number of articles, citations and h-index to identify most influential authors. In 1990–2007, we found that the most productive author is James D. Westphal for questions about the engagement of CEO and boards, Richard A. Johnson, with highest number of citations per article who would be the author to read for the role of institutional ownership on corporate evolution, and Robert E. Hoskisson, with highest h-index, who focuses on the impact of different types of ownership on CG. In 2012–2021, we found five authors with more than four articles, being authors of reference, Isabel M. Garcia Sánchez (most productive and second highest h-index) for board independency issues, and Alfredo De Massis (highest h-index) for BoD involvement in innovation at SMSE.

To answer the second question (which areas are being analyzed for the link between BoD and BT?), we found that during 1990–2007, the topic caught low interest from researchers, and most of their work concentrated on the balance of inner power within corporations (owners, directors, top management), the body of rules that marked their behavior (CG) and how directors might exercise control over management (compensation, incentives, agency costs and board composition). During 2008–2022, we found that interest on the matter grows exponentially with researchers expanding lines of work beyond core traditional aspects (CG, ownership, BoD and management) and elevating to a central position the consequence of decisions made by stakeholders (performance, impact). Also, new lines of research appear in these years mostly related to diversity (gender diversity) and sustainability (CSR, climate change).

To answer the third research question (which areas constitute well-covered fields of study; which ones are undeveloped), we identified the relevance of themes through their location in strategic graphs, showing two highly structured and well-developed areas that concentrate most of the research efforts in 2008–2022: (1) CG and BoD from the perspective of organizational behavior rather than the sum of individual features; (2) consequences of strategic decisions on firm's performance. We also noted the existence of a secondary theme covering the impact on firms of gender diversity although most of the research concentrates on diversity as an individual trait rather than organizational aspects. The importance of seeing BoD's involvement in BT as a complex structure instead of a mere sum of individuals playing a theoretical role is corroborated by the contributions of most cited articles (Tables 4 and 5) and the fact that we have seen a myriad of different theories simultaneously used to support contributions.

This paper presents some practical implications for future researchers. Those who wish to leverage previous evidence to address new research questions might investigate principal themes covering BoD dynamics and composition to exert CG, and the relation between strategic decisions and performance measured by different variables. Those who wish to position their research as new findings to shed light on dilemmas, might find opportunities in the fields of climate change-sustainability, R&D for growth, and innovation under the perspective of intangible assets (networks, knowledge and entrepreneurship). Also, to highlight gender diversity as an interconnected subject with research to develop around organizational perspectives.

The strategic graph for 2008–2022 (Figure 5) offers uses to derive future lines of research each one building on specific quadrants with distinctive aims (Table 10). The first line would be whether the impact of BoDs on BT depends on corporate culture and ownership structure. Are family-controlled companies with a low number of directors (aligned with ownership) more successful because board composition facilitates agile execution with less discrepancies? Or are highly diversified shareholding companies more successful because diversity in boards facilitate broader answers to transformational challenges? Answering

Strategic aim	Enabler quadrant in strategic graph 2008–2022	Suggested line of research	Research questions	Supporting sources
Validate findings sourced from developed themes, in alternative business context less developed	Principal Theme	Family ownership and BoD culture for BT success	Which ownership structure most facilitates BT government? Family-controlled business with a family aligned BoD or fragmented shareholding companies with diversified directors' profiles?	Chrisman <i>et al.</i> (2004), King <i>et al.</i> (2022), Maseda <i>et al.</i> (2019), Vlasic (2022)
Deepen the content of an interconnected cluster of ideas still with areas to examine	Secondary Theme	Leveraging the beneficial impact of gender diversity in upper echelons by a synchronized increase in female representation both at BoDs and Top Management Team (TMT) rather than separated organizational layers	Do firms achieving high performance results require an organization where diversity shows parallel standards at BoD and at TMT?	Bertrand <i>et al.</i> (2014), de Waal (2018), Dezső and Ross (2012), Maida and Weber (2022), Tampakoudis <i>et al.</i> (2022), Vracheva and Stoyneva (2020)
Expand an undeveloped theme in relation to other areas already researched and to strength inner content	Dilemma Theme	Organizational legitimacy of BoDs as a driver of BT due to sustainability and climate change risks	When BODs lead BT for climate change reasons, does organizational legitimacy act as an enabler or as a must-have? What are the CG attributes profiling companies succeeding at BT? Which of those attributes relate to effectiveness and which ones to legitimacy?	Cachón-Rodríguez <i>et al.</i> (2021), Diez-Martin <i>et al.</i> (2021), Galbreath (2018), Haque (2017), Liao <i>et al.</i> (2015), Orazalin and Mahmood (2021)

Table 10.
Future Lines of
Research

Source(s): Table by authors

this might yield recommendations to family companies on how to integrate strategic approaches, and to multi-owned companies on how to increase agility at governing BT.

A second line will deepen the content of secondary theme (gender diversity) focusing on how to leverage the beneficial impact of an increased female representation both in BoDs and top management teams (TMT). Traditional analyses have covered the impact of gender diversity in isolated domains (either BoDs or TMT) and we could ask whether organizations aiming high performance results require that gender diversity is equally standardized at BoD and TMT.

A third line of research would concentrate on the specific organizational characteristics that profile sustainable corporations and how this is led from BoDs. Analyzing how climate change and sustainability enter board's agenda will explain what triggers BT, and the attributes activated to gain either effectiveness or legitimacy from stakeholders.

Some limitations are also noted. This analysis considered articles indexed by WoS for Q1+Q2 publications as source of literature, while including others such as Scopus would increase knowledge base. Also, to identify main streams of research, we considered keywords with cumulative occurrence spanning from 30% to 40% while increasing this percentage would add terms that might improve precision to the connections among keywords. Other techniques could have been used such as co-citation or bibliographic coupling, although we find these as better suited to investigate the basic structure behind the foundational knowledge of the topic (Mukherjee *et al.*, 2022) while our intention was to understand the positioning of study fields regarding the degree of research progress.

Despite the above, this review is the first to address transformation as the focal point of BoD, to identify most relevant authors on the topics, and the themes that concentrate interest for authors, pointing out new lines where future research might head to.

Notes

1. <https://www.frc.org.uk/getattachment/88bd8c45-50ea-4841-95b0-d2f4f48069a2/2018-UK-Corporate-Governance-Code-FINAL.pdf>
2. https://ec.europa.eu/migrant-integration/library-document/european-commission-green-paper-eu-corporate-governance-framework_en

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