

Article

Corporate Sustainability Strategies and Decision Support Methods: A Bibliometric Analysis

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Abstract: Sustainability is becoming an increasing issue for decision-makers and scholars worldwide and many managers understand the significance of the strategic approach of corporate sustainability. However, they face difficulties in aligning sustainable development and strategic management as well as to implement it in practice. Thus, the purpose of this paper is to conduct a bibliometric analysis exploring the integration of strategic management, decision-making and corporate sustainability, providing a framework of interrelated issues according to the current literature in this area. 72 peer-reviewed papers were analyzed based on Webster's and Watson's (2002) methodology. The results of this review revealed that the number of publications in this domain has increased in the last decade, and there is a need to foster research (especially empirical) in this field because managers should find out ways to implement, in action, corporate sustainability strategies and integrate their action plans with their business strategy. This review concludes with a framework that includes the most commonly addressed issues of this topic and provides opportunities and challenges for further research.

Keywords: corporate sustainability; sustainable development; business strategy; decision-making; decision support systems

1. Introduction

Existing researchers [1–3] have noticed that sustainability is becoming an increasing issue for decision-makers and scholars worldwide because it is concerned with the sustainable development of an organization in terms of environmental, economic and social views. In organizations, managers formulate and implement sustainability strategies in order to respond to environmental and social issues [1]. Corporate sustainability presents the strategic position of a business with regard to sustainable development and provides many benefits for businesses that are becoming more sustainability-oriented, use resource-efficient technologies and offer products and services that are eco-friendlier. Unfortunately, the results of the existing literature show that many managers ignore the significance of the strategic approach of corporate sustainability and they face difficulties in aligning sustainable development and strategic management [4,5].

The formulation and implementation of a suitable corporate sustainability strategy is a challenging issue for businesses because each firm has specific characteristics (e.g., the industry sector, organizational structure and internal processes, capabilities, business policies, stakeholder interests, market changes, effects of external environment, etc.) [6]. The formulation and implementation of corporate sustainability strategies, as well as the alignment between corporate sustainability and business

strategy, help businesses to deal with environmental and social challenges [7]. Thus, decision-makers should select the appropriate sustainability strategy in order to be aligned with the business strategy [6].

An important challenge for decision-makers who decide to formulate a corporate sustainability strategy is how to plan and implement it. Managers have already recognized the significance of formulating a corporate sustainability strategy but they face difficulties regarding the action plan [4,8,9]. How will they translate the corporate sustainability strategy into action in order to implement it? This translation should include appropriate plans, programs, management systems, decision support systems, organizational factors, policies, ethics and performance indicators [4,8,9]. Although decision-makers have paid attention to the formulation of corporate sustainability strategies, they do not focus on the practical implementation. Issues regarding sustainable development are not considered as a strategic decision by managers. Thus, there is a gap between the formulation and implementation of corporate sustainability strategies and there is a demand for more theoretical research by academics in this field [6,10].

In this view, limited structured literature reviews have been conducted in the area of strategic management and sustainability [7,11]. As the knowledge body in this area is growing, scholars have noticed that a literature review which will provide a better understanding about the state-of-the-art in this field is required. Thus, the purpose of this paper is to map studies regarding corporate sustainability, strategic management and decision-making. More specifically, this paper answers the following questions: How many papers are published each year? Which journals have published peer-reviewed publications and which have published the highest number of publications? Which are the most active institutions in the integration of the following fields: corporate sustainability, strategic management and decision-making based on number of publications? Who are the most active researchers in this domain by considering only journal publications? What is the frequency of keywords? What methods are used in empirical papers? What are the main concepts in this domain and how many papers are published in each one?

The contribution of this paper is twofold. First, the structured methodological framework which was used demonstrates how the academic interest in corporate sustainability strategy and decision-making has evolved over the years and it highlights areas that need further research. Secondly, this literature review can be useful for managers in order to increase the understanding of the complexity of areas regarding strategic management, corporate sustainability and decision-making.

The added value of this paper is the useful overview of the state of strategic management in sustainable development, which highlights issues among sustainability strategies research domains, while providing a complete overview of the literature from a different perspective, not implemented in existing analyses and, thus, it is a good starting point for further research. In contrast with previous literature reviews that are systematic mapping studies and provide narrative amount of knowledge in the area of corporate sustainability strategy and strategic management, this paper is a bibliometric study that provides a macro picture of a research field, its evolution and connections among studies, in order to be a starting point for future research. This literature review may be of interest to academics who are already studying corporate sustainability strategies and decision-making, or researchers who have been introduced to the field but are interested in examining more specific insights into where current research topics in this literature can be located, and how they may contribute to them.

The structure of the rest of the paper is as follows: Section 2 analyzes the methodology used for conducting the literature review. Then, the results of the analysis of the papers are provided in Section 3. Finally, the conclusion and suggestions for future research conclude the paper.

2. Materials and Methods

As it has already been stated, the aim of this paper is to examine the current state of corporate sustainability strategies and the decision-making process. Studies were identified using a three-phased literature review methodology, which was suggested by Webster and Watson (2002) [12], and has been previously used in the field of strategic management and Information Systems [13–22]. First, a search

of the extant literature reviews was done to select the databases and keywords of the basic search. Then, the backward search was implemented to examine the references of the selected papers and finally, the forward search to examine the citations of the selected papers in order to increase their amount. After the selection of the papers, these were classified according to their content.

2.1. Previous Literature Reviews

The existing literature review papers from 2013 to 2016 are presented to place the current literature review alongside the existing knowledge about the field of strategic management and sustainable development and to examine the previous knowledge of this area, as well as to discuss the identified research questions based on the findings of previous studies. Additionally, previous literature reviews give an overview of the literature review methodologies used by researchers and highlight their importance and gaps in their implementation. Table 1 presents a summary of the existing literature reviews on this field.

Table 1. Previous literature reviews.

Authors	Year	Methodology	Results
Crutzen and Herzig	2013	Searching for empirical papers in 2 databases using keywords regarding to sustainability, social, responsibility, environment, strategy, planning, decision-making, decision support, control, management system and accounting	27 papers
Engert et al.	2016	Searching for peer-reviewed papers in 3 databases using keywords regarding to strategic management, corporate sustainability, responsibility, social, ethical, environment	114 papers

Crutzen and Herzig (2013) [11] conducted a literature review in order to examine the relationship between strategy, sustainability and management control. They concluded that many models and frameworks have emerged but companies have limited knowledge of the design or implementation of management control which will support corporate sustainability strategy. They analyzed papers in twelve peer-reviewed journals in the field of sustainability, and they categorized them based on the countries and the type of companies, the research methodology and the operationalization of management control and strategy. Except from this analysis, authors provided some avenues for further research about the use of management control in the process of sustainability strategy formulation and implementation.

Later, Engert et al. (2016) [7] conducted a content analysis in 114 peer-reviewed scientific journal papers in order to analyze the integration of strategic management into sustainability. They focused on organizational influences, internal and external drivers and supporting and hindering factors. Their analysis has been conducted on how companies integrate strategic management into corporate sustainability, the benefits for companies when they address stakeholders' requirements and the use of management tools and systems in this integration. Their literature review provides to academics a state-of-the-art in the fields of corporate sustainability and strategic management, and to managers, some guidelines about the process of integration. Authors support that future researchers should focus on whether or not companies need to integrate corporate sustainability into strategic management and how this process could be implemented.

2.2. Article Selection Process

The search was done in Scopus, Science Direct and Web of Science databases using combinations of the following keywords 'sustainability OR sustainable development', 'strategy OR strategic

management OR strategic planning’, and ‘decision-making OR decision support’ for papers published in peer-reviewed journals. These were selected without limiting them to a specific period. Books, book chapters, conference proceedings, technical reports and working papers were not included in the review. The admitted journals belonged to fields of strategic management, sustainability and decision-making. Articles included were only those with a focus on business management and contributed to the subject of corporate sustainability strategy, strategic management and sustainable development, decision-making and corporate sustainability. Articles with a focus on environmental issues, ethical issues or economic issues of sustainable development were excluded from the analysis. Finally, published papers were only in English.

During the data collection, a set of variables was extracted for each paper. The first variable refers to the list of authors of each paper. The second variable refers to the list of institutions of each paper. The third variable refers to the title of each paper. The fourth variable refers to the year of publication of each paper. The fifth variable refers to journals’ names where papers have been published. The sixth variable refers to the h-index of each journal. The seventh variable refers to the number of citations of each paper in the Scopus database. The eighth variable presents the age of the paper in years and is an indicator because it was calculated by extracting the fourth variable from the current date. The ninth variable is also an indicator that presents the impact of each paper and it was calculated by dividing the number of citations in Scopus with the age of the paper in years [23,24].

Overall, 3067 articles were gathered using keywords in all databases. According to the limitations of language and the source of publication, the articles were reduced to 428. Duplicate articles were deleted and in scanning their titles, 107 articles were found relevant with the aim of this paper. Next, examining their abstract, 72 were accepted. A number of studies were rejected because their full text was not accessible. A prompt investigation was conducted to verify them. This second overview highlighted that all of them should be included. So, 57 articles were examined according to their full text. In these 57 articles, 6 were added from the backward search. Additionally, 9 more articles were added from the ‘forward search’ and thus, a total of 72 articles were revealed (Figure 1).

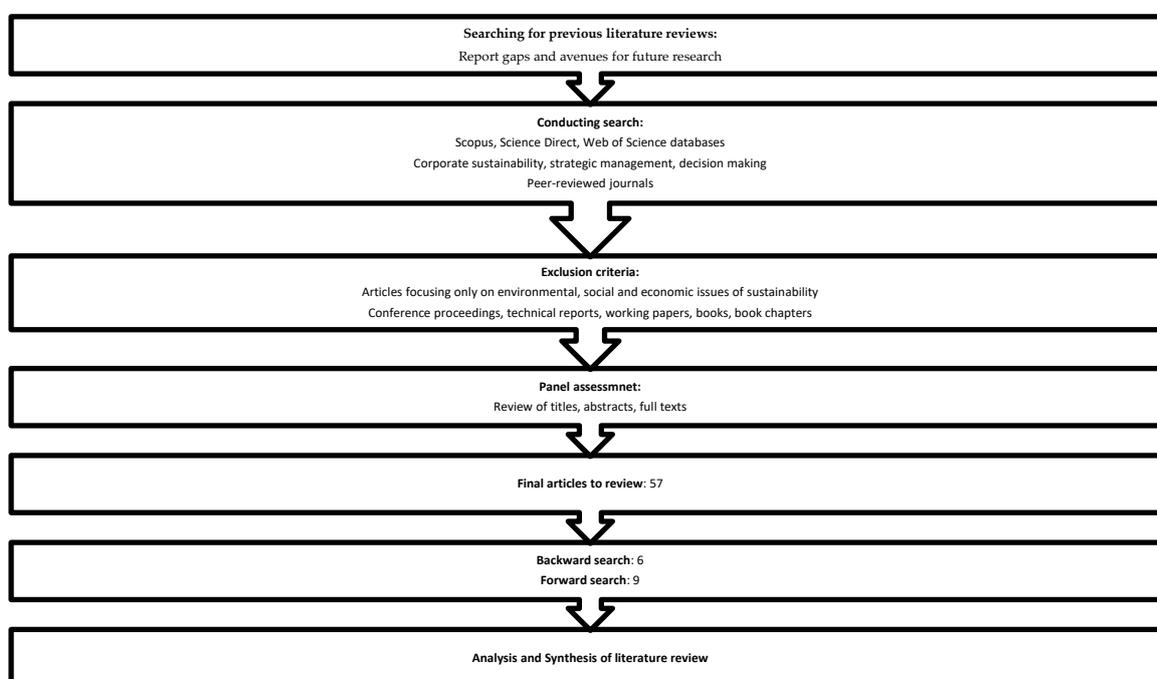


Figure 1. Article selection process.

The search was completed when it came to common articles from all databases and different combinations of keywords. Therefore, it was concluded that the critical mass of relevant literature sources had been collected (Webster and Watson, 2002) [12].

2.3. Classification Framework for Analysis

72 papers were analyzed based on a classification framework. These articles were analyzed on 13 broad dimensions which will provide a better understanding of the integration between corporate sustainability, strategic management and decision-making research, and will also help future researchers to expand the knowledge in this field. Papers were classified based on publication year, journals and publishers, universities and countries involved, authors, number of citations, keywords used, research method adopted, decision-making techniques, aspects of sustainability, drivers for sustainable development, sustainability strategies, business strategy planning and performance. Table A1 in Appendix A presents the main concepts of the analyzed papers.

3. Results

3.1. Number of Published Articles per Year

Although researchers in corporate sustainability and the strategic management area conducted studies two decades ago, the majority of the papers have only been published in the last seven years. Figure 2 presents the number of papers published each year. Especially, in the early 2000s, the awareness of strategic management into corporate sustainability was found to be very low as the majority of researchers focused only on the aspects of sustainable development, and they ignore the significance of the strategic aspect of sustainability. The strong practice of corporate sustainability strategy came into existence around 2013, when researchers realized the significance of the integration between strategic management and corporate sustainability and started examining drivers that affect sustainable performance combined with decision-making techniques. Such a finding highlights both the importance of the field and its continuous development. Figure 3 presents a clear increasing direction in the last five years.

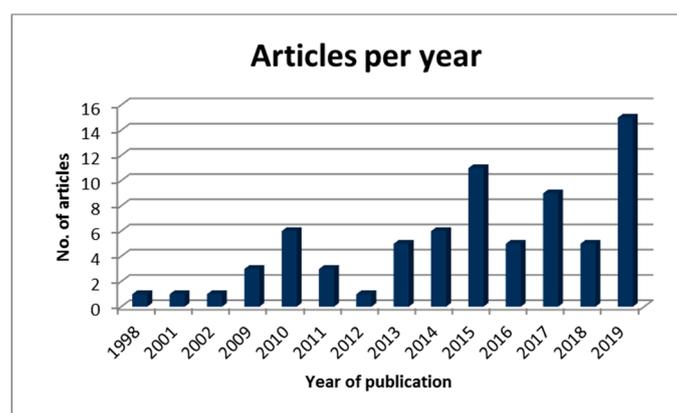


Figure 2. Number of papers per year.

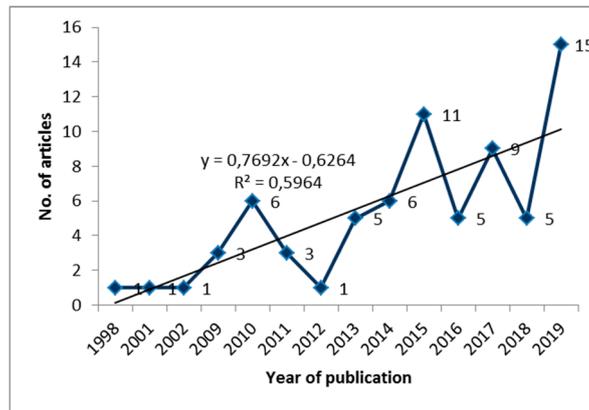


Figure 3. Papers based on the year of publication.

3.2. Number of Articles per Journal

Papers have been published in 35 peer-reviewed journals. Journal of Cleaner Production has published 20 papers, Business Strategy and the Environment and Corporate Social Responsibility and Environmental Management have published five papers each. Journal of Business Strategy and Technological Forecasting and Social Change have published three papers each. Table 2 presents the distribution of papers based on journals.

Regarding to publishers, the majority of papers were published in Elsevier journals (44.4%). Then, 12 papers were published in Emerald and Wiley peer-reviewed journals (16.7%). Springer contributed 6.95% followed by Taylor & Francis (5.56%) and Inderscience (4.17%). Other publishers have published less than three papers. Wiley and Taylor & Francis mainly have published papers based on sustainable development. On the other hand, Elsevier has published papers related to decision-making and corporate sustainability and Emerald peer-reviewed journals have focused on strategic management and sustainability. The classification of papers according to publishers is presented in Figure 4.

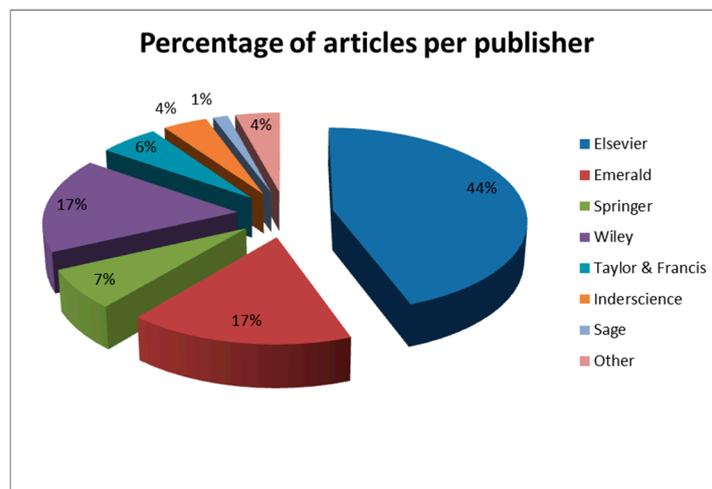


Figure 4. Papers per method.

Table 2. Distribution of papers based on journals.

Journal Name	h-Index	Publisher	No. of Papers	%
Journal of Cleaner Production	150	Elsevier	20	27.78
Business Strategy and the Environment	84	Wiley	5	6.94
Corporate Social Responsibility and Environmental Management	58	Wiley	5	6.94
Journal of Business Strategy	34	Emerald	3	4.17
Technological Forecasting and Social Change	93	Elsevier	3	4.17
European Journal of Operational Research	226	Elsevier	2	2.78
Journal of Science and Technology Policy Management	10	Emerald	2	2.78
Long Range Planning	89	Elsevier	2	2.78
Sustainable Development	51	Wiley	2	2.78
Construction Management and Economics	81	Taylor & Francis	1	1.39
Engineering, Construction and Architectural Management	49	Emerald	1	1.39
EURO Journal on Decision Processes	-	Springer	1	1.39
European Business Review	36	Emerald	1	1.39
Industrial Management and Data Systems	88	Emerald	1	1.39
International Business Management	14	Medwell	1	1.39
International Journal of Business and Systems Research	13	Inderscience	1	1.39
International Journal of Business Performance Management	18	Inderscience	1	1.39
International Journal of Energy Sector Management	17	Emerald	1	1.39
International Journal of Logistics Systems and Management	25	Inderscience	1	1.39
International Journal of Production Economics	155	Elsevier	1	1.39
International Journal of Productivity and Performance Management	48	Emerald	1	1.39
International Journal of Project Management	121	Elsevier	1	1.39
International Journal of Public Sector Management	48	Emerald	1	1.39
Journal of Business Economics and Management	30	Taylor & Francis	1	1.39
Journal of Business Ethics	147	Springer	1	1.39
Journal of Change Management	22	Taylor & Francis	1	1.39
Journal of Engineering and Technology Management	58	Elsevier	1	1.39
Journal of Management and Governance	44	Springer	1	1.39
Journal of Small Business Strategy	5	Middle Tennessee State University	1	1.39
Management and Production Engineering Review	9	Polish Academy of Sciences	1	1.39
Management Decision	82	Emerald	1	1.39
Organization and Environment	48	Sage	1	1.39
Organization Management Journal	-	Taylor & Francis	1	1.39
Science and Engineering Ethics	43	Springer	1	1.39
Systemic Practice and Action Research	31	Springer	1	1.39
Total			72	100

3.3. Number of Articles per Country and Universities

To develop the corporate sustainability and strategic management domain, a total of 101 universities across the world contributed through 72 papers. Table 3 presents the leading universities involved in

strengthening corporate sustainability and strategic management oriented research. The University of Graz is among the top universities involved in corporate sustainability and strategic management research followed by Åbo Akademi University, Blekinge Institute of Technology, Kedge Business School, Pontifical Catholic University of Parana, Rice University, Ryerson University, University of Kassel, University of Leoben and Utrecht University.

Table 3. Leading universities.

Universities	Countries	No. of Articles
University of Graz	Austria	4
Åbo Akademi University	Finland	2
Blekinge Institute of Technology	Sweden	2
Kedge Business School	France	2
Pontifical Catholic University of Parana	Brazil	2
Rice University	USA	2
Ryerson University	Canada	2
University of Kassel	Germany	2
University of Leoben	Austria	2
Utrecht University	The Netherlands	2

3.4. Authors Actively Involved in Publishing

A total of 167 authors contributed to the 72 papers. Table 4 presents the main authors (three or more that two papers each) who have published articles on sustainability and strategic management. Baumgartner [2,4,6,25] appears to be a more prolific author in the field of corporate sustainability and strategic management and has published six papers, followed by Hahn with four published papers. Figge contributes to the research topic with three papers followed by four authors. Hallstedt, Lozano and Searcy published two papers. The results show that a vast majority of authors have contributed to just one article in the set of journals comprising the dataset.

Table 4. Main authors.

Author	No. of Articles	h-Index (Retrieved from Scopus)
Baumgartner R.J.	6	16
Hahn T.	4	21
Figge F.	3	22
Hallstedt S.I.	2	13
Lozano R.	2	30
Searcy C.	2	25

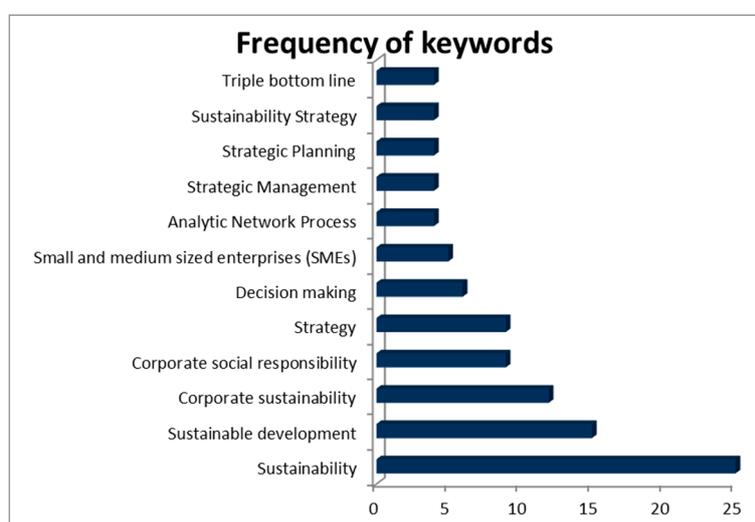
Table 5 presents the most cited papers comprising this dataset in the field of corporate sustainability and strategic management. The number of citations were retrieved from Scopus for each one of these papers. Then, the age of each paper was calculated by extracting the year of publication from the current year (2019). Finally, the average annual number of citations was calculated by dividing the number of citations in Scopus with the age of the paper.

Table 5. Top cited papers.

Title of Paper	No. of Citations (Retrieved from Scopus)	Age of the Paper (in Years)	Average Annual Number of Citations
The Sustainability Balanced Scorecard—Linking Sustainability Management to Business Strategy	458	17	26.94
Sustainability in Action: Identifying and Measuring the Key Performance Drivers	261	18	14.5
Corporate Sustainability Strategies: Sustainability Profiles and Maturity Levels	234	9	26
Strategy Development in Small and Medium- Sized Enterprises for Sustainability and Increased Value Creation	169	10	16.9
Tensions in Corporate Sustainability: Towards an Integrative Framework	168	4	42
A Holistic Perspective on Corporate Sustainability Drivers	148	4	37
Managing Corporate Sustainability and CSR: A Conceptual Framework Combining Values, Strategies and Instruments Contributing to Sustainable Development	132	5	26.4
Building Corporate Social Responsibility into Strategy	116	10	11.6

3.5. Frequency of Keywords

Figure 5 shows the frequency of keywords that are used in each paper. The majority of keywords refer to sustainability, sustainable development, corporate sustainability and corporate social responsibility. Other keywords regarding to strategy, strategic planning and strategy management were also used. Finally, keywords regarding to decision-making or decision-making methods, such as Analytic Network Process were used by researchers.

**Figure 5.** Frequency of keywords.

VOSviewer was used to indicate the most frequently used keywords of the 72 papers and the relationships among them. The network visualization, which is presented in Figure 6, shows the relationship among keywords and Figure 7 presents the heat map. The most frequent keywords are in the yellow area, which are “sustainability”, “sustainable development”, “integration”, “competitiveness” and “corporate sustainability”. Other keywords such as “strategies”, “corporate social responsibility” and “decision-making” are not commonly used. This finding supports researchers who claim that studies ignore the strategic view of corporate sustainability [6,10].

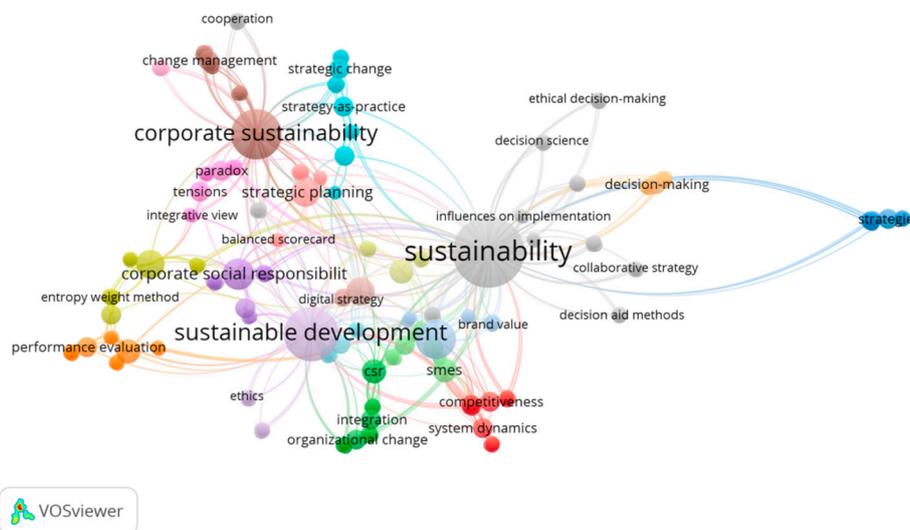


Figure 6. Network visualization of keywords.

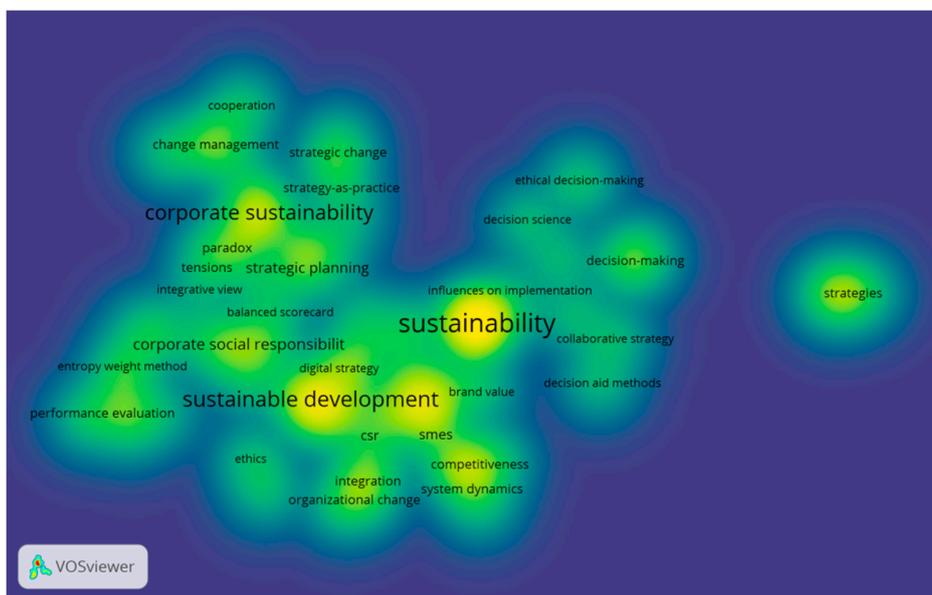


Figure 7. Heat map of keywords.

3.6. Research Methods

Figure 8 shows that 30.57% of the papers were categorized as conceptual, 26.39% of studies were case studies whereas limited studies were theoretical. 31.94% were classified to qualitative and quantitative surveys. The results confirm scholars’ notifications that despite the importance of this field, limited empirical surveys have been implemented [1,26]. Empirical papers that have conducted quantitative surveys used Small-Medium Enterprises (SMEs) or large companies in their sample. Decision-making methods used were Fuzzy methods, Multi-Criteria Decision-making Methods (MCDM), Analytical Hierarchical Process (AHP), Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS), Decision-making Trial and Evaluation Laboratory (DEMATEL), Graph Theory and Matrix Approach (GTMA) and Analytical Network Process (ANT).

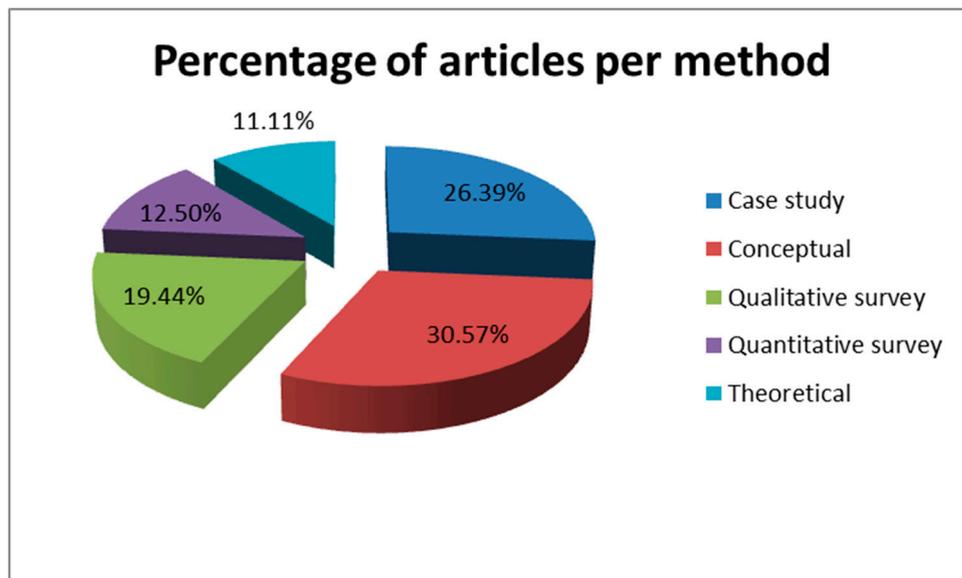


Figure 8. Papers per method.

3.7. Number of Papers per Concept

Based on the classification of papers that was presented in Table 2, Figure 9 shows the percentage of articles per concept. The majority of papers (36.11%) refer to sustainability strategies. 31.94% of papers are related to the integration of corporate sustainability and decision-making. 30.56% of papers combine the concept of sustainability with the concept of performance. Only 27.78% of papers combine the concepts of sustainability and business strategy, confirming researchers who claim that more research is required in order to examine how companies can formulate and implement sustainability strategies in practice and integrate them with their business strategy [10,26].

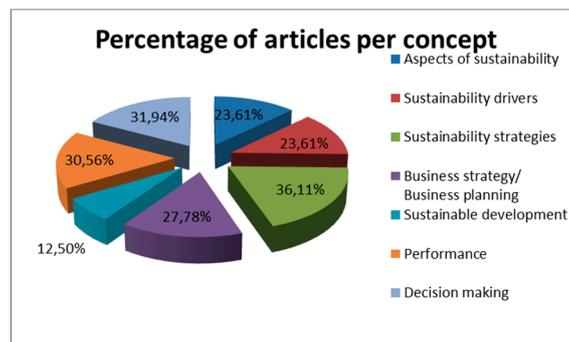


Figure 9. Papers per concept.

4. Concept Analysis

Sustainability is presented somewhat as a synonym of corporate sustainability and CSR, namely under the approach of the triple bottom line, i.e., considering the environmental, economic and social views [27]. In recent years, growing attention has been paid to sustainability as one of the most significant business goals because of organizations' concerns about human rights and the protection of the environment [28]. Researchers aim to explore how CSR can be integrated into strategic planning and how the three aspects of sustainability (environmental, economic and social views) can be aligned with the components of business strategy (mission, resources, market, customer needs, competitive advantage, stakeholder interests and value) [5,6,29].

A corporate sustainability strategy aligns social with environmental dimensions into the strategic management process, and highlights the company's strategic position with regard to sustainable

development. Managers choose the sustainability approach in order to reduce the negative environmental and social impacts of business activities while increasing the financial performance of the organization [4]. Executives and academics have understood the significance of CSR for competitive success and they have used theoretical, conceptual and empirical perspectives to evaluate the relationship between CSR and performance [5,29,30]. In this view, [31] use a fuzzy AHP method to examine the selection of relevant sustainability issues and their integration into a company's strategic decision making process. The results show that the decisional criteria composing the fuzzy AHP hierarchies integrate the value chain activities and the dimensions of competitive advantage.

However, there is a gap between CSR and strategy [5,29,30]. Managers view CSR only in terms of social or legal responsibility. Many practitioners have connected the strategic view of sustainability with philanthropy or sponsorships for society in order to increase a firm's reputation. The business environment is complex and has many opportunities and threats for firms. Managers are obliged to make strategic decisions that do not ignore stakeholders' interests. It is important to find out how they can satisfy them in a strategic manner in order to increase a firm's competitiveness. Other researchers [8] and [32] proposed a framework, using Analytic Network Process, in order to examine the relationship between stakeholders' interests and sustainability strategy. The authors used 28 decision elements about stakeholders' interests. The survey was conducted in multinational manufacturing firms in the Philippines. The proposed decision model conveys a complex decision-making process and provides the content policies that should be considered in carrying out a sustainable manufacturing strategy. A decision-making model was proposed by [33] in order to examine the relationship between stakeholders' interests and financial performance. Results show that organizations need to evaluate diverse stakeholder interests in order to be aware of social and economic impacts and to be able to integrate this into decision-making. However, there is little guidance on the underlying process.

Thus, CSR can be fully integrated into the business strategy, developing a culture that is aligned with social factors that might affect a company. This alignment will help executives to inform shareholders, stakeholders and the society about their decisions, to fulfill firms' responsibilities with society and increase shareholders' value [5,29]. During decision-making, companies balance the importance and strength of stakeholder groups [34]. Furthermore, the alignment between sustainability strategy and business strategy does not only reflect a deep organizational commitment to a sustainable society but also establishes a perspective that an organization can increase economic success, profit and benefits for society [9]. The increase of economic success can support a vision that incorporates sustainability and includes economic, environmental and social elements. This vision can guide the decisions of managers and employees and helps an organization to earn profit by protecting the society and the environment. This vision also includes a strategic decision-making process that is based on decision-makers' commitment to sustainability. This strategy that refers to sustainability at all levels (corporate, business and functional), along with an organizational culture that promotes and supports sustainability efforts, positively contributes to business performance [35].

This gap requires the ability to translate sustainability strategy into action, developing plans, systems, goals and performance indicators. Findings show that executives have no common understanding concerning how sustainability is related to their daily business activities [7]. In this view, managers can combine, in the process of sustainability decision-making, external and internal drivers such as ethics, resources and cost savings, employees' shared values, leadership, reputation, market, laws, competition and customers' satisfaction into their strategic decision-making process, in order to make changes in their organizations and formulate a sustainability strategy that increases economic, ecological and social success [7,36–39]. For example, Fairfield et al. [40] examined how aspects of organizations, context, and decision-making processes can be aligned to influence the implementation and success of sustainability efforts. Drivers such as reputation, managers' values and attitudes, management support and organizational culture has a significant impact on sustainability strategy.

Other surveys indicated that leadership and organizational culture are fundamental drivers in order to promote the implementation of a sustainability strategy. Managers can motivate employees

with their personal attitudes and values to understand the importance of sustainability [1,41,42]. Organizational structures that do not support collaboration and communication usually have a lack of trained employees, as well as the lack of clear vision of sustainability and policies about it, and are a significant obstacle for formulating and implementing a CSR strategy [43,44]. Size is also an important factor that affects an organization's willingness to formulate sustainability strategy. Large organizations have access to more resources and factors such as reputation, and stakeholder relationships play an important role in order to avoid environmental scandals and focus more on competitors' sustainability strategies [43,45,46].

Corporate sustainability strategy can affect the productivity and efficiency of processes, support the development of more sustainable products and services, reduce the risks associated with environmental and social impacts and improve the benefits for an organization. These benefits may reveal themselves in the form of an increase in economic performance or improved competitive success, such as reductions in costs and risks, and improvements in reputation [4]. The improvement of reputation can allow firms to access new markets, attract new customers, and retain good employees. Customers are expecting organizations to be responsible with a concern for environment and society. Managing these issues can allow firms to be sustainable and increase their economic performance [47]. These results are confirmed by Tseng et al. [48], who used decision-making methods in order to evaluate sustainability performance. A decision-making method was used by [49] in order to evaluate corporate sustainability performance based on the triple bottom-line concept. The results of this survey, conducted in 34 high-tech listed companies in Taiwan, can be used as an important basis for management decision-making, and can also serve as a reference for banks and investors when developing investment strategy. Another similar survey was conducted by Wicher et al. [50]. They evaluated sustainability performance of an industrial corporation using the TBL concept and a new generation of decision-support tools.

5. Discussion

The existing studies have given a solid ground and now, a conceptual framework can be developed based on the literature study. Using an open coding technique, in the content analysis of the 72 papers, with the purpose of dividing the categories to be used into the classification of the papers, gave readers a good indication of the issues of concern (Figure 10). These papers indicate that this field is still in its early stages and further research is required. Although, many papers have built a theoretical base for corporate sustainability and strategic management, only limited studies provided guidelines about the integration of decision-making, strategic management and corporate sustainability. This creates opportunities for future researchers to explore this gap and improve the sustainability performance through strategic management and decision-making processes.

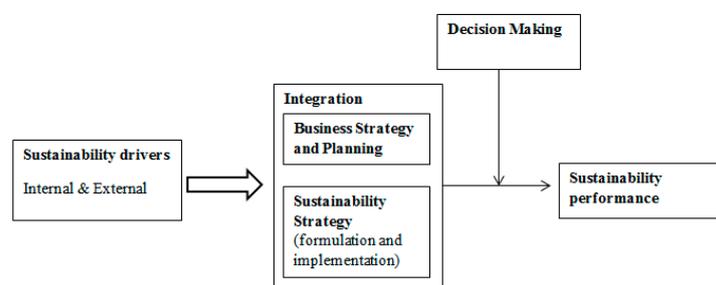


Figure 10. Conceptual Framework.

Furthermore, many papers conducted case studies in order to provide fruitful results, and researchers did not struggle through the deep penetration of corporate sustainability strategy because of unavailable generalized frameworks that provide guidelines about the formulation and implementation of action plans. Thus, there is a need for qualitative or quantitative research that provides conclusions about the effect of internal or external factors in the sustainability process,

the integration between business strategy and corporate sustainability, the implementation of action plans, the challenges and problems of this integration, as well as the impact of this alignment on sustainability performance using decision-making methods.

The majority of existing studies explore the issue of integration from the sustainability perspective and not from the perspective of strategic management. Thus, researchers ignore a discussion about barriers and problems that they often face in practice during this integration. Such an analysis could lead to deeper insights because the alignment between business strategy and corporate sustainability is complex due to stakeholder demands, required competencies, external forces, market conditions, organizational culture, management structure, and it could also help managers to increase the quality of integration. Many questions have been raised, such as how can leaders motivate employees to participate in sustainability strategy? How can stakeholders be satisfied by the implementation of sustainability strategy? What factors affect the successful implementation of sustainability strategies? What should be the vision and the organizational structure in a company in order to improve the implementation of sustainability strategy? How can managers formulate and implement, in practice, sustainability strategies? How can decision-makers promote sustainability at all levels (corporate, business and functional)? How can the size of a firm affect the implementation of sustainability strategies?

6. Conclusions

The purpose of this paper was to map studies regarding corporate sustainability, strategic management and decision-making and provide a bibliometric analysis exploring the integration of strategic management, decision-making and corporate sustainability, providing a framework of interrelated issues according to the current literature in this area. The study is based upon an analysis of 72 papers, derived from databases and categorized according to the main issues of this emerging research area. The most significant findings of this paper are described as following. The first step for conducting this literature review was to study previous literature reviews. It was observed that previous literature reviews were systematic mapping studies and provided a narrative amount of knowledge in the area of corporate sustainability strategy and strategic management. This paper is a bibliometric study that provides a macro picture of a research field, and its evolution and connections among studies, in order to be a starting point for future research. This literature review helps academics who are already studying corporate sustainability strategies and decision-making, or researchers who have been introduced to the field but are interested in examining more specific insights into where current research topics in this literature can be located, and how they may contribute to them.

Regarding the descriptive analysis, *Journal of Cleaner Production* has published the majority of papers because its scope includes different topics such as corporate sustainability, environmental management systems or performance evaluation. There are also other journals such as *Business Strategy and the Environment* and *Corporate Social Responsibility and Environmental Management* that include similar topics and have published many papers. Austria, USA and Germany hold many of the total number of papers published in the field of sustainability and strategic management. This finding indicates that industry sectors in these countries are interested in those research issues. Furthermore, Baumgartner, Hahn and Figge have significantly contributed in this field. The majority of papers are conceptual models and case studies. Although many models have been proposed by researchers, they have not been tested using decision-making methods. Researchers who conducted case studies have presented successful adoption or implementation of a corporate sustainability strategy but there still exists a need for a generalized framework that can be used by different types of industries in order to adopt, formulate and successfully implement action plans of corporate sustainability strategies. Finally, many papers used MCDM techniques or decision-making methods (AHP, TOPSIS, DEMATEL, GTMA, ANT) but the usage of modern survey analysis techniques (e.g., SEM or PLS) is limited. AHP is a flexible method for decision-makers because it provides a good understanding of the problem and handling the uncertainty of human factor.

This paper has some limitations that are described below. First, criteria for searching articles in databases include keywords “sustainability or sustainable development”, “strategy or strategic management or strategic planning” and “decision-making or decision support” in the title and abstract of the papers. There probably exists papers which lack these keywords in the title but still focus on the field of sustainability and strategic management. Furthermore, only peer-reviewed journals were included in the dataset, however, there are also related papers in conference proceedings or book chapters. Moreover, journals from Elsevier, Emerald, Wiley, Taylor & Francis, Springer and Inderscience were included in this paper but there are more journals that have published articles related to strategic management and sustainability. Another limitation is that only English papers were searched which may skip other publications in other languages. Thus, the use of different journals or papers from other sources could possibly lead to different findings regarding the most cited papers, or the most active researchers or institutions, and the percentage of papers per publisher.

Future researchers could expand on the existing models about the integration of strategic management into sustainability using decision-making methods in order to address the existing gaps. These models are expected to combine the aspects of sustainability, and the drivers that affect sustainability strategies with the business strategy planning. As this field is in the early stages and only limited studies provided guidelines about the integration of decision-making, strategic management and corporate sustainability, future researchers could explore this gap and conduct quantitative surveys in order to collect data from different industries and check the reliability of the theory developed, discussing the challenges and the problems of this integration. From a theoretical perspective, this paper is a bibliometric study that provides a macro picture of a research field, its evolution and connections among studies, in order to be a starting point for future research by highlighting issues among sustainability strategies research domains, while providing a complete overview of the literature from a different perspective, not implemented in existing analyses. Future researchers could expand this literature review and provide different bibliometric analyses such as co-author or co-citation.

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Appendix A

Table A1. Concept matrix table.

No.	Authors	Year	Method	Aspects of Sustainability	Sustainability Drivers	Sustainability Strategies	Concepts			
							Business Strategy/Business Planning	Sustainable Development	Performance	Decision-Making
1.	Engert and Baumgartner [1]	2016	Qualitative survey			x				
2.	Baumgartner and Korhonen [2]	2010	Conceptual				x	x		
3.	Baumgartner and Rauter [4]	2017	Conceptual				x	x		
4.	Galbreath [5]	2009	Conceptual				x	x		
5.	Baumgartner [6]	2014	Conceptual			x				
6.	Epstein and Roy [8]	2001	Conceptual		x		x		x	
7.	Stead and Stead [9]	2013	Theoretical			x	x			
8.	Kumar et al. [21]	2018	Quantitative survey		x					
9.	Baumgartner and Ebner [25]	2010	Theoretical	x		x				
10.	Egels-Zandén and Rosén [26]	2015	Case study			x				
11.	Chang and Cheng [28]	2019	Quantitative survey	x				x		x
12.	León-Soriano et al. [29]	2009	Conceptual	x			x			
13.	Asif et al. [30]	2013	Case studies	x		x				
14.	Calabrese et al. [31]	2019	Conceptual			x				x
15.	Ocampo [32]	2016	Qualitative survey						x	x
16.	Epstein and Widener [33]	2011	Qualitative survey						x	x
17.	Harangozó and Zilahy [34]	2015	Quantitative survey		x					
18.	Bonn and Fisher [35]	2011	Theoretical		x	x				
19.	Cezarino et al. [36]	2019	Qualitative survey		x	x				
20.	Lozano [37]	2015	Qualitative survey		x					
21.	Neugebauer et al. [38]	2016	Conceptual		x	x		x		
22.	Schrettle et al. [39]	2014	Conceptual		x					x
23.	Fairfield et al. [40]	2011	Quantitative survey		x				x	
24.	Shields and Shelleman [41]	2015	Theoretical			x		x		
25.	Thakhathi et al. [42]	2019	Case study		x					
26.	Kiesnere and Baumgartner [43]	2019	Qualitative survey			x				
27.	Lozano [44]	2013	Case studies		x	x				
28.	Moore and Manring [45]	2009	Theoretical					x		
29.	Rosati and Faria [46]	2018	Quantitative survey		x				x	
30.	McPhee [47]	2014	Conceptual		x		x			
31.	Tseng et al. [48]	2019	Case study	x					x	
32.	Ou [49]	2016	Case study						x	
33.	Wicher et al. [50]	2019	Conceptual	x					x	x
34.	Beckmann et al. [51]	2014	Theoretical	x			x			
35.	Aras and Crowther [52]	2009	Conceptual		x				x	
36.	Bastons and Armengou [53]	2017	Conceptual					x		x
37.	Bianchi et al. [54]	2015	Case studies				x		x	x

Table A1. Cont.

No.	Authors	Year	Method	Aspects of Sustainability	Sustainability Drivers	Sustainability Strategies	Concepts				
							Business Strategy/Business Planning	Sustainable Development	Performance	Decision-Making	
38.	Brook and Pagnanelli [55]	2014	Qualitative survey	x						x	
39.	Cagno et al. [56]	2019	Case studies							x	
40.	Chang et al. [57]	2016	Conceptual	x						x	
41.	Christ et al. [58]	2017	Case study				x			x	
42.	Daneshpour and Takala [59]	2017	Case study			x					x
43.	De Brucker et al. [60]	2013	Case study						x		x
44.	de Fátima Teles and de Sousa [61]	2018	Case studies			x	x				x
45.	Eikelenboom and de Jong [62]	2019	Quantitative survey		x					x	
46.	Figge et al. [63]	2002	Conceptual	x			x				
47.	García et al. [64]	2016	Case study							x	x
48.	Haffar and Searcy [65]	2019	Qualitative survey			x				x	
49.	Hahn [66]	2014	Case study	x							x
50.	Hahn et al. [67]	2015	Conceptual	x		x					
51.	Hallstedt et al. [68]	2015	Case study	x							x
52.	Hallstedt et al. [69]	2010	Qualitative survey								x
53.	Hessami et al. [70]	2019	Case study							x	
54.	Ivory and Brooks [71]	2018	Conceptual			x					
55.	Janeiro and Patel [72]	2015	Theoretical	x							x
56.	Kelly [73]	1998	Conceptual						x		x
57.	Martin [74]	2015	Conceptual								x
58.	Modrak and Dima [75]	2010	Conceptual			x					x
59.	Parisi [76]	2013	Quantitative survey		x					x	
60.	Rodriguez et al. [77]	2018	Qualitative survey			x					
61.	Satyro et al. [78]	2017	Theoretical			x	x			x	
62.	Silvius et al. [79]	2017	Qualitative survey		x						x
63.	Singla et al. [80]	2019	Quantitative survey						x		
64.	Sreekumar and Rajmohan [81]	2018	Conceptual	x							x
65.	Sroufe [82]	2017	Qualitative survey			x	x				
66.	Taghavi et al. [83]	2014	Qualitative survey			x	x				
67.	Teh and Corbitt [84]	2015	Qualitative survey	x			x				
68.	Teixeira and Junior [85]	2019	Case studies			x	x				
69.	Ukko et al. [86]	2019	Quantitative survey			x				x	
70.	Riccaboni and Leone [87]	2010	Case study			x				x	
71.	Vazhayil and Balasubramanian [88]	2012	Case study				x				x
72.	Wollmann and Tortato [89]	2019	Conceptual	x							x

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