

Understanding the contribution of scientific research on strategic alliances between 2000 and 2017

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Abstract— A combination of bibliometric and content studies was conducted to analyze published research on strategic alliances over the period 2000-2017 in the Web of science database. The objective is to review the scientific research conducted on strategic alliances to describe the level of knowledge accumulated and to discover the main research themes addressed in this field and their evolution.

Index Terms— bibliometric analysis, content analysis, scientific research, strategic alliance.

1 INTRODUCTION

Strategic alliances are voluntary cooperative inter-firm agreements aimed at achieving competitive advantage for the partners [1]. A considerable, vast and varied number of articles from the literature have been published on strategic alliances. This research has highlighted the need to understand the level of knowledge accumulated on strategic alliances.

Several studies were conducted to review published research on strategic alliances. For example, [2] conducted a quantitative analysis of scientific production on strategic alliances between 1989 and 2008 to identify the most cited authors, articles and journals. On the same date, [3] focused on co-citation analysis to describe the knowledge network in order to identify the main themes addressed on strategic alliances between 1999 and 2008. In 2014, [4] combined the analyses of citations and co-citations to identify the research themes addressed on strategic alliances over a period of 1993 and 2012. In 2014, [5] conducted an evaluation of the strategic alliance research literature of the major management journals between 1990 and 2012 to assess research methodology and establish theoretical trends in this area. This work is considered a response to the suggestion of [3] integrate bibliometric and quantitative methods to provide a comprehensive overview of studies in the field of strategic alliances.

In this work, we have integrated bibliometric and quantitative methods such as content analysis, the objective of which is to review the scientific research conducted on strategic alliances to describe the main research themes addressed in this field and their evolution.

This document has been divided into three parts. The first part describes the research methodology presented.

bibliometric and content analyses of the research published on strategic alliances during the period 2000 and 2017 in the web of science analysis database. Finally, a conclusion is proposed.

2 METHODOLOGY

The data for this study were collected using the Web of science analysis database indexed by more than 10000 scientific journals. The research on this basis was carried out by theme between 2000 and 2017. This study includes two essential steps:

Step 1: Bibliometric study of published articles on strategic alliances.

The bibliometric study covered a total of 6091 published articles and 214053 articles cited in the Web of science database over a period from 2000 to 2017. [6] defined bibliometric analysis as the application of mathematical and statistical techniques to books and other media. More recently, [7] proposed that bibliometrics should consist of a variety of mathematical and statistical methods that allow quantitative analyses of science to be conducted. It adopts production accounting, citation analysis and co-citation analysis.

Counting the number of scientific articles published over a given period of time provides a detailed analysis of scientific production [8]. The number of publications is counted by country, field, author and year.

The analysis of citations is based on the frequency of counting, it allows to evaluate the scientific impact of the research. It is based on the assumption that the most cited articles have a greater influence on a subject than least cited articles [9].

Co-citation analysis is used to map research activities to monitor and study the evolution of science using time as a variable [7]. It was carried out using CitNetExplorer software, which is an abbreviation for 'citation network explorer' used mainly to study literature research based on citation networks. It allows you to visualize and analyze the citation networks of scientific downloaded via the Web of science interface.

The bibliometric study provides an understanding of the accumulated knowledge of strategic alliance research, identifies the most influential articles and prolific authors in this field, and provides an analysis by number of publications per year, research papers and country, and analyses cooperation

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The second part presents the results and discussions of the

between authors.

Step 2: Content analysis of articles published on strategic alliances in the Web of science database.

The content analysis of the article, according to [10] is a technique for objective, systematic and quantitative description of the content of articles. The content analysis was done on the first articles most frequently cited in the Web of science. The choice of these articles is related to their large number of citations and the long duration during which the article remained cited. This analysis makes it possible to identify and discover the main research themes addressed on strategic alliances in this field and their evolution.

3 RESULTATS AND DISCUSSIONS

3.1 Bibliometric review of articles published on strategic alliances

1) The counting of publications: The search on the Web of science was carried out by subject. On the theme of strategic alliance, more than 6000 publications were published between 2000 and 2017. The number of publications on strategic alliances has been on an upward trend, with more than 625 articles published in 2017 compared to 130 published in 2000 (Table1).

The United States leads the way in the production of scientific

TABLE 1
NUMBER OF PUBLICATIONS PER YEAR

Year	Number of publications	Year	Number of publications
2017	625	2008	268
2016	563	2007	242
2015	533	2006	182
2014	477	2005	166
2013	445	2004	148
2012	316	2003	129
2011	338	2002	131
2010	305	2001	120
2009	331	2000	130

publications on strategic alliances with more than 34% of the world's share, followed by England (9,5%), China (8,38%), the Netherlands (6,09%), Canada (5,92%) and France (4,2%) (Table2).

Depending on the research fields, business economics is the represented field with a percentage of (65,39%), followed by

TABLE 2
NUMBER OF PUBLICATIONS BY COUNTRY

Country	Nombre de publication	Country	Nombre de publication
USA	1 882	TAIWAN	319
ENGLAND	516	SPAIN	298
CHINA	459	GERMANY	278
NETHERLANDS	330	AUSTRALIA	252
CANADA	323	FRANCE	231

engineering (11,75%) and management science (7,73%) (Table3).

2) Citation analysis: The search on the Web of science was carried out by subject. On the theme of strategic alliance, more

TABLE 3
NUMBER OF PUBLICATIONS BY RESEARCH AREA

Domains	Number of publications
BUSINESS ECONOMICS	3 549
ENGINEERING	647
OPERATIONS RESEARCH	418
MANAGEMENT SCIENCE	
INTERNATIONAL RELATIONS	283

than 6000 publications were published between 2000 and 2017. The number of publications on strategic alliances has been on an upward trend, with more than 625 articles published in 2017 compared to 130 published in 2000 (Table4).

3) Analysis of co-citations: The co-citations analysis was performed using CitNetExplorer software, which allows you to view and analyze the citation networks of the first articles

TABLE 4
EXTRACT FROM THE RESULTS OF THE CITATION ANALYSIS

Articles	Number of citations	Articles	Number of citations
Powell, WW; Kopar, KW; SmithDoerr, L, 1996	3270	Dar, IK; Teag, BS, 1998	1220
Zakra, SA; George, G, 2002	2980	RING, PS; VANDEVEN, AH, 1992	1146
HAMEL, G, 1991	1797	Kale, P, Singh, H; Perlmutter, H, 2000	1123
Gulan, R, 1998	1672	Gulan, R, 1995	1067
Burt, RS, 2004	1422	Dussange, Garrette, 1995	1049
Gulan, R; Nekria, N; Zaheer, A, 2000	1421	Baum, JAC; Calabrese, T; Silverman, BS, 2000	1048
Mowery, DC; Oxley, JE; Silverman, BS, 1996	1289	Smart, TE; Hoang, H; Hybel, RC, 1999	999
MOHR, J; SPEKMAN, R, 1994	1222	Eisenhardt, KM; Schoonhoven, CB, 1996	995
Inkpen, AC; Tsang, EWX, 2005	1220	Gulan, R, 1999	991

found during the citation analysis. By importing citation networks directly from Web of science data analysis, Fig.1 shows the co-citation network of the most cited articles over the period 2000 and 2017.

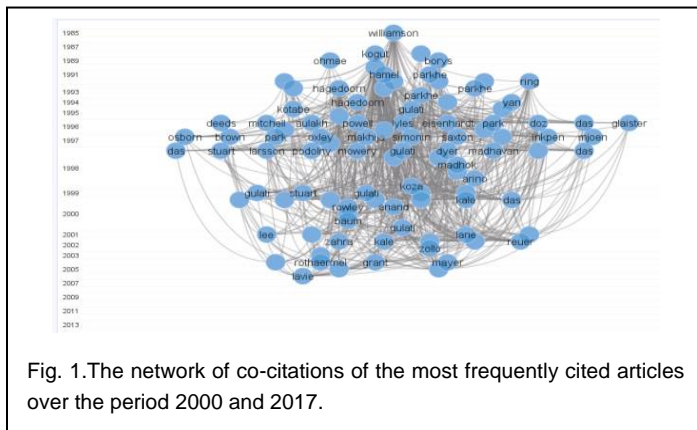


Fig. 1. The network of co-citations of the most frequently cited articles over the period 2000 and 2017.

At the top of Fig.1 is the work of [11] which is the only work most cited over the periods 1985 and 1987 with a citation score of 143. By selecting the williamson circle, we find that all articles published as a result are referred to Williamson’s article. Williamson can therefore be considered as the founder of this domain. Between 1987 and 1989, the only work presented was that of [12] with a score of 114. Between 1991 and 1993, the articles [13], [14], and [15] are the most presented with high scores. Between 1995 and 1998, the work of [16] and [17] are the most centered. Fig. 1 shows that there is a strong citation relationship involving [16],[18], [14], [1] and [19]. Between 1996 and 2002, the most frequently presented citation relationships are those that include [17], [14], [20], [21], [22] and [23]. Another relationship was presented that includes [24] and [25]. Between 2002 and 2006, the most presented works with a significant citation network are those of [26], [27] and [28].

The results of the co-citations analysis confirm the results of the content analysis presented and detailed later. For example, [1], [16], [26], [14], [13], [12], [15] have associated the creation and success of an alliance relationship with different factors and attributes. Authors like [23], [24], [13], [22], [25], [21], [20], [17] addressed the theme of learning and absorptive capacity within strategic alliances. [28], [26], [29], [30], [31] and [32] discussed the importance of social networks in strategic alliances.

3.2 Content analysis of published articles

A significant number of articles dealing with the theme of the evolution of alliances and success factors such as [16], [18], [37], [33], [34], [28], [14], [12], [13], [35], [28], [36], [26] and [19]. The authors associated the success of an alliance relationship with the attributes of engagement, coordination and problem-solving techniques [33] trust, confidence [18] the diversity of the partner’s characteristics [14]. [16] and [13] spoke about the importance of learning for the success and effectiveness of an alliance relationship. [37] in his article demonstrated the possible correlation between stock market and management gains and the success of the alliance. [19] and [36] focused on the importance of social networks in the creation and success of

inter-organizational relationships.

A total of 14 articles dealing with learning and absorptive capacity as [14], [38], [23], [28], [24], [13], [28], [22], [25], [21], [20] and [17]. According to [17], collaborative networks provide access to resources and skills and facilitate the circulation and acquisition of capacities [25]. Most of these articles link the performance of collaboration with the learning process [13] the adaptation [14] the role of coordination in improving the effectiveness of cooperation [21] the experience [23] and [22]. [24] in his article proposed a reconceptualization of absorption capacity.

There are 10 articles dealing with the importance of social networks in alliances such as [28], [26], [29], [39], [40], [41], [27], [31], [32]. Belonging to networks affects economic behaviour [41] and facilitates acquisition [28], [29] and knowledge transfer between network members [19], [43], [17], [44] addressed the theme of alliance formation. [42] proposed trends in alliance formation in R&D. [44] have linked social factors with the formation of strategic alliances and [19] showed in his article the role of resources in determining alliance formation.

The choice and forms of strategic alliance were mainly addressed by [15] and [45] as well [46], [15] and [45] spoke about the opportunities and incentives for strategic alliances. The formation and determination of a form of alliance is influenced by the company’s capital according to [46] and by contractual and competence perspectives according to [45]. [15], focused on sectoral differences and inter-organizational characteristics to clarify the motivations for cooperation.

The large number of articles dealing with strategic alliances has pushed [1], [47] and [35] to propose a theoretical framework for strategic alliances. They proposed a classification of studies according to mechanisms, levels of analysis, styles [50] and according to the advantages and disadvantages of inter-firm relationships [47]. [1] proposed a general approach to resource-based strategic alliance theory that covers 4 aspects: rationale, training, structural preferences and performance with an emphasis on the role of aligning partner’s resources.

After identifying the main themes addressed in the literature on strategic alliance, we can then identify the evolution of the themes between 1990 and 2017. We have divided these into five periods. Between 1990 and 1995, work on strategic alliances will focus on the formation and evolution of alliances. Between 1995 and 2000, researcher’s mainly studied incentives and motivations, alliance choices and forms, learning and absorptive capacity, and alliance formation and evolution. Between 2000 and 2005, the field reached a certain level of maturity, researchers accumulated the level of knowledge about alliances and proposed a theoretical framework for it, and some others focused on the importance of social networks within an alliance relationship. Between 2005 and 2010, research focused on learning and absorptive capacity and social networks. Finally, between 2010 and 2017, with technological change, both researchers and companies became more interested in R&D and innovation alliances.

4 CONCLUSION

The purpose of this study was to review research on strategic alliances. A combination of bibliometric and content studies

was used to analyze published research on strategic alliances over the period 2000-2017 in the Web of science database.

The bibliometric study was conducted to understand the accumulated level of knowledge of strategic alliance research, identify the most influential articles in the field through citation analysis and analyze cooperation among researchers by adopting a co-citation analysis.

The content analysis was carried out to discover the main themes addressed and the evolution of this published work on strategic alliances during the period 2000 and 2017.

The results of this study show that the field has undergone a change in the direction of research on strategic alliances overtime. Between 1990 and 2017, research focused on 7 themes: alliance formation, alliance evolution and success factors, incentives and motivations, alliance choices and forms, learning and absorptive capacity, theoretical framework for research on strategic alliances and social networks. Alliance formation and evolution, learning and absorptive capacity and social networks are the most frequently addressed themes. The results of this research support the idea of [29] and they are also consistent with the study of [3].

This study is considered as a channel to access the content of the most relevant work in this field. It allows us to better understand the field and determine the direction of future research on strategic alliances.

ACKNOWLEDGMENT

Berka would like to thank Achelhi and Renaud for their expert advice, encouragement and their collaboration. We would also like to convey our sincere gratitude and thanks to the Association of Scientific Research and Doctoral Studies for organising such an interesting conference on Management and International Business" (MCI'2019).

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