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Analysis of publications about strategy as practice: a mapping of the field by means of bibliometric and sociometric studies

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Abstract

The objective of this study is to present a comparative board of the evolution of the strategy as practice approach by means of sociometric and bibliometric analyzes combined with statistical techniques applied to the set of papers available on the Web Isi of Knowledge. The analyzes of periods before and after 2007 indicates evolution on the main group of authors of the strategy as practice approach, but yet with a high amount of peripheral authors. Results indicated a relationship between bibliometric and sociometric data and evidenced that network analysis is a relevant tool for treating data allowing the comprehension of the intellectual structure of a discipline, the identification of significant differences between periods in terms of productivity of authors and the inference about possible evolutionary patterns.

Key-words: Strategy as Practice; Bibliometric Analysis, Sociometric Analysis, Network Analysis.

Introduction

Several studies looked for a historical view about certain phenomena related with the theme strategy. Nag, Hambrick and Chen (2007) conducted a lexicographical analysis of strategy papers aiming to extract a consensual definition of the field. Boyd, Gove, and Hitt (2005) used content analysis in papers published about strategic management to identify its methodological deficiencies. Boyd, Finkelstein and

Gove (2005) measured the maturity of the field by evaluating the productivity of the research of the teaching staff in strategy and comparing it with other disciplines. Phelan, Ferreira e Salvador (2002) investigated changes on the diversity and content of papers published in the *Strategic Management Journal* during its first 20 years. Hoskisson, Hitt, Wan and Yiu (1999) published a revision of intellectual currents underlying the evolution of the field in strategic management after the two decades of fast growing in the area. Ramos-Rodrigues and Ruiz-Navarro (2004) identified the works of greatest impact in strategic management and analyzed changes that happened in the intellectual structure of the discipline by means of citation and co-citation analyzes considering all papers published in the *Strategic Management Journal* between the years of 1980 and 2000. Nerur, Rasheed and Natarajan (2008) investigated the intellectual structure of the strategic management field using co-citation and author analyzes as the analysis unity.

Researchers in any academic discipline have a tendency to group in informal networks, or invisible schools, which deal with common problems in a similar way (PRICE, 1963). Inside those networks the concepts and discoveries of a researcher are soon chosen to be tested, amplified, improved, criticized or refuted by another one, and in this way the work of one person contributes for building the work of others. The history of exchanges between members of those sub-groups in a discipline describes the intellectual history of the field. Researchers may benefit by understanding this process and its results, because it reveals the vitality and evolution of the thinking in a discipline and because it gives a sense for the future. Citation analysis is often used to determinate the more influent authors and their publications during a period of time considering a given group of documents previously established.

In Brazilian studies, the use of sociometric and bibliometric analyzes in the field of management, strategy and organizational studies enable the authors to do a mapping of the researches, bringing the main themes, more productive authors, most cited works, mapping of cooperative social networks between authors and educational institutions, besides providing insights about the evolution of knowledge areas (ROSSONI; GUARIDO FILHO, 2007). Other studies use statistical analyzes besides the sociometric and bibliometric ones aiming to establish relationships between parameters of networks centrality and productivity of authors (ROSSONI, 2006; ROSSONI; GUARIDO FILHO, 2009; GONÇALVES et al., 2011). Specifically about the approach of strategy as practice, Maciel and Augusto (2011), from a sociometric study, aimed to analyze the turnaround of the practice in studies about strategy under the light of three distinct moments, differentiation, mobilization and construction of legitimacy.

The study of Walter, Bachl and Barbosa (2012) used both the bibliometric as well as the sociometric analyzes. The authors cite the structure of relations between the social actors involved in the development of the approach of strategy as practice in Brazil and abroad between 1996 and 2001, highlighting the main educational institutions, the most cited works and authors as well as the co-authoring networks.

The objective of this study is to present a comparative board of the evolution of the strategy as practice approach by means of sociometric and bibliometric analyzes combined with statistical techniques applied to the set of papers available on the Web Isi of Knowledge, identifying the most influential authors, their influence and discussing the contributions for the development of this theoretical area before and after 2007.

Theoretical Framework

The neoclassic economy was interested in investigating the performance of industry and economy in a broader sense, systematizing supply and demand. But it was after the 50s that the interest became to be about the company and its manager seeking to no longer analyze the short term strategies, but focusing on the long term ones. With the long term ones came the realization that the company is not only a passive observer of the market forces, but that it may effectively influence its destiny. Considering the importance of long term strategies, the contemporaneous literature about management tried to answer the question of how a company may conquer and keep a competitive advantage because, in the long term, competitiveness comes from a capacity of building, with lower cost and more rapidly than competitors, the essential competences that generate unforeseen products (PRAHALAD; HAMEL, 1990).

The macro vision about strategic factors related with the industry, market and organizations in macro social contexts had in the 90s an appeal to consider the micro social dimension of the strategy. The paper published by Whittington in 1996 is considered one of the seminal ones for the approach of strategy as practice.

The approach of strategy as practice

For Whittington (1996), the focus of this new approach is the strategy as a social practice and it seeks to understand how the practitioners of the strategy really act and interact on the strategic process. There is a displacement from the analysis of organization strategy for the strategy produced by members of the organization, specifically by strategists, the interest becomes to be on the strategy as being what

people do. From the perspective of strategy as practice, the key-question is: what is needed to be an effective strategy practitioner?

According to Whittington (1996) treating strategy as a practice implies in a new direction for the strategic thinking. The perspective of practice in strategy changes the preoccupation about the central competence of the company for the practical competence of the manager as strategist. The question is how manager and consultants act and interact in the whole sequence of the strategy making. Thus, the practical perspective is preoccupied with the management activity, how the managers "create strategy". There are inspirational activities in the strategy making – getting ideas, the focus on opportunities, the seizure of situations, as well as perspiration activities – routines of budgeting and planning, sessions of strategy commissions, the writing of formal documents, the performance of presentations. The author indicates that the research agenda is to discover more about the work of elaborating strategies and how strategists learn to do it. The challenge for the teaching is to discover new ways of creating the difference so that the strategy is really performed.

The introductory paper of Johnson, Melin and Whittington (2003) provides a background for the origins, themes and roles of the special edition about Micro Strategy and Strategizing. The overall argument is that, while the strategy area has traditionally focused on the macro level of organizations, now is necessary to focus on much more micro levels phenomena. A vision is proposed, based on strategy activities, which focus on the detailed processes and on the practices that constitute the daily activities of the organizational life and which refer to the strategic results. The authors use criticism about the institutional theory and about the resource based vision indicating their limitations about the possibility of studying the micro strategies considered as fundamental for the comprehension of the strategizing process.

Jarzabkowski (2005) brings a retrospective of her previous works and of other relevant works for the area and proposes the first analytical framework. The author presents the concept of strategizing practices as being "institutionalized rules of formatting the strategy and its performance locally situated" (JARZABKOWSKI, 2005, p. 43), besides discussing the question of recursiveness and interdependence between institutions and behavior.

Whittington (2006) arguments that the turnaround of practice is incomplete due to most of the researches focusing either on the strategy at intra-organizational level or on the aggregate effects of this activity at extra-organizational level. The author proposes an structure for the investigation in strategy integrating micro-macro levels based in three main themes for the theory or practice: praxis, strategic practices and strategy practitioners. Based on practical perspectives developed by

the social theory and by other management strategies, the author presents a structure able to build a more integrated comprehension of the strategy practice, both as an activity inside organizations, which is fundamental for the management work, and as a phenomenon which extends for outside of the organizations with potential influence over entire societies. For Whittington (2006), first there is the society and in its different forms, the theoretical of practice are concerned with the way as social fields or social systems define the practices – which are the shared understandings, cultural rules, languages and procedures that guide and enable the human activity. In second place, the theoretical of practice reinforces individuality, allocating a meaning of practice to the praxis as the real "practical" activity of people. The distinction between practices and praxis, as being what happens in practice, points for a third central theme in the turnaround of practice which are the actors with their abilities, initiatives and performance of activities.

For Whittington (2006), studies oriented by practice do not need to combine all the three elements of praxis, practices and practitioners at the same time. According to the theory of practice, generally, the professionals are seen as the critical connection between the intra-organizational praxis and the organizational and extra-organizational practices that depend upon this praxis. The dependence of professionals about those practices however is not simply passive. The author indicates that by reflecting about this experience, professionals are able to adapt the existing practices; exploring plurality they sometimes are able to synthesize new practices; taking advantage of the opening, they may be able to introduce new practitioners and practices at the same time.

Jarzabkowski, Balogun and Seidl (2007, p. 11) suggest a mode to explain strategizing as the "inter-relationship between praxis, practices and practitioners". In the model the strategizing has the focus on strategists, their activities, shared procedures and interactions with the strategies of the organization. The authors indicate that although any research question inevitably links the concepts of praxis, practices and practitioners, empirically, there may be cuts respecting the different interests of research.

Considering the variability of research cuts, the bibliometric and sociometric studies may be used seeking the comprehension about a knowledge field.

Bibliometric and Sociometric Studies

According to Eom (2009) the creation and diffusion of knowledge in a discipline are facilitated by means of the circulation of ideas between invisible schools

(CRANE, 1972). Each individual contributes for the body of knowledge, building over something that others already did. Referencing and using citations are important tools to link with the content written by the other. Studies related to citations may be useful in the understanding of the theoretical field stage. Analysis of citations may be basically classified in two types. The first type is the counting of the citations in a document or set of documents created by an individual without considering intellectual articulation. The second is the analysis of co-citations of authors or documents in order to identify the intellectual links between authors and publications. In the co-citation analysis, both of documents and authors, the techniques are the same, the thing that changes is the unity of analysis or counting. The expression ACA (Author Co-citation Analysis) is referenced with the study in which the analysis unity is the author. The analysis of co-occurrence of the words is made from a specific set of papers from periodicals in a research area and counting the frequency of words. The analysis process and the tools used by the techniques are identical, because all process matrixes using hierarchical grouping, multidimensional scheduling or network analysis in order to produce empirical maps of a given academic discipline or sub-discipline. However, it must not be forgotten that the co-citation analysis provides no details about the real content of the identified sub-specialties and only the analysis of the co-occurrence of words may provide indications about the content of the research topics.

Analysis of author co-citation is based on the supposition that bibliographic citations are an acceptable substitute for the real influence of several sources of information (McCAIN, 1986) and that the co-citation analysis of a field generates a valid representation of the intellectual structure of that field (BELLARDO, 1980; McCAIN, 1984, 1990a, 1990b; SMITH, 1981). According to Bellardo (1980), the fundamental premise of co-citation analysis is that the greater the frequency of a pair of documents or authors being cited together is, the greater the possibility of them having related content. ACA is based on the supposition that co-citation is a measurement of similarity perception, conceptual link or cognitive relationship between two co-cited items and that co-citation of studies about specialties and fields validates the representations of the intellectual structure (McCAIN, 1986). ACA selects the group of authors that have a high degree of interconnections with others. Therefore, it is unrealistic even on hypothetical situations to expand the group of authors with high frequency of citations in order to include others with irrelevant frequencies (EOM, 2009).

Bibliometric studies allow to evaluate the scientific contribution in specific scenarios and of the behavior developed in social networks created by the authors.

Sociometric studies allow to evaluate the social networks formed by authors in a given discipline favoring the mapping of the area of interest.

Sociometry analyzes social actors and their relationships by means of representing a set of nodes symbolized by the authors and their links indicating their social relationships of co-authoring. Links between actors of a social network may be of two types: strong or weak (GRANOVETTER, 1973). The first one consists on a direct connection between actors, for instance, when in publications of co-authorship where the shared information tends to be repeated and reinforced, with low tendency of changing (BURT, 1992). On the other hand, a weak link refers to indirect contacts by means of bridges, where are different flows of information that may lead to innovation (GRANOVETTER, 1973). The bridge between two actors is made by a third author having publications with the other two ones.

Networks may be characterized by some parameters that allow comparison, among them density, centrality degree and the number of main components of the network. Density indicates how many actors of this network are connected to each other from all possibilities. The centrality degree indicates the importance of the actor on the network regarding the interconnection between different actors (WASSERMAN; FAUST, 1994). The main component of the network is created by the greater set of actors connected by links. On network analysis, each actor's attributes may be analyzed egocentrically with the parameters of centrality, intermediation, proximity and the existence of structural holes are calculated, as well as determining if there is participation in network components.

It is possible to observe the development of a specific study field from the analysis of the scientific production associated with it. The social relationships of the several authors of a given network are relevant factors in the development of the scientific knowledge and in the consolidation of a discipline. Understanding those relationships makes possible to map the knowledge in a given area of interest.

Research Hypotheses

Studies involving network analysis may indicate relevant aspects about the stage of development in a given area of knowledge. The use of co-authoring matrixes between authors allows the mapping of the network between researchers, the identification of the community of scholars which may contribute in the identification of themes and trends of development in the field. Thus, the following research hypotheses are launched:

H1a: The productivity of authors considering published papers is related with the role that each author performs in a co-authoring social network;
H1b : The representativeness of authors considering the number of citations received is related with the role that each author performs in a co-authoring social network;
H2a: The measurements of network centrality may be used as differentials regarding the location of authors on the network;
H2b: There are statistically significant differences between the measurements of network centrality of the authors of the main component and of the other components.

Hypotheses H1a and H1b seek to relate bibliometric data with sociometric data and hypotheses H2a and H2b seek evidences that network analysis is a relevant tool for treating data in different periods indicating that authors considered as central, by means of their relationships, may have advantages when compared with those considered as peripheral ones.

Methodological Procedures

The selection of papers was performed using the site *ISI Web of Knowledge* during the month of January, 2013, and searching the database using the key-words "*Strategy as Practice*", "*Strategizing*" and "*Strategic Practice*". After verifying the contents and their adherence with the studies related with strategy as practice approach, 93 papers were identified for analysis. The papers were sub-divided into two parts, the first one with 47 papers and year of publication until 2007 inclusive and the second one with 46 publications after 2007.

Among the 93 papers, 129 co-authorships were identified and all citations of them were collected. Bibliometric analysis of references of the papers allowed the collection of the main authors and mentioned works. The 129 mapped authors had the numbers of references (citations on the 93 papers) identified by period before and after 2007.

For each one of the periods of analyzes matrixes of co- authorships were created using the UCINET software. Using the Netdraw application the social networks of co-citation were created and the network parameters calculated. The centrality degree is equal to the number of links that an actor has with other actors. The closeness is another measurement of centrality, but is a more overall indicator than the previous one, because it takes into consideration the structural position of the actors in

the whole network. A high closeness for an actor means that it is related will all other ones by a small number of paths. Betweenness is a measurement based on the number of short paths passing by an actor. Actors with high intermediation perform the role of connecting different groups of actors and are considerate as intermediate ones. The structural holes (effsize) represent a void between actors and a lack of relationships in the social structure which inhibits the flow of information between the groups. Actors of both sides of a structural hole have access to several flows of information representing an opportunity for an actor of having access to new ideas.

Quantitative data of scientific production, number of citations and the measurements of network centrality by period were generated under the light of statistical techniques. Spearman's correlation analysis was used in order to verify relations among the variables and Mann-Whitney's test to compare the differences between authors members of the main components and the other peripheral groups. The hypotheses launched on the theoretical framework were verified on the data analysis and interpretation.

Data Analysis and Interpretation

From the 93 selected papers the references were tabulated for bibliometric analysis using citation counting and the co-authorships were identified in a binary matrix used for sociometric analysis before and after 2007.

Bibliometric Analysis

Bibliometric analysis indicated the most cited authors and the main works in each period. Data were manipulated in order to make easier the visualization of the quantitative evolution between the periods, as well as to identify actors that appear from the 2nd period and those ones that reduced their participation in terms of the production of academic papers or of citations received. Figures 1, 2 and 3 present the data.

Analysis of Figure 1 propitiates the identification of the importance of some authors, especially the cases of Whittington and Jarzabkowski. On the ten first works, those authors are present in seven of them. Data also reveal that some works were less referenced during the second period of analysis than during the first period. Works such as Hendry (2000), Giddens (1984), Barry and Elmes (1997), Knights and Morgan (1989) and Pettigrew (1985), among others, are in this situation. Contrary to what it may indicate, it is not possible to hastily conclude that those works are losing

their importance, because they may be referenced by means of subsequent works of authors interpreting those seminal ones. Future research may evidence, or not, this fact. However, it is possible to observe some works that became more cited on the 2nd period than they were on the 1st one, those are the cases of Jarzabkowski, Balogun and Seidl (2007), Johnson, Langley, Melin e Whittington (2007) and Seidl (2007), among others. The increase in the number of citations of a given work reinforces its importance for the development of the area.

Figure 2, presenting the data of the main referenced authors reinforces the relevance of other authors for the development of strategy as practice approach. Besides the already mentioned Whittington and Jarzabkowski, authors such as Johnson, Balogun, Langley, Samra-Fredericks, Merlin and Bourdieu appear in prominent positions on the two analyzed periods. On the other hand, authors such as Pettigrew, Mintzberg, Giddens, Weick, Eisenhardt, Hendry, Knights and Morgan have a decrease in the number of citations during the second analyzed period. Again, it is important to underline that it is not possible to allege that those authors and their contributions are being excluded from new publications. On the other hand, it is possible to infer that active authors that are contributing for the growing of the field publishing articles about the approach of strategy as practice are reaching notoriety and increasing the number of publications referenced on other studies.

As a way of corroborating this inference, Figure 3 brings the data of the 129 coauthors of the 93 analyzed papers and a comparative of the quantity of published papers and numbers of citations in both periods, before and after 2007. From the 129 authors, 107 of them had an increase on the number of citations between periods, reinforcing the idea that authors contributing for the development of the area of strategy as practice become more cited inside the community of authors of that approach as a self-reinforcement process.

Sociometric Analysis

The social network formed by the authors in each one of the analyzed periods indicated the presence of 10 authors on the main component during the 1st period, 14 authors during the 2nd period and 27 authors considering the total period for the set of 93 papers.

Figure 1 - Most cited works on the analyzed papers in each one of the periods

	Period of Analysis						
	47 articles till 2007		46 articles after 2007		93 articles Analyzed		
Most cited works	Order	Citations	Order	Citations	*Ranking*	Citations (total)	Citations (evolution)
Johnson,G.;Melin,L.;Whittington,R.(2003)	2	20	2	25	1	45	↑
Whittington,R.(2006)	7	14	1	30	2	44	↑
Jarzabkowski,P.(2004)	4	17	2	25	3	42	↑
Jarzabkowski,P.(2005)	5	16	5	23	4	39	↑
Samra-Fredericks,D.(2003)	7	14	6	20	5	34	↑
Hendry,J.(2000)	1	21	15	12	6	33	↓
Whittington,R.(1996)	5	16	7	17	6	33	↑
Giddens,A.(1984)	3	18	19	11	8	29	↓
Jarzabkowski,P.;Balogun,J.;Seidl,D.(2007)		3	4	24	9	27	↑
Whittington,R.(2003)	14	11	8	16	9	27	↑
Jarzabkowski,P.(2003)	10	13	10	14	9	27	↑
Regner,P.(2003)	14	11	12	13	12	24	↑
Barry,D.;Elmes,M.(1997)	12	12	22	10	13	22	↓
Knights,D.;Morgan,G.(1989)	10	13	28	9	13	22	↓
Pettigrew,A.M.(1985)	7	14	34	8	13	22	↓
Balogun,J.;Johnson,G.(2004)	18	9	12	13	13	22	↑
Hendry,J.;Seidl,D.(2003)	18	9	15	12	17	21	↑
Eisenhardt,K.M.(1989)	12	12	44	7	18	19	↓
Bourdieu,P.(1990)	32	7	15	12	18	19	↑
Whittington,R.;Jarzabkowski,P.;Mayer,M.;et al.(2003)	18	9	22	10	18	19	↑
Pettigrew,A.M.(1992)	14	11	44	7	21	18	↓
Weick,K.E.(1995)	18	9	34	8	22	17	↓
Johnson,G.;Langley,A.;Melin,L.;Whittington,R.(2007)		1	8	16	22	17	↑
Mantere,S.(2005)		4	12	13	22	17	↑
Balogun,J.;Johnson,G.(2005)	27	8	28	9	22	17	↑
Mintzberg,H.;Waters,J.A.(1985)	27	8	28	9	22	17	↑
Gioia,D.A.;Chittipeddi,K.(1991)	18	9	44	7	27	16	↓
Seidl,D.(2007)		2	10	14	27	16	↑
Rouleau,L.(2005)	39	6	22	10	27	16	↑
Weick,K.E.(1979)	27	8	44	7	30	15	↓
Balogun,J.;Huff,A.S.;Johnson,P.(2003)	18	9	52	6	30	15	↓
Whittington,R.(2002)	14	11		4	30	15	↓
Langley,A.(1999)	27	8	52	6	33	14	↓
Burgelman,R.A.(1983)		3	19	11	33	14	↑
Johnson,G.(1987)	32	7	52	6	35	13	↓
Schatzki,T.R.(2001)	32	7	52	6	35	13	↓
Mintzberg,H.(1979)	18	9		3	37	12	↓
Laine,P.-M.;Vaara,E.(2007)		0	15	12	37	12	↑
Chia,R.;MacKay,B.(2007)		1	19	11	37	12	↑
Chia,R.;Holt,R.(2006)		2	22	10	37	12	↑
Vaara,E.;Kleymann,B.;Seristo,H.(2004)		4	34	8	37	12	↑
Whittington,R.(2004)		4	34	8	37	12	↑
Mintzberg,H.(1973)	18	9		2	43	11	↓
Pettigrew,A.M.(1990)	18	9		2	43	11	↓
Foucault,M.(1980)	32	7		4	43	11	↓
Mintzberg,H.(1994)		2	28	9	43	11	↑
Goffman,E.(1959)		4	44	7	43	11	↑
Maitlis,S.;Lawrence,T.B.(2003)		4	44	7	43	11	↑
Floyd,S.W.;Lane,P.J.(2000)	47	5	52	6	43	11	↑
Salvato,C.(2003)	47	5	52	6	43	11	↑
Jarzabkowski,P.;Wilson,D.C.(2002)	47	5	65	5	51	10	↔
vanMaanen,J.(1979)	27	8		2	51	10	↓
Orlikowski,W.J.(2000)	32	7		3	51	10	↓
Jarzabkowski,P.(2008)		0	22	10	51	10	↑
Jarzabkowski,P.;Spee,A.P.(2009)		0	22	10	51	10	↑
Hardy,C.;Palmer,I.;Phillips,N.(2000)		2	34	8	51	10	↑
Garfinkel,H.(1967)		3	44	7	51	10	↑

Source: Research Data.

Figure 2 - Most cited authors on the analyzed papers in each one of the periods

	Period of Analysis									
	47 articles till 2007 n° of References = 4545			46 articles after 2007 n° of References = 4950			93 articles Analyzed n° of References = 9495			
Most Cited Authors	Order	Citations	%	Order	Citations	%	Order	Citations	%	Evolution
Whittington,R.	1	112	2%	1	178	4%	1	290	3%	↑
Jarzabkowski,P.	2	80	2%	2	171	3%	2	251	3%	↑
Pettigrew,A.M.	3	77	2%	9	49	1%	4	126	1%	↓
Johnson,G.	4	67	1%	3	93	2%	3	160	2%	↑
Mintzberg,H.	5	62	1%	6	58	1%	5	120	1%	↓
Balogun,J.	6	39	1%	5	64	1%	6	103	1%	↑
Giddens,A.	7	37	1%	43	15	0%	16	52	1%	↓
Weick,K.E.	8	35	1%	16	33	1%	11	68	1%	↓
Eisenhardt,K.M.	9	32	1%	34	17	0%	17	49	1%	↓
Langley,A.	10	31	1%	10	48	1%	8	79	1%	↑
Samra-Fredericks,D.	10	31	1%	14	36	1%	12	67	1%	↑
Hendry,J.	10	31	1%	20	24	0%	14	55	1%	↓
Knights,D.	13	29	1%	30	18	0%	19	47	0%	↓
Morgan,G.	14	27	1%	25	21	0%	18	48	1%	↓
Bourdieu,P.	15	25	1%	7	50	1%	9	75	1%	↑
Melin,L.	15	25	1%	7	50	1%	9	75	1%	↑
March,J.G.	15	25	1%	54	12	0%	25	37	0%	↓
Gioia,D.A.	18	23	1%	52	13	0%	27	36	0%	↓
Dutton,J.E.	19	21	0%	0	3	0%	47	24	0%	↓
Huff,A.S.	20	20	0%	70	9	0%	36	29	0%	↓
Alvesson,M.	21	19	0%	19	25	1%	21	44	0%	↑
Tsoukas,H.	21	19	0%	30	18	0%	25	37	0%	↓
Brown,J.S.	21	19	0%	70	9	0%	38	28	0%	↓
Luhmann,N.	21	19	0%	95	7	0%	43	26	0%	↓
Seidl,D.	25	18	0%	4	70	1%	7	88	1%	↑
Orlikowski,W.J.	26	17	0%	34	17	0%	29	34	0%	↔
Floyd,S.W.	27	16	0%	22	23	0%	23	39	0%	↑
Schatzki,T.R.	28	14	0%	45	14	0%	38	28	0%	↔
VandeVen,A.H.	28	14	0%	45	14	0%	38	28	0%	↔
Feldman,M.S.	28	14	0%	59	11	0%	45	25	0%	↓
Chia,R.	33	13	0%	12	42	1%	14	55	1%	↑
Denis,J.-L.	33	13	0%	45	14	0%	41	27	0%	↑
Barry,D.	33	13	0%	54	12	0%	45	25	0%	↓
Greenwood,R.	33	13	0%	65	10	0%	49	23	0%	↓
Willmott,H.	38	12	0%	25	21	0%	32	33	0%	↑
Wilson,D.C.	38	12	0%	30	18	0%	34	30	0%	↑
Goffman,E.	38	12	0%	45	14	0%	43	26	0%	↑
Hambrick,D.C.	38	12	0%	59	11	0%	49	23	0%	↓
Elmes,M.	38	12	0%	65	10	0%	53	22	0%	↓
Foucault,M.	46	11	0%	15	35	1%	20	46	0%	↑
Hardy,C.	46	11	0%	20	24	0%	28	35	0%	↑
Regner,P.	46	11	0%	22	23	0%	29	34	0%	↑
Mayer,M.	46	11	0%	40	16	0%	41	27	0%	↑
Waters,J.A.	46	11	0%	54	12	0%	49	23	0%	↑
Vaara,E.	53	10	0%	11	46	1%	13	56	1%	↑
Burgelman,R.A.	53	10	0%	25	21	0%	33	31	0%	↑
Porter,M.E.	66	9	0%	25	21	0%	34	30	0%	↑
Rouleau,L.	77	8	0%	17	31	1%	23	39	0%	↑
Hodgkinson,G.P.	77	8	0%	40	16	0%	47	24	0%	↑
Phillips,N.	91	7	0%	24	22	0%	36	29	0%	↑
Lawrence,T.B.	110	6	0%	34	17	0%	49	23	0%	↑
Mantere,S.		5	0%	13	38	1%	22	43	0%	↑
Clegg,S.R.		5	0%	18	29	1%	29	34	0%	↑
Ezzamel,M.		5	0%	34	17	0%	53	22	0%	↑
Lounsbury,M.		2	0%	29	20	0%	53	22	0%	↑

Source: Research Data.

Figure 3 - Comparison between authors of the analyzed papers, number of authorships and citations received

	Period of Analysis									
	47 articles till 2007 n° of References = 4545			46 articles after 2007 n° of References = 4950			93 articles Analyzed n° of References = 9495			
Authors	Order	Citations	Articles	Order	Citations	Articles	Order	Citations	Articles	Evolution
Whittington,R.	1	112	4	1	178	4	1	290	8	↑
Jarzabkowski,P.	2	80	5	2	171	8	2	251	13	↑
Johnson,G.	4	67	2	3	93	1	3	160	3	↑
Pettigrew,A.M.	3	77	1	9	49	-	4	126	1	↓
Balogun,J.	6	39	3	5	64	-	6	103	3	↑
Seidl,D.	25	18	3	4	70	2	7	88	5	↑
Langley,A.	10	31	3	10	48	1	8	79	4	↑
Melin,L.	15	25	1	7	50	-	9	75	1	↑
Samra-Fredericks,D.	10	31	2	14	36	-	12	67	2	↑
Vaara,E.	53	10	3	11	46	4	13	56	7	↑
Chia,R.	33	13	2	12	42	1	14	55	3	↑
Hendry,J.	10	31	1	20	24	-	14	55	1	↓
Eisenhardt,K.M.	9	32	1	34	17	-	17	49	1	↓
Mantere,S.	0	5	1	13	38	2	22	43	3	↑
Floyd,S.W.	27	16	-	22	23	1	23	39	1	↑
Rouleau,L.	77	8	2	17	31	-	23	39	2	↑
Gioia,D.A.	18	23	1	52	13	-	27	36	1	↓
Clegg,S.R.	0	5	-	18	29	3	29	34	3	↑
Regner,P.	46	11	-	22	23	1	29	34	1	↑
Willmott,H.	38	12	-	25	21	1	32	33	1	↑
Wilson,D.C.	38	12	1	30	18	-	34	30	1	↑
Huff,A.S.	20	20	1	70	9	-	36	29	1	↓
Denis,J.-L.	33	13	2	45	14	-	41	27	2	↑
Hodgkinson,G.P.	77	8	1	40	16	-	47	24	1	↑
Lounsbury,M.	0	2	1	29	20	-	53	22	1	↑
Ezzamel,M.	0	5	-	34	17	1	53	22	1	↑
Johnson,P.	38	12	1	70	9	-	56	21	1	↓
Cooren,F.		0	-	30	18	1	60	18	1	↑
Kornberger,M.	0	1	-	34	17	2	60	18	2	↑
Holt,R.	0	3	1	45	14	-	67	17	1	↑
Spee,A.P.		0	-	34	17	2	67	17	2	↑
Carter,C.	0	1	-	43	15	1	74	16	1	↑
Chittipeddi,K.	66	9	1	95	7	-	74	16	1	↓
Townley,B.	66	9	1	95	7	-	74	16	1	↓
Kaplan,S.	0	4	1	59	11	1	83	15	2	↑
Barley,S.R.	77	8	1	95	7	-	83	15	1	↓
Cooper,D.J.	77	8	1	96	6	-	91	14	1	↓
Kleymann,B.	0	5	1	80	8	-	99	13	1	↑
Seristo,H.	0	5	1	80	8	-	99	13	1	↑
Ambrosini,V.	0	5	1	95	7	1	106	12	2	↑
MacKay,B.	0	1	1	59	11	-	106	12	1	↑
Clark,T.	0	5	-	95	7	1	106	12	1	↑
Oakes,L.S.	91	7	1	0	5	-	106	12	1	↓
Sillince,J.		0	1	59	11	-	0	11	1	↑
Hoon,C.	0	1	1	70	9	-	0	10	1	↑
Cornelissen,J.P.		0	-	65	10	1	0	10	1	↑
Bowman,C.	0	3	1	95	7	-	0	10	1	↑
Roos,J.	0	4	1	96	6	1	0	10	2	↑
Palmer,I.	0	2	-	80	8	1	0	10	1	↑
Fenton,E.	0	4	1	0	5	-	0	9	1	↑
Kuhn,T.		0	-	0	9	1	0	9	1	↑
McCabe,D.	0	3	-	0	5	1	0	8	1	↑
Rasche,A.		0	-	80	8	1	0	8	1	↑
Sminia,H.	0	1	-	95	7	1	0	8	1	↑

Source: Research Data.

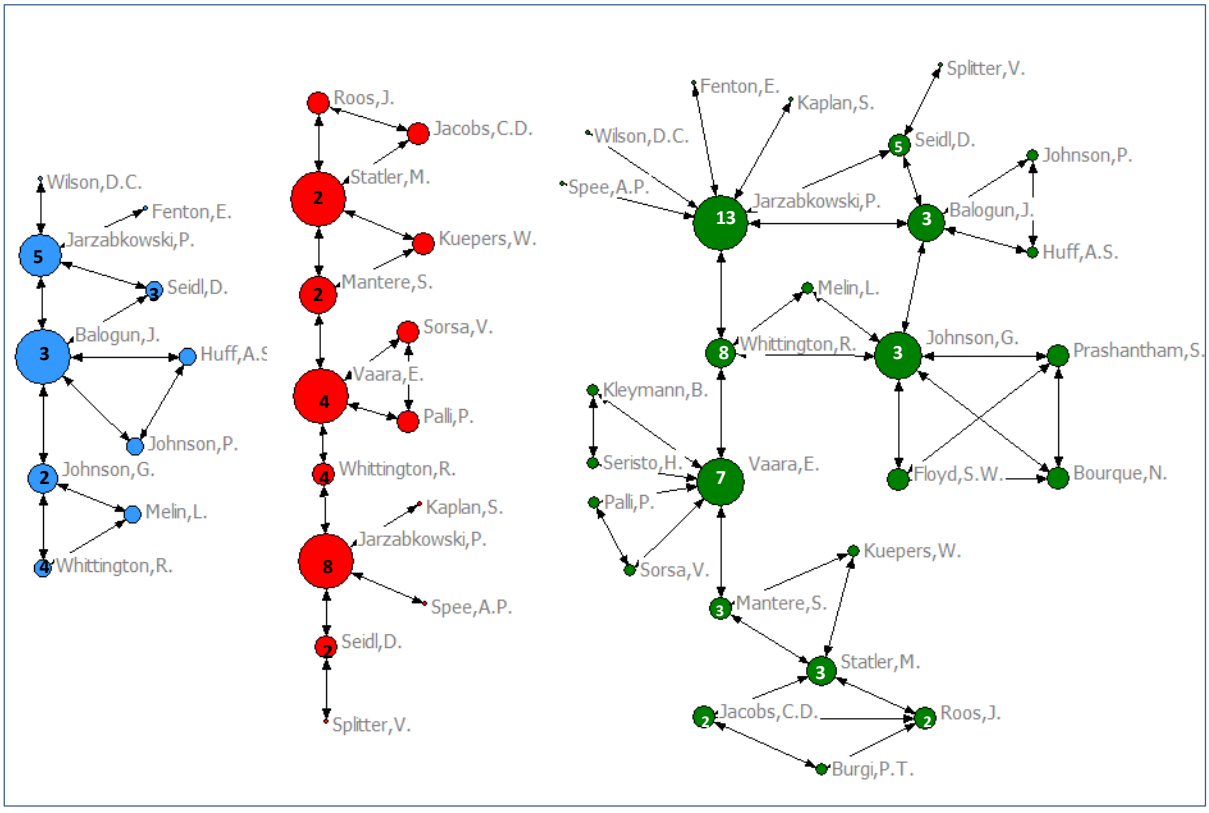
Figure 4 illustrates the main components of the network in each period and the number of published papers by the respective authors. The dimension of circles indicates the centrality degree of the actors in each one of the networks.

As members of the main component during the period until 2007, Balogun has the greater centrality degree, having been co-author of three papers. Jarzabkowski with 5 published papers, 2 of them without co-authoring and Whittington with 4 published papers, only one of them with co-authoring have lower centrality degrees.

The second period of analysis indicates 14 authors on the main component of the co-authoring network. Highlights for Vaara, Statler, besides Jarzabkowski with the higher centrality degrees. Jarzabkowski's production reached eight publications during this period, but only four of them with co-authorships.

When the data about co-authoring of both periods are grouped, the main component of the network reaches 27 members. Authors Jarzabkowski, Johnson, Vaara, Balogun and Whittington have the higher centrality degrees.

Figure 4 - Evolution of the number of authors of the main component and number of published papers

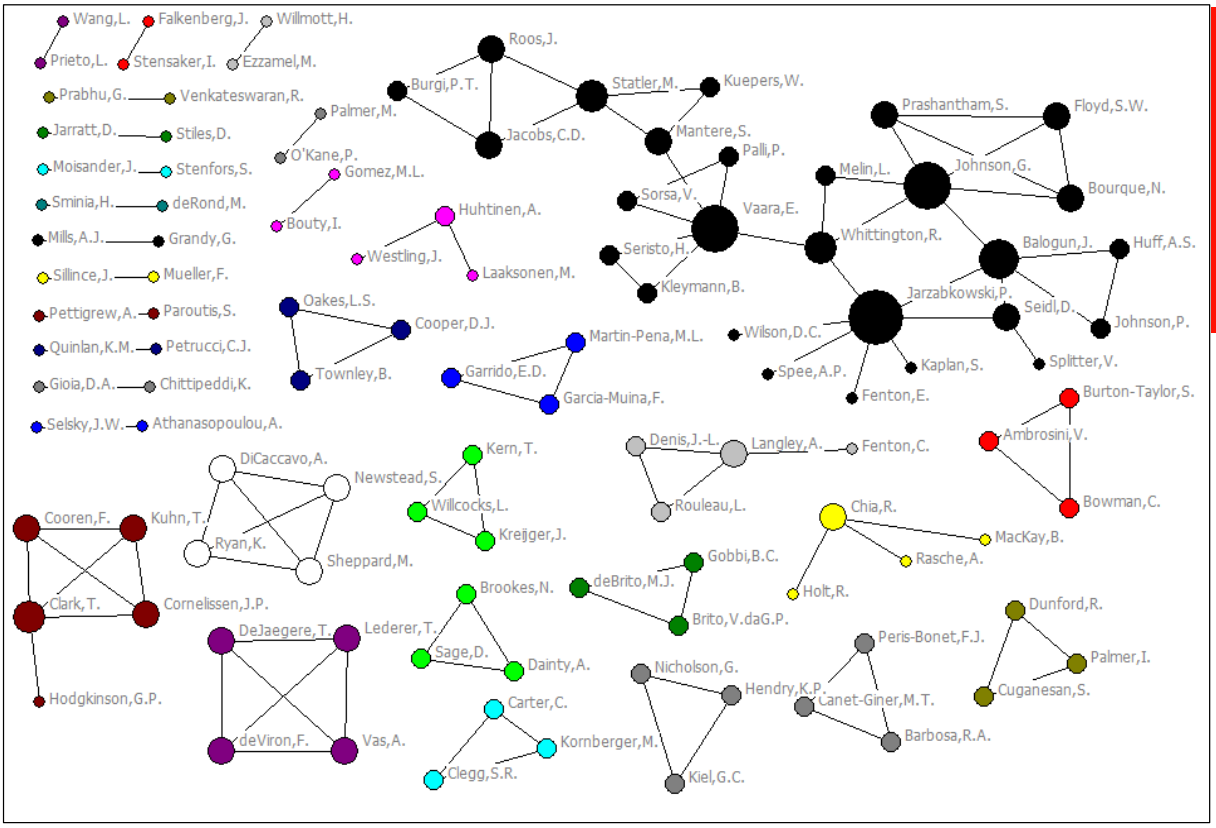


Source: Research Data.

Figure 5 has the social network of the total period with the composition of the 129 authors and their relationships of co-authoring. Network parameters were calculated for each one of the periods in separate in order to be used on the statistical

analyzes. Authors isolated from the network, in other words, those that did not publish in co-authoring, are not presented in the network of Figure 5. A high number of papers involving only 2 authors (15 simple links) and 23 clicks (3 authors) is also observed. The centrality degree of the network is 2.48% and the clustering coefficient is 0.873.

Figure 5 - The social network of co-authoring encompassing the total period



Source: Research Data.

From the network analysis and centrality data generated for each one of the periods the hypotheses launched in the theoretical network at the beginning of this investigation will be investigated.

Statistical analyzes

By means of the SPSS software correlation analyzes were performed between the number of publications of each author, the number of citations received by each author and the centrality parameters of the network. Spearman's correlation analysis indicates that the number of publications is correlated with all parameters of the network analysis on the 1st and 2nd periods, as well as on the total period at a significance level of 0.01. The number of citations per author, despite being correlated

with network parameters during the 1st period is not correlated with network parameters during the 2nd period (only betweenness), neither with parameter Degree on the total period and is correlated at a level of significance of 0.05 with Effsize and at a level of significance of 0.01 with the other parameters. Data are disposed in Table 1.

With data from Table 1 it is possible to indicate that the production of authors is a better parameter for evaluating the contributions for the development of strategy as practice approach when compared with the quantity of citations received by those authors.

Thus, hypothesis H1a is corroborated and hypothesis H1b is partially corroborated. The productivity of authors in terms of published papers has correlation with the parameters of network centrality Degree, Closeness, Betweenness and Effsize. The representativeness of authors in terms of number of citations on the researched papers proved to be correlated with network parameters during the 1st period, but partially correlated during the 2nd period and on the total period.

Table 1 - Correlation data between citations, published papers and network parameters.

	Citations 1st Period	Articles Published	Degree	Betweenness	Closeness	Effsize
Citations 1st Period	-	,666**	,538**	,299**	-,564**	,544**
Articles Published		-	,804**	,317**	-,802**	,813**
	Citations 2nd Period	Articles Published	Degree	Betweenness	Closeness	Effsize
Citations 2nd Period	-	***,019***	***-,019***	,226**	***-,016***	***,004***
Articles Published		-	,820**	,393**	-,847**	,873**
	Citations Two Periods	Articles Published	Degree	Betweenness	Closeness	Effsize
Citations Two Periods	-	,476**	***,077***	,345**	-,237**	,198*
Articles Published		-	,402**	,688**	-,463**	,510**

Note. **Correlation significant at the level of 0.01. * Correlation significant at the level of 0.05 (bi-caudal).

Taking into account the subdivision of authors in each period between authors of the main network component and other authors, the aim was to verify the existence of statistically significant differences between the averages of the network parameters. In order to do that, Mann-Whitney's test was used for non-parametric data, according to Tables 2 and 3.

Data presented in Tables 2 and 3 propitiate the verification of hypotheses H2a and H2b. Mann-Whitney's test for difference between means found statistically significant differences (at a level of significance of 0.05) between productivity data,

number of citations and network centrality parameters for authors members of the main component and the other authors of the network.

Considering this, hypotheses H2a and H2b which indicated that the measurements of network centrality may be used as differentials regarding the localization of authors on the network and that there were statistically significant differences between the measurements of network centrality of the authors of the main components and the other authors are corroborated.

Table 2 - Comparative between means with Mann-Whitney's tests encompassing the analyzed periods.

n° of Citations	Non Principal	119	60,6	7208,5	68,5	7208,5	-4,9	,000	115	62,4	7172,5	502,5	7172,5	-2,3	,021
	Principal	10	117,7	1176,5					14	86,6	1212,5				
	Total	129							129						
n° of articles published	Non Principal	119	61,3	7298,5	158,5	7298,5	-4,3	,000	115	59,5	6839,0	169,0	6839,0	-5,4	,000
	Principal	10	108,7	1086,5					14	110,4	1546,0				
	Total	129							129						
Degree	Non Principal	119	61,2	7287,0	147,0	7287,0	-4,4	,000	115	60,5	6952,5	282,5	6952,5	-4,2	,000
	Principal	10	109,8	1098,0					14	102,3	1432,5				
	Total	129							129						
Betweenness	Non Principal	119	63,5	7560,0	420,0	7560,0	-5,1	,000	115	62,0	7134,0	464,0	7134,0	-6,6	,000
	Principal	10	82,5	825,0					14	89,4	1251,0				
	Total	129							129						
Closeness	Non Principal	119	70,0	8330,0	,0	55,0	-5,9	,000	115	72,0	8280,0	,0	105,0	-6,5	,000
	Principal	10	5,5	55,0					14	7,5	105,0				
	Total	129							129						
Effsize	Non Principal	119	61,3	7297,5	157,5	7297,5	-4,5	,000	115	59,9	6887,0	217,0	6887,0	-5,0	,000
	Principal	10	108,8	1087,5					14	107,0	1498,0				
	Total	129							129						

Table 3 - Comparative between means with Mann-Whitney's tests encompassing the total period.

		Total Period						
	Network Components	N	Mean Rank	Sum of Ranks	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
n° of Citations	Non Principal	102	59,0	6020,0	767,0	6020,0	-3,6	,000
	Principal	27	87,6	2365,0				
	Total	129						
n° of articles published	Non Principal	102	58,9	6012,5	759,5	6012,5	-5,5	,000
	Principal	27	87,9	2372,5				
	Total	129						
Degree	Non Principal	102	57,9	5908,5	655,5	5908,5	-4,3	,000
	Principal	27	91,7	2476,5				
	Total	129						
Betweenness	Non Principal	102	60,3	6154,0	901,0	6154,0	-5,1	,000
	Principal	27	82,6	2231,0				
	Total	129						
Closeness	Non Principal	102	78,5	8007,0	,0	378,0	-8,1	,000
	Principal	27	14,0	378,0				
	Total	129						
Effsize	Non Principal	102	59,0	6014,5	761,5	6014,5	-4,7	,000
	Principal	27	87,8	2370,5				
	Total	129						

Results confirm that the authors members of the network's main components are the more relevant ones for developing the strategy as practice approach.

Final Reflections

The intellectual base over which a discipline develops is largely revealed on the citations that researchers do in their works and composes the intellectual structure from which the discipline is evolving. A bibliometric study about a given theme may be the key to explore and understand the origins of the concepts used by the community of specialists on the discipline of interest. The identification of the more influential sources of publication also contributes to prove the changes that happened in the intellectual structure of research using the bibliographic references cited by a significant group of authors. On the other hand, a sociometric analysis brings relevant contributions for the comprehension of the relationship between the several social actors members of a scientific field of interest. The comparative analysis between the analyzed periods indicates an evolution on the number of actors with co-authoring among the main group of authors of strategy as practice approach, but still with a high amount of peripheral authors. The network of social actors and their different relationships created by strong or weak links allows a given field to seek its development as a theoretical-empirical discipline. For a theoretical approach, as the case of strategy as practice, it is important to analyze its evolutionary trajectory along time in order to identify the presence or absence of consensus among its researchers. Quantitative studies with bibliometric and sociometric characteristics allow the comprehension of the intellectual structure of a discipline with advantages of objectivity, methodological rigor and propitiate base for the inference of evolutionary patterns.

The identification of critical actors and the increase of citations about their works are ways to evaluate the consistency of the theoretical proposals and of the results obtained over time, however only with a qualitative analysis is possible to deduce the influence of those contributions. Understanding the true motives why some authors are no longer being cited and others are increasing their presence as references may help to identify theoretical-empirical changes and signalize the next challenges of a field of study. Thus, as future work is suggested to perform qualitative studies of the papers published about the strategy as practice approach in order to corroborate or misrepresent the discoveries of this research about the mapping of the field, its intellectual structure and evolutionary patterns.

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