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**SCHUMPETER'S (1934) INFLUENCE ON ENTREPRENEURSHIP
(AND MANAGEMENT) RESEARCH**

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¹ Manuel Portugal Ferreira² Nuno Rosa Reis³ Claudia Frias Pinto**ABSTRACT**

Entrepreneurship research has flourished since the 1980s, following the institutional development that created schools and courses, research centers and dedicated journals. This paper examines the impact of Joseph Schumpeter, one of the main “knowledge producers” whose concepts and ideas on the entrepreneur, entrepreneurship and innovation have shaped the discipline and much of the research on entrepreneurship, and has influenced the thought on other areas of management. Methodologically, we conducted a bibliometric study of the articles published in 16 high stature international journals, over a period of 30 years, between 1981 and 2010. On a sample of 412 articles citing Schumpeter, we analyzed and mapped citations, co-citations and research themes. We further establish distinctions between entrepreneurship and management research. This study presents a manner to examine the influence of a scholar, and a set of conceptualizations he has introduced, on a discipline. Schumpeter has had an imprint in the multidisciplinary and wealth of research themes that entrepreneurship scholars have delved upon but also in other management disciplines, where his perspectives on entrepreneurship, the entrepreneur and innovation have contributed to much of the research conducted to date. Although entrepreneurship has remained largely multidisciplinary and drawing from the main management theories there is a growing body of entrepreneurship-specific literature.

Keywords: Entrepreneurship; Bibliometric Study; Schumpeter; Co-Citations; Entrepreneurship Research.

¹ Doutor em PhD Business Administration pela University of Utah - UTAH, (Estados Unidos). Professor de Estratégia no Programa de Mestrado e Doutorado em Administração – PPGA, na Universidade Nove de Julho – UNINOVE, São Paulo, Brasil. E-mail: manuel.portugal.ferreira@gmail.com

² Doutor em Gestão de Empresas pela Faculdade de Economia da Universidade de Coimbra, (Portugal). Professor de Empreendedorismo e Estratégia, Departamento de Gestão e Economia no Instituto Politécnico de Leiria - IPL, Portugal. E-mail: nuno.m.reis@ipleiria.pt

³ Doutoranda em Administração de Empresas pela Fundação Getulio Vargas - FGV/EAESP, São Paulo, (Brasil). E-mail: claudia.frias.pinto@gmail.com



A INFLUÊNCIA DE SCHUMPETER (1934) NA PESQUISA DE EMPREENDEDORISMO (E ADMINISTRAÇÃO)

RESUMO

A pesquisa em empreendedorismo floresceu desde os anos 1980, seguindo o desenvolvimento institucional que criou escolas e cursos, centros de pesquisa e periódicos especializados. Este artigo analisa o impacto de Joseph Schumpeter, um dos principais “produtores de conhecimento” cujos conceitos e ideias sobre o empreendedor, empreendedorismo e inovação moldaram a disciplina e muita da pesquisa em empreendedorismo, e influenciou o pensamento em outras áreas de Administração. Metodologicamente, conduziu-se um estudo bibliométrico dos artigos publicados em 16 periódicos internacionais de alto status, num período de 30 anos, entre 1981 e 2010. Numa amostra de 412 artigos que citam Schumpeter, foi analisado e mapeado citações, cocitações e temas pesquisados. Estabelecemos distinções entre a pesquisa em empreendedorismo e administração. Este estudo apresenta uma forma de examinar a influência de um pesquisador, e um conjunto de conceitualizações que introduziu na disciplina. Schumpeter tem sido uma marca na multidisciplinaridade e riqueza dos temas analisados pelos pesquisadores em empreendedorismo, mas também em outras disciplinas de administração, onde as suas perspectivas sobre empreendedorismo, o empreendedor e inovação têm contribuído para muita da pesquisa realizada até a data. Apesar de empreendedorismo permanecer fortemente multidisciplinar e utilizando das principais teorias em administração, há um corpo de conhecimento crescente e específico na literatura de empreendedorismo.

Palavras-chave: Empreendedorismo; Estudo Bibliométrico; Schumpeter; Cocitação; Pesquisa em Empreendedorismo.



INTRODUCTION

As a field of study evolves, it is useful to periodically analyze the accumulated knowledge and its past directions (Low & Macmillan, 1988). This statement expresses the underlying motivation for our contribution. Entrepreneurship research has gained more attention during the past decades and perhaps even more recently, as the world faces economic, social and cultural challenges to which governments are not able to devise solutions (Low & Macmillan, 1988). Individuals seek their own employment solutions through entrepreneurial initiatives leading to the creation of their own businesses, implementing innovations and new technologies (Da Costa, 2006). Recognizing the importance of entrepreneurship, many universities created research centers and entrepreneurship courses and degrees – especially at the post-graduate level – and scholars feed a growing body of knowledge. It is thus interesting and timely to examine the influence and reach of one of the main contributors to the knowledge base of entrepreneurship research, Joseph Schumpeter. Schumpeter is one of the field's earliest and most influential knowledge producers and his early studies on the nature of entrepreneurship have been foundational to an array of issues from entrepreneurship to innovation and are still highly influential.

The development of entrepreneurship as a discipline has benefited from the contribution of numerous scholars since the 1980s (Low & Macmillan, 1988). Some authors and theories seem to have had a greater impact in the blossoming of entrepreneurship research, most notably Joseph A. Schumpeter, the first economist arguing for the central role of the entrepreneur in economic development. In his seminal 1912 work *Theorie der Wirtschaftlichen Entwicklung* – subsequently translated as *The Theory of Economic Development* (Schumpeter, 1934) – Schumpeter has put forward ideas that still permeate the discipline. Particularly, we recognize his proposition that economic development occurs in a process of creating new opportunities through “creative destruction”. The entrepreneur was, according to Schumpeter, the driver of economic growth by introducing innovations. Later, Schumpeter's perspective shifted from entrepreneurs to corporations and to innovative activities by incumbent firms (Schumpeter, 1942). The evolution of the discipline has also created a community of scholars sharing concepts, research methods and topics (Aldrich, 2012). This community has steadily grown out of being knowledge-users



(some scholars argue that entrepreneurship research is still in a rather early stage, such as Nicholls (2010) and Aldrich (2012)) and is increasingly knowledge-producer, with a small group of intellectual leaders such as Schumpeter.

In this paper we aim at understanding the influence and reach of Schumpeter's work and ascertain the assumption that his contribution persisted in research in the last decades. Moreover, we examine whether his influence is bound to entrepreneurship or whether it extends to other management domains. Despite the large volume of literature that generated in the field, Schumpeter is a compulsory reference. As Nelson (2012, p. 901) noted "recent developments have increased the interests of economists in innovation and in innovation driven economic activity, and the time now may be ripe for a renaissance of Schumpeterian economics". We examine how Schumpeter's work is intellectually intertwined with the themes and theories used in entrepreneurship and management.

This bibliometric study analyzes the stock of accumulated knowledge assessed in the articles published, but relying on quantitative data and using bibliometric techniques. Van Leeuwen (2004, p. 374) defined bibliometrics as "the field of science that deals with the development and application of quantitative measures and indicators for science and technology based on bibliographic information". The advantage of an empirical analysis of the extant literature, based on statistical methods, is that it reduces potential biases introduced by the authors' own perceptions and preferences (White & McCain, 1998; Ramos-Rodriguez & Ruiz-Navarro, 2004; Shafique, 2013). Furthermore, the data may be interpreted to identify, for instance, what have been the largest concentrations of research streams. Methodologically, we analyze the articles published in 16 high impact entrepreneurship and management journals over a 30-year period, from 1981 to 2010. The bibliometric study uses a sample of 412 articles citing Schumpeter (1934). The procedures of data analysis included citation and co-citation networks and the mapping of the research themes to understand the intellectual structure of entrepreneurship research, specifically the interconnections of Schumpeter's work with other authors, theories and themes (White & McCain, 1998; Ramos-Rodriguez & Ruiz-Navarro, 2004). Our analyses identify ties between research themes with which Schumpeter's works holds communalities. These analyses clarify Schumpeter's contribution to entrepreneurship and management research.



This paper complements earlier literature reviews and bibliometric studies by focusing specifically on Schumpeter and applying a set of techniques that permit us to objectively identify and examine the most salient works, the intellectual structure of the knowledge base and identifying the core themes that have characterized past research endeavors over an extended period of time. Landström *et al.*'s (2012) bibliometric study examined the changes in the discipline's intellectual structure depicting the links between entrepreneurship scholars. Teixeira (2011) examined articles published between 2005 and 2010 observing some level of fragmentation of the theories and topics but identifying new specializations emerging. Shane (2000) observed the most prolific institutions in entrepreneurship research. Low and MacMillan (1988) examined past research to propose a future research agenda. Etemad and Lee (2003) delved into the networks of knowledge in international entrepreneurship research. Schildt *et al.* (2006) identified the communities of scholars and topics. Reader and Watkins (2006) analyzed the networks of collaboration among scholars. However, none of these works focused on one of the leading knowledge producers nor have they used such a broad sample or extended research period of thirty years to identify intellectual connections between Schumpeter's work and the entrepreneurship and management research carried out over the past 30 years.

SCHUMPETER'S WORK

It is not our purpose in this paper to extensively analyze the life and work of Joseph Schumpeter. Schumpeter's work has permeated many disciplines from entrepreneurship to sociology, from economics to management and such analyses are too huge to fit in a single paper. Readers with limited familiarity with Schumpeter's work may find it useful to refer back to previous works such as those by Hagedoorn (1996), Backhaus (2003), Goss (2005), da Costa (2006) and Nelson (2012) and, specifically on Schumpeter's impact on management research, to Ahuja *et al.* (2008). Neither it is our purpose to extensively review the extant literature on entrepreneurship, which may be found in other articles (e.g., Low & Macmillan, 1988; Cooper, 2003; Cornelius *et al.*, 2006; Busenitz *et al.*, 2003; Teixeira, 2011; Landström *et al.*, 2012).

Nonetheless, it is relevant to briefly highlight some of the most prominent features of Schumpeter's work to understand Schumpeter's influence on entrepreneurship, and



more broadly, on management research, as well as topics in which his influence may be more strongly felt. In fact, Schumpeter's original works were a reference to economists and only later, with the emergence of a discipline on entrepreneurship, did his works become foundational to entrepreneurship research and teaching – arguably more prominently his views on the entrepreneur, entrepreneurship and innovation.

Schumpeter has pioneered an entrepreneurial vision of the individuals (individuals' motivation has a central position) who personified innovation and are the real drivers of innovations (Schumpeter, 1934). This individual, the entrepreneur, was that who took on the uncertainties and risks but also the potential benefits of innovation. Studies on the entrepreneur have thus pursued many of the traits first illustrated by Schumpeter, such as risk taking, managerial ability, wealth, and the job attributes that come with being one's own boss (Ohyama *et al.*, 2009). According to Schumpeter (1934) the entrepreneur is the individual which innovates when he introduces something new in the market, either a product, a service or a method, although recognizing that a substantial part of these innovations imply a (re)combination of existing elements. Largely, the current definition of entrepreneur is based on Schumpeter's "economic outcome-based concept that an entrepreneur creates value by carrying out new combinations causing discontinuity" (Bull & Willard, 1993, p. 182).

It is worth noting that economic progress, according to Schumpeter, would demand changes or ruptures based on something new entering the system, i.e. innovations, and these conceptions were themselves a rupture with economic models based in equilibrium. William Baumol (1968, p. 64) would write on the entrepreneur:

The entrepreneur is at the same time one of the most intriguing and one of the most elusive characters in the cats that constitutes the subject of economic analysis. He has long been recognized as the apex of the hierarchy that determines the behavior of the firm and thereby bears a heavy responsibility for the vitality of the free enterprise society. In the writings of the classical economist his appearance was frequent, though he remained a shadowy entity without clearly defined form and function. Only Schumpeter (...) succeeded in infusing him with life and in assigning to him a specific area of activity to any extent commensurable with his acknowledged importance.

Schumpeter pioneer thinking was also responsible for breaking the then dominant doctrine of equilibrium models in economic theories, proposing proposed change as an alternative to equilibrium. The entrepreneur propelled economic change as s/he disrupted the equilibrium by introducing innovations. Hence, creative destruction was the key element of capitalism (Schumpeter, 1942) – and change could



arise from the individual, the entrepreneur, and from innovations in established organizations. Despite Schumpeter's postulate, economic analyses continued disregarding the role of the entrepreneur since the neoclassical rationale based on equilibrium prevailed. However, some applications and extensions started to emerge, for instance, in McClelland's (1961) '*The achieving society*' as he sought to understand the role of motivation and why were some societies more dynamic.

While Schumpeter's early writings stressed the individual entrepreneurs and firms were simply the vehicles that brought innovations to markets, in his 1942 work on "Capitalism, Socialism, and Democracy", firms and especially large firms were the main drivers of innovations. That is, Schumpeter (1942) recognized the role of organizations in generating innovations under specific conditions. Much of the subsequent management research on innovation would take this perspective and look into firms as the innovators. Moreover, knowledge and innovations became central topics in management studies.

Management research has been strongly influenced by Schumpeter's thoughts perhaps more especially in what relates to innovation (Ahuja *et al.*, 2008). For instance, in analyzing the conditions under which firms innovate and when does innovation occur, Schumpeter's argument was that the large monopolistic firms were the main sources of innovation. Firm size and market structure were at the heart of Schumpeter's conjecture of innovation. In fact, management studies took many approaches in testing this assumption and several theories were brought in, such as social networks and interfirm ties within an industry that can function as vehicles for the flow of information and ideas that influence firms' innovative ability. The structure of the network can have an impact on the generation of innovations and on who are the agents of innovation. Research on institutional theory has also risen to examine, for instance, how firms imitate innovators. Scale and scope decisions by firms may not only influence innovation but also who is able to capture the rents from innovation have been examined. Resource- and capabilities-based thinking were applied since firms may augment their ability to innovate through investments and, for instance, establishing alliances.

Albeit the work of Schumpeter is extensive, his book, originally written in 1912, and published in English in 1934, "*The theory of economic development: An inquiry into profits, capital, credit, interest and the business cycle*" has defined his impact on



economic thinking that would support much of the research undertaken thereafter. The 1934 book is the most cited of Schumpeter's publications - Table 1 includes the top five most cited of Schumpeter's works and their citation counts (data collected from *Institute for Scientific Information (ISI) Web of Knowledge*) – and is used in the empirical part of this paper.

Rank	Work	Year of publication	N. of citations
1	The theory of economic development: An inquiry into profits, capital, credit, interest and the business cycle	1912/1934	2,424
2	Capitalism, socialism and democracy	1942	2,163
3	History of economic analysis	1954	1,272
4	Business cycles: A theoretical, historical and statistical analysis of the capitalist process	1939	1,107
5	Imperialism and social classes	1951	137

Table 1. Schumpeter's most cited works
Source: Data collected in *ISI Web of Knowledge*.

METHOD

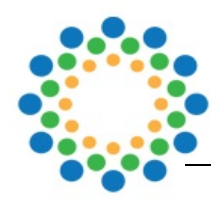
Scientometry is the science of measuring and analyzing knowledge. Bibliometry is a scientometric method that allows analyzing quantitatively a body of knowledge, or extant literature, by ascertaining, for instance, the most cited works, the co-citation networks and, more broadly, understanding its intellectual structure (Ramos-Rodriguez & Ruiz-Navarro, 2004). Bibliometric studies may be used to examine trends (White & McCain, 1998; Acedo *et al.*, 2006), networks of scholars and institutions (Shane, 1997), identify the impact of an author (Ferreira, 2011), the themes researched (Schildt *et al.*, 2006; Furrer *et al.*, 2008), the track record of publications in a given area (Cornelius *et al.*, 2006), the productivity of authors and institutions (Shane, 1997), or the intellectual structure of a discipline (Ramos-Rodriguez & Ruiz-Navarro, 2004; Shafique, 2013). Bibliometric studies have been used in several areas of business and economics (McCain, 1991), strategy (Ramos-Rodriguez & Ruiz-Navarro, 2004; Furrer *et al.*, 2008; Shafique, 2013), international business (Ferreira, 2011), and entrepreneurship (Ratnatunga & Romano, 1997; Teixeira, 2011). In this paper, we conduct a bibliometric study of the articles that have cite Schumpeter's (1934) work over a period of 30 years, employing citation and co-citation analysis and the co-occurrence of keywords to proxy research topics.



Specifically related to entrepreneurship, Ratnatunga and Romano (1997) conducted a citation analysis of the articles on small businesses. Shane (2000) examined scholars and institutions that published entrepreneurship. Etemad and Lee (2003) focused the knowledge networks in international entrepreneurship research. Schildt *et al.* (2006) identified the communities of scholars with a co-citation analysis. Reader and Watkins (2006) observed the collaborative nature of entrepreneurship research using co-citation and perception analyses. Teixeira (2011) uncovered the invisible colleges. Finally, Sassmannshausen (2009) performed an extensive bibliometric study using articles on relational networks, social capital, cooperation and alliances in entrepreneurship. Hence, bibliometric studies are not new to scholars.

Data Collection Procedures

We have collected the data needed for the quantitative analyses searching for articles in journals available in *ISI Web of knowledge*. The data collection procedures involved three main steps. The first step consisted in narrowing the search to a set of the main entrepreneurship journals and other top ranked management journals that also publish entrepreneurship research. We have selected highly ranked journals according to their 5-year impact factors (JCR - Journal Citation Reports), Scopus SJR, H index, and Harzing's (2014) journal quality list. The impact factors consider the citation frequency and are often used in evaluating the journals' impact and quality. We also guaranteed that that we included the journals that were used in prior bibliometric studies (see Table 2). The second step involved delimiting the period for the study. To capture the recent research while maintaining our ability to examine a significant track record we delimited to scope to the period 1981 to 2010, a 30 years period. Finally, the third step, involved restricting the sample to the articles citing Schumpeter's (1912/1934) work entitled "*The theory of economic development*" - his most cited work, with 2,424 citations (Table 1).

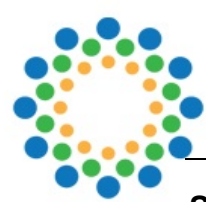


Journal	Year ISI WoK	5-years impact factor	Impact factor	Scopus SJR	Scopus H index	Other entrepreneurship bibliometric studies that include the journal	Number of articles	% of total sample
Entrepreneurship and Regional Development	2001	1.770	1.353	1.373	45	Schildt <i>et al.</i> (2006), Meyer <i>et al.</i> (2014)	15	
Entrepreneurship Theory and Practice	2003	3.839	2.272	2.085	57	Schildt <i>et al.</i> (2006), Keupp & Gassman (2009), Busenitz <i>et al.</i> (2014), Meyer <i>et al.</i> (2014)	29	
International Small Business Journal	2003	1.748	0.927	1.171	35	Schildt <i>et al.</i> (2006), Keupp & Gassman (2009)	11	
Journal of Business Venturing	1987	3.914	2.149	3.622	90	Schildt <i>et al.</i> (2006), Van Praag & Versloot (2007), Keupp & Gassman (2009), Busenitz <i>et al.</i> (2014), Meyer <i>et al.</i> (2014)	63	
Journal of Product Innovation Management	1984	3.626	2.079	1.935	82	Keupp & Gassman (2009)	9	
Journal of Small Business Management	1995	1.703	1.189	0.812	51	Schildt <i>et al.</i> (2006)	21	
Small Business Economics	1992	2.057	1.555	2.002	64	Schildt <i>et al.</i> (2006), Van Praag & Versloot (2007), Keupp & Gassman (2009)	61	
Academy of Management Journal	1958	10.779	5.250	10.259	182	Busenitz <i>et al.</i> (2003), Schildt <i>et al.</i> (2006), Van Praag & Versloot (2007), Keupp & Gassman (2009), Busenitz <i>et al.</i> (2014)	21	
Academy of Management Review	1983	11.657	6.720	9.042	163	Busenitz <i>et al.</i> (2003), Schildt <i>et al.</i> (2006), Keupp & Gassman (2009), Busenitz <i>et al.</i> (2014)	19	
Administrative Science Quarterly	1956	7.539	3.684	-	-	Busenitz <i>et al.</i> (2003), Van Praag & Versloot (2007), Keupp & Gassman (2009), Busenitz <i>et al.</i> (2014)	14	
Journal of International Business Studies	1976	5.539	4.184	3.512	108	Keupp & Gassman (2009)	11	
Journal of Management	1983	6.210	3.758	4.603	114	Busenitz <i>et al.</i> (2003), Schildt <i>et al.</i> (2006), Keupp & Gassman (2009), Busenitz <i>et al.</i> (2014)	26	
Management Science	1954	3.966	2.221	4.170	153	Busenitz <i>et al.</i> (2003), Schildt <i>et al.</i> (2006), Van Praag & Versloot (2007), Keupp & Gassman (2009)	15	
Organization Science	1990	5.838	3.800	6.421	133	Busenitz <i>et al.</i> (2003), Schildt <i>et al.</i> (2006), Keupp & Gassman (2009), Busenitz <i>et al.</i> (2014)	27	
Organization Studies	1981	3.590	2.339	2.589	80	Schildt <i>et al.</i> (2006)	18	
Strategic Management Journal	1980	6.818	3.583	6.349	166	Busenitz <i>et al.</i> (2003), Schildt <i>et al.</i> (2006), Van Praag & Versloot (2007), Keupp & Gassman (2009), Busenitz <i>et al.</i> (2014)	52	

Table 2. Journals in sample

Note: For additional analyses, we distinguished entrepreneurship-specific from other management journals.

Notes: ISI impact factors collected from JCR Social Sciences Edition 2010 edition. Scopus SJR and Scopus H-index retrieved from SCImago Journal Rank 2010.



Sample

Table 2 reveals the sample and shows the percentage of the articles published in each journal. The final sample included 412 articles. *Journal of Business Venturing*, the leading journal in entrepreneurship, was the largest contributor to our sample (15.3% of the 412 articles), followed by *Small Business Economics* (14.8%), *Strategic Management Journal* (12.6%) and *Entrepreneurship Theory & Practice* (7%). Several entrepreneurship journals are somewhat young and thus have a relatively short track record of publications. For instance, ETP and ISBJ were founded in 2003. Other journals are not included in the database because they do not have an impact factor or are from other disciplines and thus are not included in the business/management category. It is further worth noting that for some of the following analyses we split the sample into two sub-samples: one including the articles published in general management journals (203 articles), and other comprising articles published in entrepreneurship-dedicated journals (209 articles).

The data in Figure 1 reveals an increasing trend in citations to Schumpeter's (1934) work. This trend may be influenced by an also increasing number of scholars researching entrepreneurship and innovation or related topics to which Schumpeter has made a significant contribution, the emergence of new journals, and more journals being included in ISI Web of Knowledge.

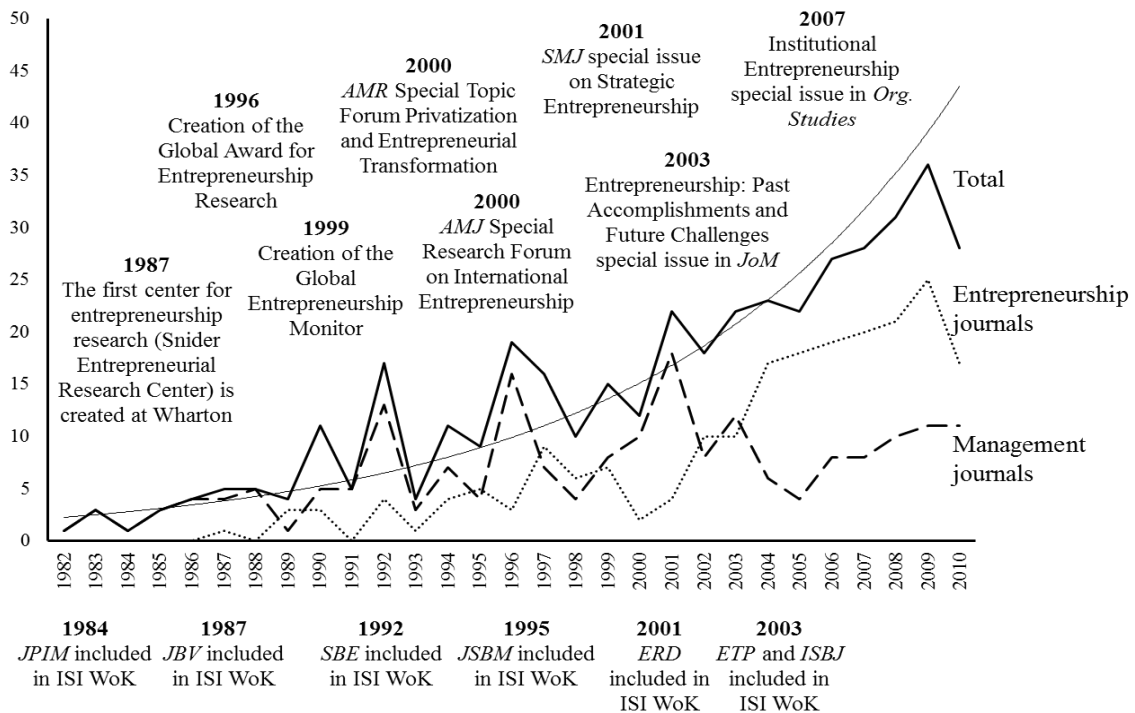
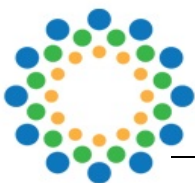


Figure 1. Evolution of published research (year and %). In the figure we list some events that may have contributed to spur research.

Source: Data collected from *ISI Web of Knowledge*. Authors' calculations.

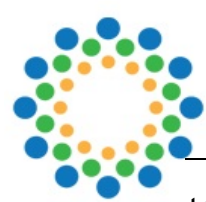


PROCEDURES OF ANALYSIS

The data was subject to three types of analyses: citations, co-citations and research themes, and when feasible presenting a longitudinal perspective. Citation analysis is one of the main, and more often used, bibliometric techniques (Acedo *et al.*, 2006; Ferreira, 2011) that involves identifying which works (articles or books) are more frequently referenced by other authors. Citing existing works is one of the foundational norms in academic research. Citation analysis is important because, as noted by White and McCain (1998), the most cited works are the most influential and those with greater impact in a discipline or topic.

Co-citation analysis looks into the joint use of citations to identify the frequency with which a given pairs of works is cited by other authors. Co-citation analysis identifies ties between works based on the assumption that co-cited articles address proximate, or similar, issues (White & Griffith, 1981), thus assessing the degree of relationship between scholars or works. Persson (1994) noted that articles citing a similar body of references also share content commonalities. Additionally, the most co-cited pairs of works have a more central position and are those more relevant in a field. Moreover, examining co-citation we may grasp the intellectual structure of a field (Ramos-Rodriguez & Ruiz-Navarro, 2004).

The third procedure entailed identifying the themes researched. To identify the themes we followed the procedure described in Furrer, Thomas and Goussevskaia (2008) and inferred the content of the articles using the author-supplied keywords. Using author-supplied keywords is a reasonable procedure since authors choose a set of keywords (usually between three to six keywords) that best describe the content of their articles for both indexing purposes and to position the article for potential readers. This procedure involved collecting all author-supplied keywords from each article and classifying them into themes. We used Schildt *et al.*'s (2006) list of the main research themes in entrepreneurship (see list in Appendix 1). Two research assistants independently coded the author-supplied keywords allocating each keyword to one of the 24 themes and any differences were resolved with the assistance of the leading researcher (see example in Appendix 2). This procedure has the advantage of allowing an article to be included in more than one theme – since the articles have several keywords – for instance, in a theme concerning the theory used, and another pertaining



to the context or the empirical approach. This technique seems to renders a reasonable approximation to the content of each article.

RESULTS

Citation Analysis

The citation analysis requires identifying the most cited, and influential, works. Table 3 includes the top 40 most cited works in our sample. This list comprises the well-known fact that entrepreneurship studies have been largely multidisciplinary. In fact, the list includes all main management theories, from the Resource-Based View, knowledge and learning to transaction costs and institutional theory. Moreover, it also includes a significant number of studies that may be considered entrepreneurship-specific – that is, that fall in the narrower scope of entrepreneurship.

Rank	Reference	Total citations	Rank	Reference	Total citations
1	Schumpeter (1934)	412	21	March & Simon (1958)	40
2	Nelson & Winter (1982)	123	22	Porter (1985)	39
3	Schumpeter (1942)	90	23	Kirzner (1979)	39
4	Penrose (1959)	80	24	Williamson (1985)	38
5	Porter (1980)	79	25	Hannan & Freeman (1977)	37
6	Barney (1991)	73	26	Teece (1986)	37
7	Kirzner (1973)	68	27	Shane (2000)	36
8	Shane & Venkataraman (2000)	65	28	Chandler (1962)	36
9	Stinchcombe (1965)	61	29	Pfeffer & Salancik (1978)	36
10	Cohen & Levinthal (1990)	60	30	McClelland (1961)	36
11	Kogut & Zander (1992)	55	31	Granovetter (1985)	36
12	March (1991)	55	32	Henderson & Clark (1990)	36
13	Wernerfelt (1984)	52	33	Hannan & Freeman (1984)	36
14	Williamson (1975)	46	34	Venkataraman (1997)	34
15	Tushman & Anderson (1986)	46	35	Aldrich & Zimmer (1986)	33
16	Dierickx & Cool (1989)	45	36	Cyert & March (1963)	33
17	Knight (1921)	45	37	Weick (1979)	32
18	Teece, Pisano & Shuen (1997)	42	38	Lumpkin & Dess (1996)	31
19	Thompson (1967)	40	39	Gartner (1985)	31
20	DiMaggio & Powell (1983)	40	40	Barney (1986)	31

Table 3. The top 40 most cited works
Source: Data collected from *ISI Web of Knowledge*. Calculations by the authors.

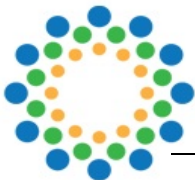
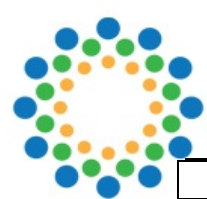


Table 4 presents a longitudinal analysis, showing the 20 most cited works for five 6-years periods. We have used only the 20 most cited because the citation counts fall substantially. Scrutinizing this data disaggregated in periods reveals variations in the usage of each reference and provides a better understanding of the shifts in the direction of the knowledge generated over time. For instance, there is a marked growth in citations to Nelson and Winter's (1982) seminal work on evolutionary theory, after 1987-1992. There is also a growth in citations to works related to the Resource-Based View (e.g., Penrose, 1959; Barney, 1986; 1991; Dierickx & Cool, 1989; Teece *et al.*, 1997) which may be signaling a greater emphasis on matters related to the resources needed to boost new firms' competitiveness and performance. Conversely, there is a relative decline of Industrial Organization as seen by citations to Porter (1980). Other variations pertain to research based on the transaction costs, innovations and types of innovations, characteristics of the entrepreneurs, population ecology, resource dependence and institutional theory.

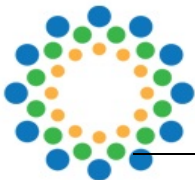


1981-1986		1987-1992		1993-1998		1999-2004		2005-2010	
Author	Cit	Author	Cit	Author	Cit	Author	Cit	Author	Cit
Schumpeter (1934)	12	Schumpeter (1934)	47	Schumpeter (1934)	69	Schumpeter (1934)	112	Schumpeter (1934)	172
Hannan & Freeman (1977)	5	Nelson & Winter (1982)	20	Nelson & Winter (1982)	24	Nelson & Winter (1982)	39	Shane & Venkataraman (2000)	44
Aldrich (1979)	5	Porter (1980)	20	Porter (1980)	18	Schumpeter (1942)	30	Kirzner (1973)	43
Porter (1980)	5	Schumpeter (1942)	15	Penrose (1959)	15	Cohen & Levinthal (1990)	27	Nelson & Winter (1982)	38
McClelland (1961)	4	Thompson (1967)	14	Schumpeter (1942)	14	Barney (1991)	24	Penrose (1959)	34
Child (1972)	4	Porter (1985)	14	Barney (1991)	13	Kogut & Zander (1992)	23	Barney (1991)	32
March e& Simon (1958)	4	Williamson (1975)	12	Stinchcombe (1965)	12	Penrose (1959)	22	Schumpeter (1942)	30
Miles & Snow (1978)	4	March & Simon (1958)	10	Wernerfelt (1984)	11	Shane & Venkataraman (2000)	21	Shane (2000)	30
Mintzberg (1973)	3	Lippman & Rumelt (1982)	9	Thompson (1967)	11	March & Simon (1958)	20	March (1991)	29
Bain (1956)	3	Cyert & March (1963)	9	Hannan & Freeman (1989)	11	Teece (1986)	17	Stinchcombe (1965)	27
Gould (1969)	3	Scherer (1980)	9	Tushman & Anderson (1986)	11	Lumpkin & Dess (1996)	17	Kogut & Zander (1992)	26
Kimberly (1979)	3	Barney (1986)	9	Weick (1979)	10	Wernerfelt (1984)	16	Teece, Pisano & Shuen (1997)	26
Hartmann (1959)	3	Rumelt (1984)	8	Dierickx & Cool (1989)	10	Cyert & March (1963)	16	Cohen & Levinthal (1990)	24
Peters (1982)	3	Chandler (1962)	8	Hannan & Freeman (1977)	10	Porter (1980)	16	Venkataraman (1997)	23
Caves (1980)	3	Wernerfelt (1984)	8	Chandler (1962)	9	Knight (1921)	16	Knight (1921)	22
Pennings (1982)	3	Porter (1981)	8	March & Simon (1958)	9	Henderson & Clark (1990)	15	Kirzner (1979)	21
Stinchcombe (1965)	3	Hannan & Freeman (1977)	8	Cyert & March (1963)	9	Teece, Pisano & Shuen (1997)	15	Aldrich (1979)	20
Chandler (1962)	3	Chandler (1977)	7	DiMaggio & Powell (1983)	9	Tushman & Anderson (1986)	15	Kirzner (1997)	20
Cooper (1973)	3	Penrose (1959)	7	Burns & Stalke (1961)	9	Christensen (1997)	15	Porter (1980)	20
Burns & Stalke (1961)	3	Burns & Stalke (1961)	7	McClelland (1961)	9	Stinchcombe (1965)	15	Shane (2003)	19

Table 4. The 20 most cited per period

Note: Cit is the number of citations in the period.

Source: Authors' calculations with data collected from *ISI Web of Knowledge*.



Co-Citation Networks

Using co-citation analyses we examine the intellectual structure by identifying the works that are more frequently used together with Schumpeter (1934). It is worth noting that the co-citation analysis is not based on the 412 articles in our sample, but rather on the 29,946 different references included in the 412 articles. Figure 2 includes only the 40 most co-cited among the 29,946 references. Showing only the top 40 was largely arbitrary but, on one hand, including too many works would render a difficult to interpret and visualize figure and, on the other, many works are co-cited only once and do not bear great impact. The relational network in Figure 2 was constructed from the co-citation matrix using social networks software *Ucinet* for the graphic representation. It is relevant attending to two aspects in interpreting the figures. First, the thickness of the lines connecting a pair of works is, in social networks analysis, a measure of the strength of the tie – that is, measures the frequency with which a pair of works is cited among all works in the sample. Second, the proximity between works signals that they are more often jointly cited (or co-cited) than other works farther apart. The software positions each work in such a manner that the more apart from the center, the weaker the tie with all the remaining works.

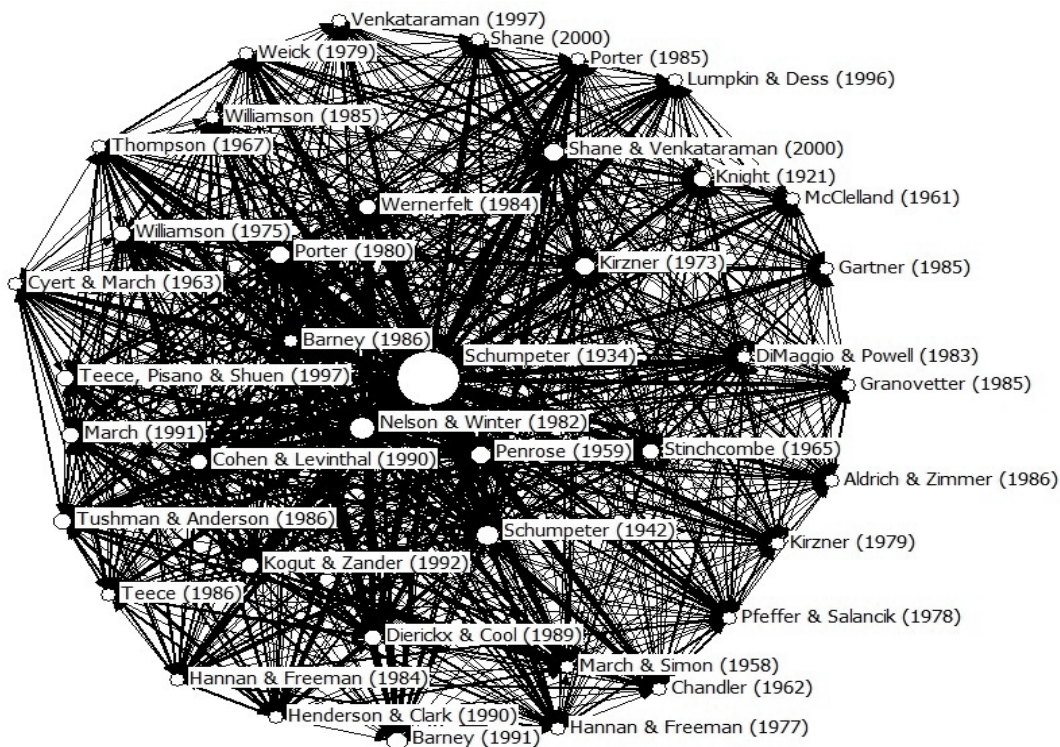
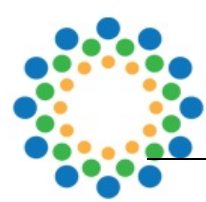


Figure 2. Co-citation network of Schumpeter (1934)

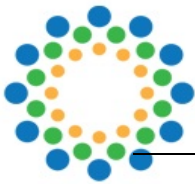
Source: Data collected from *ISI Web of Knowledge* using *Bibexcel*. Visual maps with *Ucinet*.



Schumpeter (1934) is the central work since it is the object of the study. Departing from Schumpeter, in closer proximity are Nelson and Winter (1982) on evolutionary theory and Schumpeter (1942), related to the socio-economic aspects and the prevalence of the capitalist doctrine over socialism. When taken together, the works associated with the Resource-Based View (RBV) also have a prominent position. For instance, Penrose's (1959) approach to the theory of the growth of the firm, and Barney (1991) and Porter (1980) more focused on firms' competitive advantages. Observing the remaining network, towards the periphery, we also identify other core RBV works such as Dierickx and Cool (1989) and Barney (1986), in addition to some variants on knowledge-based (Kogut & Zander, 1992) and capabilities-based (Teece *et al.*, 1997) perspectives. Other theoretical approaches include resource dependence (Pfeffer & Salancik, 1978) and transaction costs theory, that comprises Williamson's (1975, 1985) works and other studies on governance in different contexts.

Comparing Disciplines

To observe whether there are notably different patterns between entrepreneurship and management articles we split the sample following the classification of journals shown in Table 2. We identified the top 20 most cited articles citing Schumpeter in each of the sub-samples (entrepreneurship and management) (Table 5). It is worth observing that the most cited articles vary considerably between the two sub-samples, even though both samples include quite a few articles that have been identified by Ramos-Rodriguez and Ruiz-Navarro (2004) as belonging to the core of strategy research. Examining the entrepreneurship outlets the most cited works include also a number of works specific to entrepreneurship (e.g., Kirzner, 1973, 1979; Knight, 1921; Aldrich, 1986, 1999; Shane, 2000). Conversely, in the management outlets we observe works identified with theories such as Resource-Based View, Transactions Costs, Resource dependence, Learning, Social networks, and so forth. These differences are evidence that Schumpeter's (1934) supports different research lenses.



Entrepreneurship journals		Management journals	
Reference	Total citations	Reference	Total citations
Schumpeter (1934)	209	Schumpeter (1934)	203
Shane & Venkataraman (2000)	46	Nelson & Winter (1982)	99
Kirzner (1973)	43	Porter (1980)	60
Schumpeter (1942)	39	Penrose (1959)	55
Knight (1921)	33	Barney (1991)	52
Stinchcombe (1965)	30	Schumpeter (1942)	51
Kirzner (1979)	27	March (1991)	42
Penrose (1959)	25	Cohen & Levinthal (1990)	41
Aldrich (1986)	25	Kogut & Zander (1992)	41
Shane (2000)	25	Tushman & Anderson (1986)	40
Nelson & Winter (1982)	24	Wernerfelt (1984)	39
Storey (1994)	24	Dierickx & Cool (1989)	38
Granovetter (1985)	24	Thompson (1967)	37
Drucker (1985)	23	March & Simon (1958)	36
Barney (1991)	21	Williamson (1975)	34
Gartner (1985)	21	Porter (1985)	33
Venkataraman (1997)	21	Henderson & Clark (1990)	33
Aldrich (1999)	20	Teece (1986)	32
Baumol (1990)	20	Teece, Pisano & Shuen (1997)	31
Porter (1980)	19	Hannan & Freeman (1977)	31

Table 5. The top 20 most cited works: entrepreneurship and management journals
Source: data collected from *isi web of knowledge*. Calculations by the authors.

The data shows one interesting facet: albeit a number of articles on the entrepreneurship group are fairly standard citations in management (such as Penrose, Nelson & Winter, Granovetter, Barney, Porter) there is a large concentration of clearly entrepreneurship scholars. The contrast is thus stark with the management journals that follow a rather predictable pattern of the most cited. This is also evidence that although entrepreneurship has absorbed from other management disciplines it has an increasingly identifiable domain and body of literature.

Figure 3 depicts the co-citation network for the sample of entrepreneurship journals. There is substantial homogeneity in this network even though we identify the salience of an RBV/learning perspective and a social networks lens. The majority of the articles delve into entrepreneurship-specific issues such as entrepreneurial opportunities (SHANE, 2000), the entrepreneur (Gartner, 1985), the domain, context and delimitation of what is entrepreneurship as a discipline (Knight, 1921; Kirzner, 1973; Shane & Venkataraman, 2000; Aldrich, 1999).

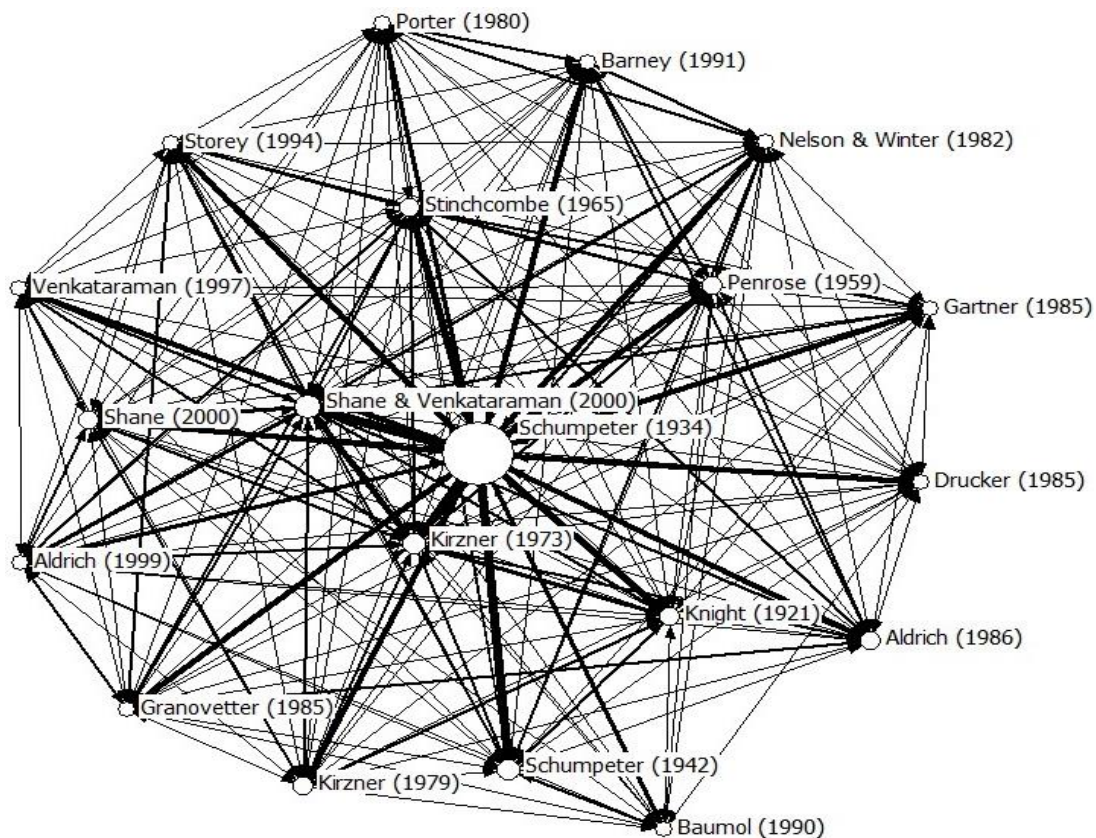
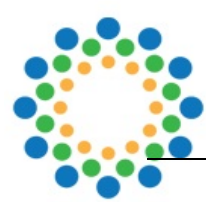


Figure 3. Co-citation network of Schumpeter (1934): Entrepreneurship journals
Source: Data collected from *ISI Web of Knowledge* using *Bibexcel*.

Social networks theory (Granovetter, 1985) also emerged probably due to several studies that place the entrepreneur in his social context and argue for the importance of the entrepreneurs' networks in accessing physical, social and informational resources and market opportunities. Birley (1985) studied the role of the entrepreneurs' networks in new firm foundation, introducing the concepts of formal networks (banks, agencies, universities, etc.) and informal (family, friends, etc.). According to Zahra (1996), entrepreneurial activities in organizations have the goal of exploring those competences already held and leveraging them for future growth. Aldrich and Zimmer (1986), for instance, analyzed the entrepreneurial process embedded in a network of social ties that facilitate accessing resources and opportunities. Entrepreneurial activities are influenced by the external environment – comprising institutions, culture, availability of financial resources, knowledge creation, and economic and social policies. Following Stinchcombe (1965), the social environment is one of the determinants of individuals' activity.

Figure 4 depicts the co-citation network for the sample of management journals. The main theoretical approaches captured include the RBV/capabilities (e.g., Barney, 1991; Teece *et al.*, 1997), knowledge and learning (March, 1991; Cohen & Levinthal, 1990), innovation and technological change (e.g., Tushman & Henderson, 1986; Teece, 1986).

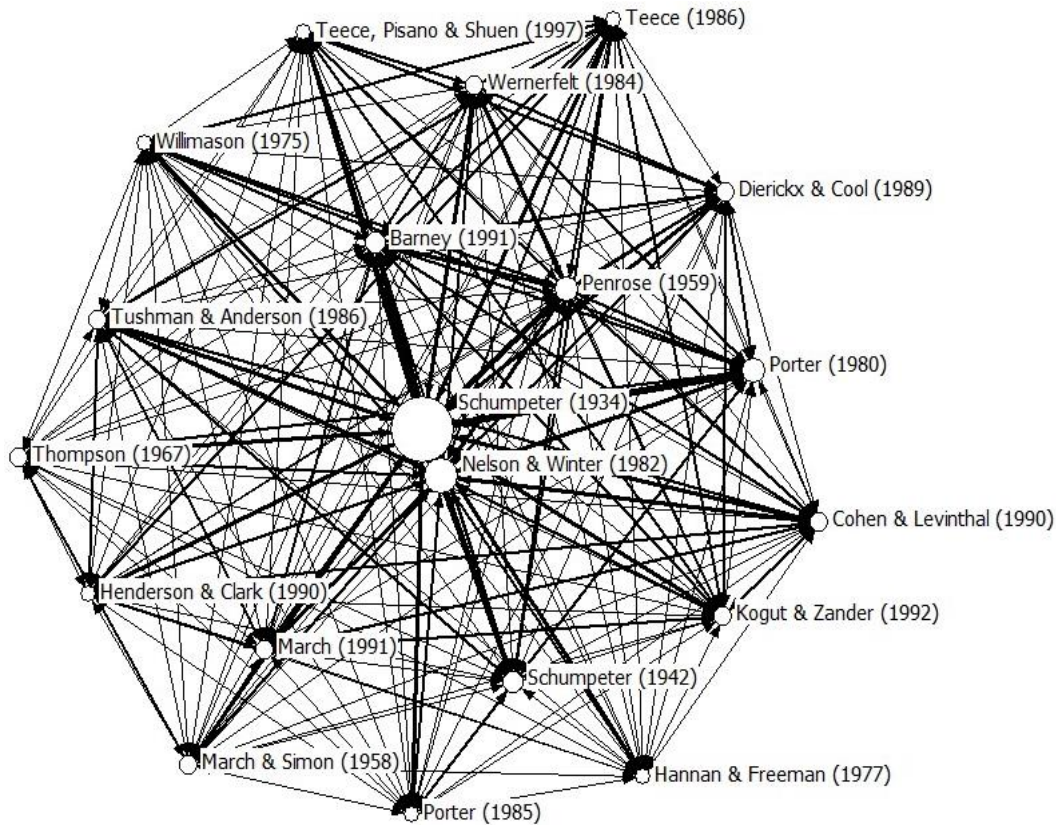
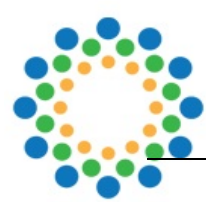


Figure 4. Co-citation network of Schumpeter (1934): Management journals
Source: Data collected from *ISI Web of Knowledge* using *Bibexcel*.

We also observe works on the behavioral theory of the firm (March and Simon, 1958) and learning theory (Cohen & Levinthal, 1990; MARCH, 1991). In entrepreneurship, these have probably been more connected to corporate entrepreneurship, or intra-entrepreneurship, but have been central in the knowledge-based view in management. Namely, these studies contribute to the large body of research on innovation and the idea that firms' need for flexibility to adopt innovations faces prior path dependences and inertia, and search processes that are often bound to the immediate geographic and technological landscape, limiting firms' ability to develop novel ideas, products and processes (March, 1991). For instance, Tushman and Anderson (1986) and Henderson and Clark (1990) noted how industries evolved as technologies changed. These shifts in industries were defined in a Schumpeterian manner as innovations that represent technological progresses that overcome prior technologies.



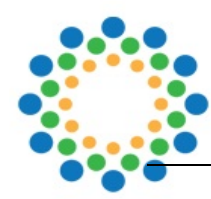
Distinguishing the types of innovation in incremental and radical (other papers deal with component and architectural innovations or as competence-enhancing or competence-destroying), they conclude that the radical innovations promote the entry of new entrepreneurial firms, while incremental innovations contribute to strengthen the incumbents. The gestation of new firms in moments of innovation-induced discontinuities occurs when exploring the opportunities does not require the firm to hold complementary assets (Teece, 1986).

At the periphery of the network, we find population ecology (Hannan & Freeman, 1977) that has had great impact in the area, with some authors suggesting that individual behaviors are almost irrelevant and that it is the selection forces that determine the new venture's success. The paper by Hannan and Freeman (1977), "*The population ecology of organizations*", highlighted that the ability to adapt to a changing environment was over-rated and that inertia was a dominant organizations characteristic. Using an analogy with Biology, they suggested that those firms best adapted survive and the others will eventually decline. This is a selection process whereby the external environment pressures are deterministic over the populations of firms. To strategy would thus be relegated the role of micro variable, as an agent for survival; but the *grand* tendencies and changes in technology, social, demographic dimensions were the true determinants of firms' birth.

Research Themes

To identify and analyze the research themes delved into by prior research we followed the method previously explained, based on the classification of author-supplied keywords (Furrer *et al.*, 2008). This analysis was conducted for the period 1991-2010 since *ISI Web of Knowledge* did not include the keywords prior to 1991. Hence, we conduct a longitudinal analysis of 20 years.

We analyzed the research themes for the total sample and the two sub-samples (entrepreneurship and management) (Table 6). We may observe some common research themes in the articles published in both groups of journals. For instance "High tech entrepreneurship", "Value creation and performance", "Psychological, cognitive and individual characteristics" and "Organization and organizational decision making" have received a great deal of attention. On the other hand, some noteworthy differences include that entrepreneurship journals have emphasized more the "Entrepreneurial process", the "Entrepreneurial opportunity" and "Founders" issues, whereas articles in management journals focused more "Corporate venturing and business competition", "Entry modes, international, Born-global & MNE" and "Entrepreneurial networks (trust & relational)".

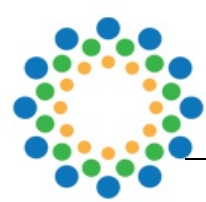


Total		Entrepreneurship journals		Management journals	
Research theme	K	Research theme	K	Research theme	K
High-tech entrepreneurship	103	Entrepreneurial process	5 4	High-tech entrepreneurship	65
Value creation and performance	97	High-tech entrepreneurship	3 8	Value creation and performance	61
Entrepreneurial process	74	Env. and external determinants of entrepreneurship	3 7	Corporate venturing and business competition	52
Methods, theories and research issues	62	Value creation and performance	3 6	Methods, theories and research issues	37
Environmental and external determinants of entrepreneurship	61	Psychological, cognitive and individual characteristics	2 6	Organization and organizational decision making	36
Corporate venturing and business competition	60	Methods, theories and research issues	2 5	Psychological, cognitive and individual characteristics	31
Psychological, cognitive and individual characteristics	57	Entrepreneurial opportunity	2 1	Knowledge-based view	29
Organization and organizational decision-making	48	Founders	1 3	Entry modes, international, Born-global & MNE	27
Knowledge-based view	40	Organization and organizational decision making	1 2	Entrepreneurial networks (trust & relational)	24
Entry modes, international, Born-global & MNE	33	Knowledge-based view	1 1	Env. and external determinants of entrepreneurship	24

Table 6. Top research themes: Total, entrepreneurship and management

Note: K is the number of keywords of each theme.

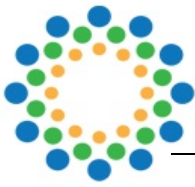
Source: Data collected from *ISI Web of Knowledge*. Authors' calculations.



The ordering of the themes in table 6 reveals the topics more studied over the 20 years (1991-2010). The more frequent theme was *High-tech entrepreneurship* (103 occurrences), followed by *Value creation and performance* (97). In the past two decades the concern with creating high technology-based new ventures has been more notorious. The theme on *value creation* presides to the idea that entrepreneurs identify opportunities to explore niches and businesses where they may be able to compete and generate wealth. The other seven themes were: *Entrepreneurial process; Methods, theories and research issues; Environmental and external determinants of entrepreneurship; Corporate venturing and business competition; Psychological, cognitive and individual characteristics; Organization and organizational decision making and Entry modes, international, born-global & MNE.*

Research related to the external environment and the determinants of entrepreneurship have gained substantial attention, perhaps because they influence not only entrepreneurial opportunities, the conditions for accessing the necessary resources and the milieu in which the entrepreneur emerges. Intra-entrepreneurship, or corporate entrepreneurship, has a long tradition whose origin we may trace back to Schumpeter's (1942) work, as well as the focus on the cognitive and psychological traits that make a successful entrepreneur. Given the diversity of themes identified that emerge when examining citations to Schumpeter (1934), we may reasonably infer the transversal impact of Schumpeter in a broad array of research arenas that have been central to the discipline. Finally, it is interesting the emphasis on aspects related to methodological issues - perhaps because the discipline itself has evolved methodologically and moved from case-based and documental accounts to empirical analyses.

Figure 5 presents a longitudinal observation of the five main research themes for four periods from 1981 to 2010 considering both entrepreneurship and management journals. Although arbitrary the definition of the periods, it allows for an examination of some evolution. This figure was constructed by replicating the prior analysis for each period, and synthesizing in only the top ten themes. A visual display shows more clearly how the relative centrality of the themes has evolved.



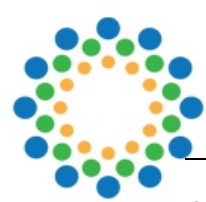
1991-1995	1996-2000	2001-2005	2006-2010
1. Corporate venturing and business competition (14)	1. Corporate venturing and business competition (16)	1. Environmental and external determinants of entrepreneurship (29)	1. High-tech entrepreneurship (56)
2. High-tech entrepreneurship (11)	2. Value creation and performance (14)	2. High-tech entrepreneurship (29)	2. Value creation and performance (47)
3. Value creation and performance (8)	3. Organization and organizational decision making (12)	3. Value creation and performance (28)	3. Entrepreneurial process (46)
4. Entrepreneurial networks (trust & relational) (5)	4. Knowledge-Based View (9)	4. Entrepreneurial process (22)	4. Psychological, cognitive and individual characteristics (40)
5. Knowledge-Based View (4)	5. High-tech entrepreneurship (7)	5. Methods, theories and research issues (16)	5. Methods, theories and research issues (36)
6. Organization and organizational decision making (4)	6. Methods, theories and research issues (7)	6. Entry modes, international, born global & MNE (14)	6. Environmental and external determinants of entrepreneurship (24)
7. Psychological, cognitive and individual characteristics (3)	7. Industry analysis (6)	7. Corporate venturing and business competition (11)	7. Organization and organizational decision making (24)
8. Methods, theories and research issues (3)	8. Psychological, cognitive and individual characteristics (5)	8. Entrepreneurial networks (trust & relational) (11)	8. Entrepreneurial opportunity (22)
9. Industry analysis (3)	9. Entrepreneurial networks (trust & relational) (5)	9. Psychological, cognitive and individual characteristics (9)	9. Corporate venturing and business competition (19)
10. Entrepreneurial resources (3)	10. Entrepreneurial resources (4)	10. Knowledge-based view (9)	10. Knowledge-based view (18)

Figure 5. Main research themes by period
Note: author-supplied keywords are available only after 1991.
Source: data collected from *ISI Web of Knowledge*.

DISCUSSION AND FINAL REMARKS

We have sought to analyze the extent to which Schumpeter's work has been used in the extant research to assess its impact on entrepreneurship and management research over the past thirty years (1981-2010). We selected Schumpeter (1934) book as the key marker for Schumpeter's work because it is his most cited work (see Table 1). Moreover, methodologically, we selected 16 of highly reputed journals for entrepreneurship and management research to collect data for the bibliometric study. In a sample of 412 articles we conducted different bibliometric analyses, including of citations, co-citations and keyword co-occurrence to infer the research themes.

Our contribution is targeted at making a systematization of the stock of accumulated knowledge that has employed Schumpeter's ideas and innovations in the discipline of entrepreneurship, but also understand how Schumpeter has permeated more broadly management studies. In doing this we complement other existing literature reviews (e.g., Low & Macmillan, 1988; Shane, 2000; Etemad & Lee, 2003; Reader & Watkins, 2006; Schildt *et al.*, 2006; Teixeira, 2011; Landström *et al.*, 2012). For a novice scholar in the discipline it may be worth to learn about Schumpeter's legacy in other works (e.g., Hagedoorn, 1996; Backhaus, 2003; Goss, 2005; Ahuja *et al.*, 2008; Ohyama *et al.*, 2009; Nelson, 2012). However, this is also probably the audience we aim at, junior faculty that has only recently joined the debate and doctoral

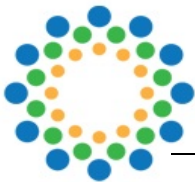


students that are defining their domain of research and are still unaware of how Schumpeter's ideas have been employed. In distinguishing entrepreneurship and management journals we do not aim at stating that Schumpeter has different interpretations in different disciplines but rather to examine the scope of his reach into many domains, perhaps more notably in innovation, technological change, and a knowledge/learning perspective.

A bibliometric study has advantages over alternative manners to conduct a literature review by eliminating subjective selections of papers and journals and by providing an empirical and unbiased view. Moreover, we may grasp the intellectual ties and the diversity of research themes. We can thus better grasp the stock of accumulated knowledge, including the conceptual shifts and dominant perspectives over the past thirty years. Finally, it permits us set some longitudinal observations. To our knowledge, this is the first bibliometric study specifically focused on Schumpeter and over such a large time horizon. This may be surprising since albeit Schumpeter's work was originated in Economics his impact on entrepreneurship and management research is undisputable. Certainly, we identify his influence in other disciplines such as sociology, economics, regional development, and so forth that were outside our scope.

Some results warrant additional analysis. The analyses of the co-citation networks (Figures 3-5) drew attention to a group of works more co-cited with Schumpeter (1934) and many of these are among the seminal works in management theories. The theoretical diversity – that comprises Institutional theory, Social networks, Resource-Based View and its Knowledge-based variant, Resource dependence theory, Population ecology, Transaction costs theory, Behavioral theories - is also *prima facie* evidence of the broad value of Schumpeter's work that extends beyond the specific domain of economics where much was initially gestated or that of entrepreneurship.

In fact, the theoretical diversity and the research themes identified (Table 5) also confirm Shane and Venkataraman (2000), Cornelius *et al.* (2006) and Aldrich's (2012) claim that the field of entrepreneurship has been built over multidisciplinary foundations and does not have (does it need?) its own theoretical body. Moreover, it reflects the diversity of topics, contexts and perspectives in which entrepreneurship as a discipline has germinated. In this vein, Shane and Venkataraman (2000) and Low (2001) have argued that the field of entrepreneurship has become an umbrella for a myriad of

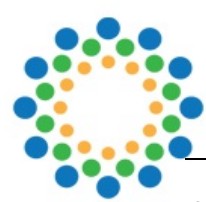


diverse studies that are only mildly connected. Observing the multiple perspectives in entrepreneurship research, Low and MacMillan (1988) noted that there is evidence that research is moving towards giving greater emphasis to contextual and process issues, while the entrepreneurs' personality traits or cultural context is gradually losing some determinism. On the other hand, concern over methodological issues may be revealing of the efforts and tendency to move from case study and qualitative inspired studies to more generalizable empirical findings.

We delved into observing the intellectual structure of the research that cited Schumpeter's (1934). It is not a simple endeavor to set the boundaries of where Schumpeter's conjectures reach since his work is cited in virtually every management discipline. From the origins in economics to entrepreneurship, management and sociology, Schumpeter is a reference to the study of multiple phenomena and his original claims have propelled much research in the following decades. Nonetheless, while in entrepreneurship studies Schumpeter's (1934) contribution has been foundational to the study of the individual entrepreneur, his attributes and networks, the definition of the domain of the discipline, and challenges and outcomes of entrepreneurial activity, in management studies Schumpeter has been more cited in studies on innovation and technological change, often combined with RBV and its variants based on knowledge, capabilities and learning. Moreover, as economies need to fuel economic prosperity and the unemployment levels stay high, policy makers, schools and firms are turning to the entrepreneur as the agent of economic disruption much in a Schumpeterian view, and as posited by Nelson (2012), Schumpeter's conjectures may be gaining novel attention.

Limitations and future research

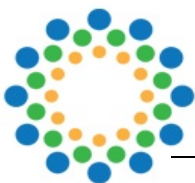
This paper has some limitations. These are mainly limitations derived from the method. Bibliometric techniques have the advantage of permitting the examination of large volumes of information in a reasonably objective manner, since the analysis is based on statistical procedures. However, these analyses do not include in-depth content analysis of the papers and are often based on analyzing only the most cited, and higher impact, works, thus failing to actually capture novel but not yet established streams of research or themes more oriented to, for instance, the community of



practitioners. Thus, we may identify the articles that cite Schumpeter (1934) but not the context in which a citation occurs. Moreover, we cannot identify the future of research from which we may infer what scholars will delve into. Future research may pursue different methodologies and resort to content analysis software to overcome this limitation and better capture the specific context of each citation. Moreover, our analysis of the themes is based on coding the author-supplied keywords. While, as we have argued, this procedure seems reasonable since authors will select the keywords that best reflect the content of the paper, alternative content analysis studies may gain additional insights. Finally, we assume that a majority of the authors cite other works – namely Schumpeter’s - to build on their arguments, theories and ideas, but it is possible that at least some citations were made to criticize or contrast.

Other limitation may derive from the sample. This sample is not inclusive of all possible journals which means that it is not inclusive of every citation to Schumpeter. Our sample was collected from 16 top journals. Albeit this is a large number of journals that is likely capable of providing a representative sample of articles for analysis, it is not exhaustive of all journals or all works published. Moreover, it is often reported that journals with a more applied profile or more regional focus have a lower citation impact and impact factor. Despite the acknowledged limitation with the sample, we do not foresee how it could create any bias in the results or that by selecting from the top journals we could influence the structure and research topics we have found. In any instance, future research may enlarge the sample including other journals and even discipline specific journals, from economics to regional studies, sociology and marketing, to capture how Schumpeter’s work is cited in those disciplines. The contrast with this paper may yield relevant patterns concerning the impact of Schumpeter, and open up new arenas where employing Schumpeter’s ideas may have induced novel perspectives.

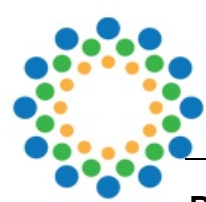
Finally, our study was based in only one of Schumpeter’s works. Albeit the 1934 work is the most cited (see Table 1), Schumpeter’s contribution extends to a large collection of other works. In defense of the validity of our study, we highlight that several articles cite more than one of Schumpeter’s works and thus adding additional works to draw our sample would not imply a substantial increase in the sample. Moreover, not all Schumpeter’s works had an equal impact on entrepreneurship research. Notwithstanding this caveat, future research may add other works and



perhaps seek to understand how the works of 1934 and 1942 – often used to differentiate two perspectives – have impacted differently entrepreneurship research.

In an analysis not reproduced here, we observed the nationality and institutional affiliation of the authors. It may come at little surprise that the majority of those citing Schumpeter (1934) are affiliated to a North American (51.8%) or European university. Specifically, the top ten affiliations includes US universities and only two European. Only 10 of the 40 more prolific institutions are not American. A possible explanation may reside in that the discipline of entrepreneurship, many of the main conferences, the degrees and courses and even the journals have emerged in the US (Aldrich, 2012) that now has a longer tradition in the area. Perhaps we ought to consider that all the journals sampled publish papers in English which may hinder non-native English speakers from publishing in these top journals. For future research, it may prove relevant to examine how scholars from the non-traditional countries use Schumpeter and the emphasis placed on research on the entrepreneur, entrepreneurship and innovation. For instance, an *ad hoc* examination we have conducted of only the Brazilian literature (one of the BRIC countries) showed a large number of studies still being conducted on entrepreneurial orientation and examining the entrepreneurial traits.

To conclude, Schumpeter's works on the entrepreneurship, entrepreneur and innovation were pioneer in his days and influenced a generation of scholars that followed. The recent economic evolution in some countries, namely in Southern Europe, have brought many of Schumpeter's ideas to the forefront of academic debate and political action, as governments search for an entrepreneurial-driven solution for the low economic growth and high unemployment. Schumpeter was one of the main "knowledge creators", an intellectual leader, whose ideas have molded academic thinking and his concepts and ideas have been foundational to much of the research that has been conducted. The connections of Schumpeter's works with several of the main management/business theoretical streams and a multitude of research themes and contexts are revealing of his outstanding impact during the past three decades.



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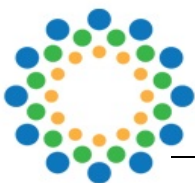
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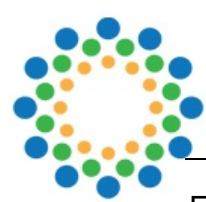
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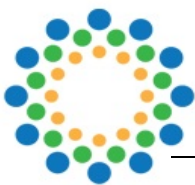
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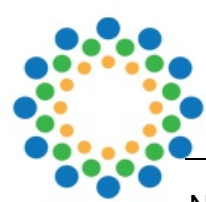
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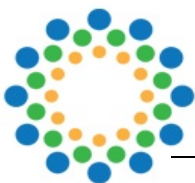
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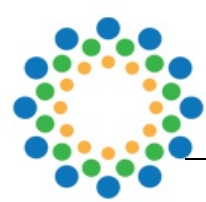
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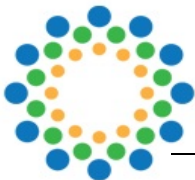
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Appendix 1. Grouping of the author-supplied keywords into main research themes

Theme	n
High-tech entrepreneurship	103
Value creation and performance	97
Entrepreneurial process	74
Methods, theories and research issues	62
Environmental and external determinants of entrepreneurship	61
Corporate venturing and business competition	60
Psychological, cognitive and individual characteristics	57
Organization and organizational decision-making	48
Knowledge-based view	40
Entry modes, international, Born-global & MNE	33
Entrepreneurial networks (trust & relational)	32
Entrepreneurial opportunity	29
Industry analysis	27
Entrepreneurial resources	22
Founders	18
Leadership, TMT and decision-making	18
Liabilities of newness & survival of firms	14
Institutions and institutional entrepreneurship	12
Cultural issues	10
Small and Medium Enterprises	10
Commercialization and marketing	6
Entrepreneurial family business	6
Human resource management	6
Business activities	5

Note: the frequency of the themes refers to the sum of the author-supplied keywords classified in the theme.

Appendix 2. Example of grouping of the author-supplied keywords into one research theme

Knowledge-based view (n=40)	Knowledge; organizational learning; knowledge management; learning; organizational knowledge; routine-based perspective on strategy; recombination; specialized knowledge; cospecialization; absorptive capacity; knowledge acquisition and knowledge exploitation; knowledge spill overs; knowledge sources; knowledge creation; knowledge assets; knowledge intensive industries; knowledge environment; learning processes; learning, service; exploration-exploitation dilemma; experiential knowledge; exploration; exploitation.
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Note: The entire coding of author-supplied keywords into main research themes is available from the authors upon request.