State of the Art in Knowledge Management and Organisational Learning

Abstract

Knowledge management and organisational learning are two related fields with different historical origins, the first in the sixties and the second in the nineties of the past century. The purpose of this study is to conduct a systematic review to analyse how the literature about organisational learning and knowledge management have evolved. The review is based on 12010 articles in the databases Scopus and ISI Web of Science. For the analysis, we used the software *VantagePoint*. Based on bibliometric analysis we identify what has been characteristic of organisational learning, this is the creation and acquisition of knowledge, it is also a trend by the knowledge management literature. This study contributes to clarifying the actual scope of knowledge management and organisational learning, according to research publications.

Keywords: Knowledge management, organizational learning, literature review

1. Introduction

In the current information and knowledge era, organisational learning and knowledge management are two fundamental fields which add value to organisations, facilitating the achievement of their goals (Castaneda, 2010). Those companies that learn faster and are able to use knowledge effectively tend to be leaders (Smith, 2008). However, knowledge management and organisational learning are dynamic subjects that "have gone through dramatic changes in the last twenty years and will continue to change in the next ten years" (Easterby & Lyles, 2011, p. 1). These changes are few investigated and studying them is the main purpose of this paper. As Vera & Crossan (2003) stated, although organisational

learning and knowledge management are closely interrelated, they are rarely discussed together. Besides, despite of the extending theoretical base of knowledge management, its trajectory and identity remain largely unknown (Serenko, 2013). This statement can also be applied to organisational learning.

The objective of this study is to conduct a systematic review to analyse how research about organisational learning and knowledge management has evolved, and specifically, to investigate if in this evolutionary path, organisational learning is been conceptually absorbed by knowledge management. There are some studies dedicated to inquire about the state of art of knowledge management and organisational learning separately (Bapuji & Crossan, 2004; Brahma & Mishra, 2015; Easterby-Smith, Crossan & Nicolini, 2000; Lee, Rittiner & Szulanski, 2016; Pun & Balkissoon, 2011; Serenko, 2013; Serenko & Dumay, 2015a; Serenko & Dumay, 2015b), however, the novelty of this study is that this is the first to investigate simultaneously the evolution of both fields. In addition, we identify the main conceptual categories in each field and how they are changing across the time. We also search for the main authors in knowledge management and organisational learning and evaluate if there are overlaps or not. The domains for this research are theoretical, empirical and analytical articles which are accessible through Scopus and ISI Web of Science databases, in the period 1970-2014. The next section presents a brief review of the concepts and some related research that has used bibliometric and scientometric tools. Section 3 describes the methodology of the study and section 4 the results. Section 5 presents some implications, limitations and conclusions of the study.

2. Theoretical background

2.1. Knowledge Management

The origin of the concept knowledge management arises in the 1990s, facilitated by globalization of the economy and markets, the requirement of knowledge-intensive products and services and the rapid development of technologies of information (Alavi & Denford, 2011). The study of knowledge management was leveraged by the work of Drucker (1993) about knowledge intensive firms and the fundamental role of their knowledge workers (Drucker, 1966).

Serenko (2013), based on previous publications, described the development of knowledge management in four generations. The first generation was prior to the mid-1990s and had a techno-centric view of knowledge processes, focus on explicit knowledge, knowledge codification and storage. The second generation went from the mid-1990 and the early 2000s and paid attention to human resources factors, social and cultural aspects in organisational learning, applied knowledge and knowledge sharing driven by employees. The third generation covered the period between early 2000s and 2013 and was characterized by: strategic perspective, the reconciliation between the human and the techno-centric views, the identification, development and support of self-managed social networks, knowledge as a flow and focus on value creation. The fourth generation, which started in 2014, has the following attributes: increasing complexity of the knowledge domain, knowledge as a relationship, focus on value multiplication, knowledge by questioning and an increasing role of knowledge-based development. In his meta-analysis of scientometric research of knowledge management, Serenko (2013) included organisational learning as part of knowledge management. The most frequent topics in the scientometric research were: intellectual core, research paradigms, knowledge management journal analysis, productivity-impact, past and future, research relevance and collaboration analysis.

Brahma & Mishra (2015) examined academic papers published during 15 years. The authors grouped the information in seven categories of analysis: foundations of knowledge

management, knowledge: a key organisational resource, knowledge directions: technologies for knowledge management, knowledge directions: outcomes of knowledge management, role of organisation culture in knowledge-based performance, impact of knowledge management on organisation performance and metrics to measure the impact of knowledge management practices. Fteimi & Lehner (2016), based on the key words of 755 papers published in the proceedings of the European Conference of Knowledge Management in the period 2006-2013 ranked these ten themes: knowledge management, knowledge sharing, knowledge, intellectual capital, knowledge transfer, innovation, communities of practice, case study, small and medium sized enterprises and organisational learning. Serenko & Dumay (2015b) suggested the need for more empirical studies in knowledge management literature, because normative rather than empirical ideas and concepts currently dominate the knowledge management field.

2.2. Organisational Learning

The origin of the concept organisational learning was in the 1960s with the work of Cyert & March (1963). These two authors proposed the concept of organisational learning in the context of a model of decision making. They emphasized on the relevance of learning by experience and in the ways in which a firm may adapt to environmental changes. Cangelosi & Dill (1965) published for the first time a work with the title organisational learning and discussed two levels of learning, the individual and the organisational. However, the field started to be known later with the publication of Argyris & Schön (1978), who introduced the notion of single and double loop learning. In the 1980s, some conceptual referents were the publication of Hedberg (1981) about the obligation of an organisation to acquire knowledge in order to survive, the work of Shrivastava (1981) on learning systems and the publication of Fiol & Lyles (1985) on levels of learning in the organisation.

Organisational learning is defined in many forms. One way of understanding the term is as a change in the organisation´s knowledge, which occurs as a function of experience (Fiol & Lyles, 1985). To be organisational, individual´s knowledge has to be embedded in a variety of forms including tools, routines, social networks and transactive memory systems (Argote, 2011), organisation´s systems, structures and culture (Cummings & Worley, 2009, Villamizar & Castaneda, 2014). According to Argote, Mcevily & Reagan (2003), broadened by Argote (2011), organisational learning has three sub-processes: creating, retaining and transferring knowledge. Interestingly, these sub-processes are included as part of the definitions of knowledge management by other authors (Lin, 2014; Liobowitz, 1999; Nonaka & Takeuchi, 1995).

Bapuji & Crossan (2004) reviewed the organisational learning literature during the period 1990-2002. Searching on the *Web of* Science they found four articles in 1990 and 98 articles in 2002, a growing trend. Some findings were: a growing consensus that learning occurs at the individual, group and organisational levels, the emergence of a learning perspective to explain organisational topics like performance and innovation, the study of organisational learning facilitators as culture and structure and the debate between internal and external organisational learning.

3. Methodology

The methodological approach for this study was a systematic review, covering publications on knowledge management and organisational learning from the 1970s, when the first documents related to organisational learning were published, up to 2014 (inclusive) that was the most recent full publication year. A systematic review is "a replicable, scientific and transparent process, in other words a detailed technology, that aims to minimize bias through exhaustive literature searches of published and unpublished studies and by providing and

audit trail of the reviewer's decisions, procedures and conclusions" (Tranfield, Denyer, & Smart, 2003, p. 209). It also differs from the traditional narrative reviews by employing more systematic, rigorous, explicit and reproducible methods in the selection of articles (Tranfield et al, 2003; Delbufalo, 2012).

The methodology presented in this research follows the process of a systematic review in management research proposed by Tranfield et al (2003). It consisted of three different stages: Planning the review, conducting the review and reporting and dissemination. On the first stage, the research protocol was developed around the following research question: How has evolved the literature about organisational learning and knowledge management between 1970 and 2014? The domains for the research synthesis are the theoretical, empirical and analytical journal articles.

In reference to the selection criteria, a strict selection criterion for the inclusion of studies was developed in order to provide the best quality evidence. Articles were reviewed according to their relevant subject. The selection criteria included research articles and reviews, published in academic journals within a timeframe from 1970 to 2014 in English language.

On the second stage, to identify possible relevant articles, the initial keywords to be search were: "organisational learning" and "knowledge management". During the research process those keywords were modified and built on search strings and entered into the electronic databases. In order to reduce the risk of missing publications, the search was performed in two separate sources and prominent databases: ISI Web of Science and Scopus.

The organisational learning search string for Web of Science was:

(organisation* near/3 learn*) and (generation or acquisition or creation or capture) or (("organisational knowledge generation" OR "organisational knowledge acquisition" OR "organisational knowledge creation" OR "organisational learning capture"))

And the search string for Scopus was:

TITLE-ABS-

KEY ((organisation* W/3 learn*) AND (generation OR acquisition OR creation OR capture) OR (("organisational knowledge generation" OR "organisational knowledge acquisition" OR "organisational knowledge creation" OR "organisational learning capture")))

Regarding to knowledge management the search string used on Web of Science was:

(("knowledge management" AND (transfer or use or application or documentation or storage or shar* or memory)))

And the search string for Scopus was:

TITLE-ABS-KEY ((("knowledge management" AND (transfer OR use OR application OR documentation OR storage OR shar* OR memory))))

Articles' substantive relevance was assured by requiring that the selected papers include at least one of the keywords mentioned above in their abstracts, keywords and/or title. Substantive relevance was enhanced by reading the abstracts when there was a doubt. Duplications, book reviews, conference proceedings, unpublished studies were excluded from the analysis to work only with high quality peer reviewed studies. This stage was conducted by both researchers.

For the analysis, VantagePoint version 8 was used. With this tool the depuration and selection processes were developed and also the fusion of all databases. The detection, definition of thematic clusters; and the different analysis as coverage comprehensiveness and publication activity were performed combining VantagePoint with VOSviewer.

4. Results and Discussion

A total of 12010 scientific publications on knowledge management and organisational learning were found on both databases, Web of Science and Scopus. 10539, around 88% of them, with the search string for knowledge management and the other 12% (1471), were found with the search string for organisational learning.

On the Figure 1, it can be observed that organisational learning emerged around the 1970s and the concepts of knowledge management around the 1990s. Since then, both topics showed a growth trend that was enhanced on the 2000s. There is a community of scholars and key organisations that work on the topics on a collaborative network.
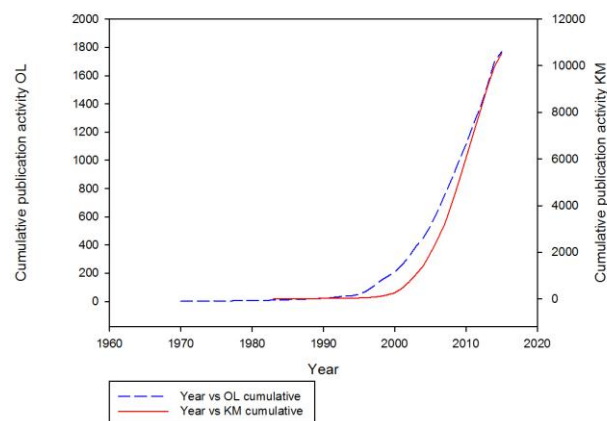

Figure 1: Growth in published papers in the wider field of knowledge management and organisational learning

4.1   Thematic clusters analysis

Using VOSviewer software a cluster analysis was performed; the starting point for this were 10 thematic groups defined with the classification of keywords, then the clusters were formed and this established the global topics researched on knowledge management and organisational learning.

On the knowledge management topic, five key research areas were identified (see Table1); the most relevant cluster, according to the number of publications, was knowledge management process and human resources with 9339 papers. This cluster group publications which results are related with management processes, especially the associated with human resource management, organisational culture, and this cluster also involves traditional knowledge transfer and information sharing. The second cluster is labelled knowledge management based systems and technological tools; here the papers are focused on management information systems, decision support systems and tools as data mining. The third cluster was related more to the electronic transmission and diffusion of knowledge. The last cluster was defined as the different methodologies associated with the knowledge management research, here case studies, surveys and reviews were the most relevant in the field.

On the other hand, for the organisational learning area, five clusters were defined, organisational learning processes, organisational learning tools, education processes, creativity and innovation and methodology. The papers included on these clusters were selected according to the keywords and abstract content related to each topic.

On Table 1 and Table 2 the most relevant authors by number of publications, leading countries and sources of publications for both topics are presented. Most productive countries were USA, UK, Taiwan, China and Spain.

Table 1: Top authors, countries and sources of publications on knowledge management 1980-2014

Trends	Author	Countries	Source
KM Process[9339]	Chen, Yuh-Jen [24]; Lee, W. B. [23]; Li, XQ [22]; Chen, Yuh Min [22]; Li, Yuzhu [22]	USA [575]; UK [307]; Taiwan [231]; China [177]; Spain [169]	JOURNAL OF KNOWLEDGE MANAGEMENT [508]; EXPERT SYSTEMS WITH APPLICATIONS [199]; VINE [134]; INTERNATIONAL JOURNAL OF TECHNOLOGY MANAGEMENT [105]; INTERNATIONAL JOURNAL OF INFORMATION MANAGEMENT [90]
Knowledge based systems and technological tools[4626]	Chen, Yuh-Jen [23]; Chen, Yuh Min [19]; Gottschalk, Petter [19]; Lee, W. B. [15]; Cheung, C. F. [15]	USA [215]; Taiwan [109]; UK [97]; China [82]; Spain [60]	EXPERT SYSTEMS WITH APPLICATIONS [163]; VINE [74]; DECISION SUPPORT SYSTEMS [72]; JOURNAL OF KNOWLEDGE MANAGEMENT [54]; INTERNATIONAL JOURNAL OF TECHNOLOGY MANAGEMENT [49]
E-KM transfer[3019]	Li, Yuzhu [12]; Davison, Robert M [12]; Li, XQ [10]; Wang, SL [10]; Zhang, Yinsheng [10]	USA [145]; Taiwan [59]; UK [59]; China [53]; Canada [39]	JOURNAL OF KNOWLEDGE MANAGEMENT [149]; EXPERT SYSTEMS WITH APPLICATIONS [66]; VINE [55]; COMPUTERS IN HUMAN BEHAVIOR [53]; KNOWLEDGE MANAGEMENT RESEARCH & PRACTICE [49]

Trends	Author	Countries	Source
Methodologies[1374]	Handzic, Meliha [10]; Bennet, Alex [6]; Scarso, Enrico [6]; Bennet, David [6]; Gottschalk, Petter [6]	USA [28]; UK [24]; Australia [15]; China [11]; Italy [11]	VINE [103]; JOURNAL OF KNOWLEDGE MANAGEMENT [42]; Industrial Management and Data Systems [27]; 9th European Conference on Knowledge Management, ECKM 2008 [26]; ONLINE INFORMATION REVIEW [21]
Human Resources[747]	Kuo, Tsung-Hsien [10]; Bontis, Nick [8]; Ho, Li-An [7]; Serenko, Alexander [6]; Luu Trong Tuan [5]	USA [37]; Taiwan [23]; UK [16]; China [15]; Spain [15]	JOURNAL OF KNOWLEDGE MANAGEMENT [54]; VINE [29]; 9th European Conference on Knowledge Management, ECKM 2008 [17]; 12th European Conference on Knowledge Management, ECKM 2011 [16]; COMPUTERS IN HUMAN BEHAVIOR [15]

Table 2: Top authors, countries and sources of publications on organisational learning 1970-2014

Trends	Authors	Countries	Source
OL process[1363]	Zollo, Maurizio [8]; Gabriel Cegarra-Navarro, Juan [7]; Argote, Linda [7]; Chiva, Ricardo [7];	USA [132]; UK [46]; Spain [35]; Taiwan [23]; Canada [16];	Journal of Knowledge Management [40]; Strategic Management Journal [36]; Learning Organisation [34]; Organisation Science [28]; Management Learning [23]

Trends	Authors	Countries	Source
	Garcia Morales, Victor Jesus [7]		
Human Resources[424]	Henderson, Amanda [3]; Song, Ji Hoon [3]; Hsu, I-Chieh [3]; Theriou, Georgios N [3]; Izzetoglu, Meltem [3];	USA [22]; UK [6]; Spain [6]; Taiwan [6]; Australia [4]	Medical Teacher [10]; Learning Organisation [8]; Journal of Knowledge Management [6]; Journal of Workplace Learning [6]; International Journal of Manpower [5]
Creativity & Innovation[335]	Argote, Linda [5]; Goffin, Keith [4]; Koners, Ursula [4]; Garcia Morales, Victor Jesus [4]; Singh, Harbir [3];	USA [43]; UK [8]; Spain [7]; Taiwan [6]; Turkey [6]	International Journal of Technology Management [11]; Organisation Science [11]; Industrial Marketing Management [11]; Strategic Management Journal [10]; International Journal of Innovation and Learning [8]
OL systems & technological tools[277]	Wang, J. [3]; Lee, W. B. [3]; Ayas, K. [3]; Leal, A. [3]; Gabriel Cegarra-Navarro, Juan [3]	USA [7]; Spain [3]; Canada [3]; UK [2]; Taiwan [1];]	International Journal of Technology Management [12]; Management Science [8]; Expert Systems with Applications [7]; Journal of Information Science [6]; Technovation [6]
Methodology [187]	Dimovski, Vlado [3]; Liao, Shu-Hsien [3]; Škerlavaj, M. [3]; Hsu, I-Chieh [3]; Tucci, Christopher L [2]	USA [10]; UK [6]; Canada [5]; Taiwan [4]; Australia [4]	International Journal of Production Economics [5]; Management Learning [5]; Medical Teacher [5]; Decision Sciences [5]; Expert Systems with Applications [4]

The bibliometric analysis, using keywords clusters, showed that the main group was organisational learning processes, this contains 1233 papers in the organisational learning topic, and it also has 7870 papers in the knowledge management area comprising the 74% of the publications. Another important finding is that knowledge management processes and human resources is the next cluster with highest growth, it can be interpreted as a new trend on research.

5. Limitations and Conclusions

The objective of this study was to conduct a systematic review to analyze how the literature about organizational learning and knowledge management has evolved between 1970 and 2014, and identify overlaps and differentiations between these two fields.

Based on bibliometric analysis we identify that what it has been characteristic of organizational learning, this is the creation and acquisition of knowledge, tends to be absorbed by knowledge management. The key words used in organizational learning articles are also frequently used in knowledge management articles. Many definitions of knowledge management include the processes of generation and acquisition of knowledge (Alavi & Liedner, 2001; Castaneda, 2015; Lin, 2014).

We found similarities with the analysis run by Serenko (2013), but we did not include organisational learning as part of the knowledge management field. As stated by Easterby & Lyles (2011), knowledge management and organizational learning are two academic fields with their own developments.

This study has limitations. The first one is that we only used two databases, Scopus and ISI Web of Science, because their academic prestige. However, the total number of published articles in knowledge management and organizational learning is significantly higher. Another limitation is related to the search equations used in this research, which could exclude some terms expected to be included from the academic perspective of other authors.

We conclude that knowledge management and organizational learning are two areas that continue capturing the attention of researchers. We also conclude that gradually, organizational learning has been absorbed by knowledge management. In particular, the processes of creation and acquisition of knowledge that were characteristic of organizational learning are now part of the definitions and studies in the field of knowledge management.

We suggest for future research works to examine if there are characteristic authors of each field. Additionally, to deepen in the emerging, core, declining and established keywords from organisational learning that are present in the knowledge management literature.

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