THE NEXUS BETWEEN KNOWLEDGE MANAGEMENT AND INNOVATION. A LITERATURE REVIEW

Ramona-Diana LEON
National University of Political Studies and Public Administration
30A Expozitiei, Sector 1, 012104, Bucharest, Romania
ramona.leon@facultateademanagement.ro

Ettore BOLISANI
University of Padova
3 San Nicola, 36100 Vicenza, Italy
ettore.bolisani@unipd.it

Abstract. *Knowledge management is the new managerial discipline whose aim is to support the processes of knowledge exploitation, memorization, re-use and learning. Therefore, it can be said that knowledge management has, implicitly or explicitly, a strong relationship with innovation management. Despite this fact, knowledge management and innovation management have developed into two separate fields and two distinct contexts of research. Starting from these assumptions, the purpose of this paper is to examine how the connection between knowledge management (KM) and innovation management has been developed in the last 10 years. In order to achieve our goal, an etic approach is employed which encompasses an external view of meaning associations and real-world events. The research combines the qualitative with the quantitative perspective and the whole multi-stage process is dominated by an inductive approach. The analysis focuses on 894 articles that were published in knowledge management and innovation journals, mostly indexed in Scopus and Thomson Reuters databases, during 2006 – 2016. The main results prove that there is a strong connection between KM and innovation management although the number of KM journals that approach topics related to innovation is higher than the number of innovation journals that focus on knowledge-related issues. The concept of "innovation" is by far the most used in the analyzed KM papers, while the term of "knowledge" is frequently used as a generic keyword in the Innovation papers; only a few papers are about a specific topic such as product development, project management, and process improvement – in the case of KM journals – or organizational learning, social capital, and human capital – in the case of Innovation journals. The research findings have both theoretical and practical implications. On the one hand, it synthesizes how the link between knowledge management and innovation management evolved in the last 10 years. On the other hand, it may serve as a handbook of managerial guidelines; it brings forward the knowledge management approaches and tools which can be used for product or process innovations.*

Keywords: *knowledge; knowledge management; innovation; product development; intellectual capital.*

Introduction

Knowledge is considered to be an essential ingredient of economic activity, especially in terms of firm's capability to develop and exploit new ideas for future competitiveness while innovation is described as one of the main drivers of firm's productivity, profitability and competitiveness. Therefore, the nexus between knowledge and innovation has long been underlined in the literature and innovation is usually presented as an output of knowledge exploitation and integration (Amara, D'Este, Landry & Doloreux, 2016; Kogut & Zander, 1992; Leiponen & Helfat, 2010; Nelson & Winter, 1982). In line with this statement, Feldman (2000) argues that innovations are nothing more than the creation and diffusion of new and economically valuable knowledge in the form of novel products, processes, and organizations while Cowan and Jonard (2009) label innovation as the discovery of knowledge not known by others.

During the time, knowledge management (KM) and innovation management consecrated themselves as separate fields and distinct contexts of research. The first one distinguishes itself as the new managerial discipline which aims to support the processes of knowledge creation, dissemination, exploitation, memorization, re-use and learning. The second one focuses on analyzing, designing and managing the organizational activities and practices that transform an idea into a competitive advantage. So, both of them focus on generating added-value and improving company's capacity of adapting to the challenges of the internal and external environment, and tend to adopt a procedural approach; KM emphasizes the organizational processes which must be developed in order to increase the value of the intangible assets while Innovation management brings forward the processes that need to be followed in order to create new concepts or to improve the existing organizational concepts.

Given these circumstances, it can be stated that KM has, implicitly or explicitly, a strong relationship with innovation management. However, considering the overlapping points of the two areas, it may be questioned whether the two kinds of literature are converging or if KM and innovation management are different contexts of research and application. As a consequence, the purpose of this paper is to examine how the connection between KM and innovation management has been developed in the last ten years.

The current paper is structured as follows. Section 2 emphasizes the research methods and techniques that had been used in order to achieve the research goal while Section 3 brings forward the main results. The prospects of a tighter connection between KM and innovation management, and the topics that could represent a shared focus of study and application are brought forward in Section 4. The article closes by drawing several conclusions and highlighting the research limits and several further research directions.

Methodology

The purpose of this paper is to examine how the connection between knowledge management (KM) and innovation management has been developed. In order to achieve our goal, an etic approach is employed which encompasses an external view of meaning associations and real-world events. Unlike the emic approach, the etic perspective generates "descriptions and analyses expressed in terms of the conceptual schemes and categories regarded as meaningful and appropriate by the community of scientific observers" (Lett, 1990, p.130). Furthermore, Mott-Stenerson (2008, p.432) claims that "the etic approach is exemplified through a review of literature for thematic frameworks" while Fram (2013, p.7) states "the theoretical framework is a process at the abstract level using relative theories and definitive concepts as comparisons to gain understandings in order to describe, explain, or predict social phenomena, which occurs when the etic perspective is maintained". Nevertheless, a documentary study is used which consists of a review of articles and studies from the KM and Innovation management journals. The research is combining the qualitative with the quantitative perspective and the whole multi-stage process is dominated by an inductive approach. The inductive character is reflected by the fact that the focus is on analyzing previously researched phenomena from a different perspective.

On a first stage, international databases like EBSCO, Scopus and Thomson Reuters are analyzed in order to identify the journals that concentrate on analyzing and disseminating KM or Innovation management studies. Initially, a list of 63 journals is obtained; 31 of them aim to offer a forum for the fast dissemination of the Innovation management studies while the other 32 claim to provide valuable insights on how and why to manage the creation, dissemination, codification and exploitation of explicit and tacit knowledge, organizational learning and intellectual capital. For selecting the most representative journals from the KM area, the Serenko and Bontis (2004) list is used. A similar procedure cannot be applied for the Innovation journals; therefore, journal's impact factor serves as a selection criterion. At the end of this stage, a list of 24 journals is obtained (Table 1).

Table 1. KM and Innovation journals included in the analysis

No.	KM Journals	Innovation Journals
1.	Electronic Journal of Knowledge Management (EJKM)	Asian Journal of Technology Innovation (AJTI)
2.	International Journal of Knowledge and Learning (IJKL)	Creativity and Innovation Management (CIM)
3.	International Journal of Knowledge Management (IJKM)	European Journal of Innovation Management (EJIM)
4.	International Journal of Knowledge Management Studies (IJKMS)	Innovations in Systems and Software Engineering (ISSE)
5.	International Journal of Learning and Intellectual Capital (IJLIC)	Journal of Innovation and Entrepreneurship (JIE)
6.	Journal of Information and Knowledge Management (JIKM)	Journal of Pharmaceutical Innovation (JPI)
7.	Journal of Intellectual Capital (JIC)	Journal of Product Innovation Management (JPIM)
8.	Journal of Knowledge Management (JKM)	Materials Research Innovations (MRI)
9.	Journal of Knowledge Management Practice (JKMP)	Strategic management (SM)

10.	Knowledge and Process Management (KPM)	Technology Analysis (TA)
11.	Knowledge Management Research & Practice (KMRP)	Technovation (T)
12.	Learning Organization (LO)	
13.	VINE	

Further, the articles published during January 2006 – March 2016 which include in title, abstract or keywords one of the next phrases "innovation", "product development", "process development", "product improvement", "process improvement", "project management", "knowledge", "organizational learning", "intellectual capital", "social capital", "relational capital", "structural capital", and "human capital" are selected. More than 800 articles are collected. Each article is analyzed in order to determine its relevance for the research problem. In the next phase, a content analysis is employed to the selected articles in order to facilitate the achievement of the research goal. The content analysis is used as a research method due to the fact that (i) it has an analytical flexibility; (ii) it is nonintrusive; and (iii) it entails the specification of category criteria for reliability and validity tests (Duriau, Reger & Pfarrer, 2007). The main categories in which the analysis focused are: (i) the type of article; (ii) the approach; and (iii) the main topic. Besides, techniques like systematization and tabling are used for identifying the nexus between knowledge management and innovation. In the final stage, the papers are counted and classified, the common topics are determined, and the prospects of a tighter connection between knowledge management and innovation studies are emphasized.

Description of results

Based on the general results, only 20 journals offer valuable insights (Table 2) and most of them belong to the KM area. Four journals are excluded due to at least one of the following situations: (i) the selected keywords are not included in the articles published during 2006 – 2016; (ii) the selected keywords are included in the articles but they are not used in relation to KM or Innovation issues; (iii) the selected keywords appear in article's title, abstract or keyword section but they are not developed further in article's content. Thus, a total of 894 articles are collected; 461 are published in the KM journals while 433 appear in the Innovation journals. Starting from this distribution, it may be assumed that the scholars who publish their work in KM journals tend to highlight the connection between knowledge and innovation; they focus on how to transform knowledge into action, how to make it visible and how to increase its use in the organizational environment. A detailed analysis is presented further

Table 2. KM and Innovation journals that provide valuable insights regarding the topics approached typically in the other field

No.	KM Journals	Innovation Journals
1.	Electronic Journal of Knowledge Management (EJKM)	Asian Journal of Technology Innovation (AJTI)
2.	International Journal of Knowledge and Learning (IJKL)	Creativity and Innovation Management (CIM)
3.	International Journal of Knowledge Management (IJKM)	European Journal of Innovation Management (EJIM)

4.	International Journal of Knowledge Management Studies (IJKMS)	Innovations in Systems and Software Engineering (ISSE)
5.	International Journal of Learning and Intellectual Capital (IJLIC)	Journal of Innovation and Entrepreneurship (JIE)
6.	Journal of Intellectual Capital (JIC)	Journal of Pharmaceutical Innovation (JPI)
7.	Journal of Knowledge Management (JKM)	Journal of Product Innovation Management (JPIM)
8.	Knowledge and Process Management (KPM)	Technology Analysis (TA)
9.	Knowledge Management Research & Practice (KMRP)	Technovation (T)
10.	Learning Organization (LO)	
11.	VINE	

Literature trends

The analysis of the annual trends shows that the interest of the two kinds of literature for the topic of the other field has remained substantially constant over time (Figure 1). As it can be noticed, there is no significant variation over the years; on average, both types of journals publish around 40 papers per year which analyze various topics and themes from the other field. Nevertheless, a special attention must be given to the situation recorded in 2007, 2013, and 2014. During 2007 and 2013 an ascending trend was registered among the innovation journals while the KM journals recorded a descending trend; the situation reversed in 2014. Further analysis is needed in order to eliminate local fluctuation and to determine whether there is a relationship between these two evolution trends.

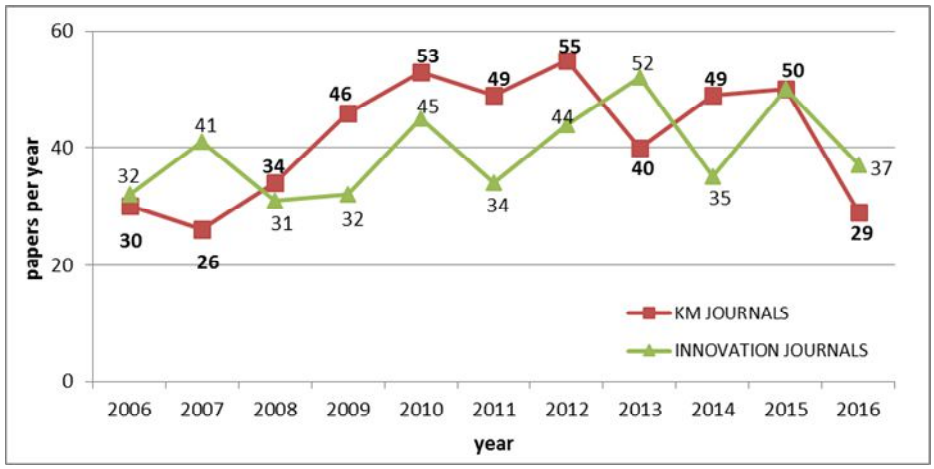

Figure 1. Papers of the KM and Innovation literature that approach topics typically treated in the other field

If the keywords distribution is taken into account (Figure 2 and 3), it can be argued that the interest in the "other field" is quite general and doesn't regard specialized or detailed subjects of study. The concept of "innovation" is by far the most used in the analyzed KM papers (Figure 2), while the term of "knowledge" is frequently used as a keyword in the Innovation papers (Figure 3); only a few papers are about a specific topic.

In the KM journals, 83.51% of the analyzed papers approach topics related to "innovation" while 22.34% focus on specific issues like: product development (9.98%), project management (9.54%), process improvement (2.39%), and process development (0.43%). As it can be remarked from Figure 2, product development represents a topic of interest for the researchers who published in the Journal of Knowledge Management (JKM) while project management managed to attract the attention of those who published especially in the Journal of Knowledge Management (JKM) and VINE.

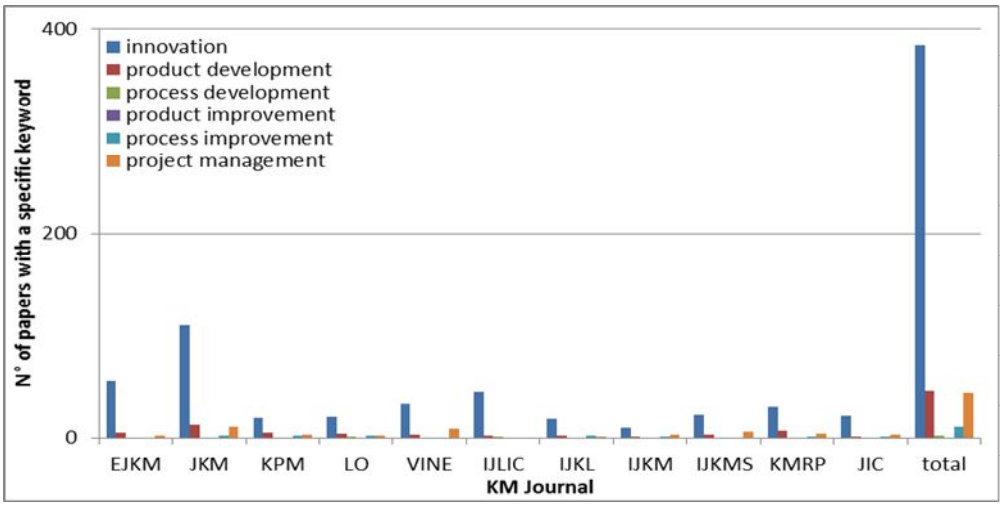

Figure 2. Distribution of papers based on keywords appearance – KM journals

In the Innovation journals, 83.60% of the analyzed papers approach topics related to "knowledge" while 28.17% focus on specific issues like: organizational learning (13.16%), social capital (6.47%), human capital (5.77%), intellectual capital (1.39%), relational capital (0.92%), and structural capital (0.46%). As it can be remarked from Figure 3, organizational learning and social capital represent an interest for the researchers who published especially in the Journal of Product Innovation Management (JPIM), European Journal of Innovation Management (EJIM), and Technovation (T) while intellectual capital managed to attract the attention of those who published especially in the Asian Journal of Technology Innovation (AJTI).

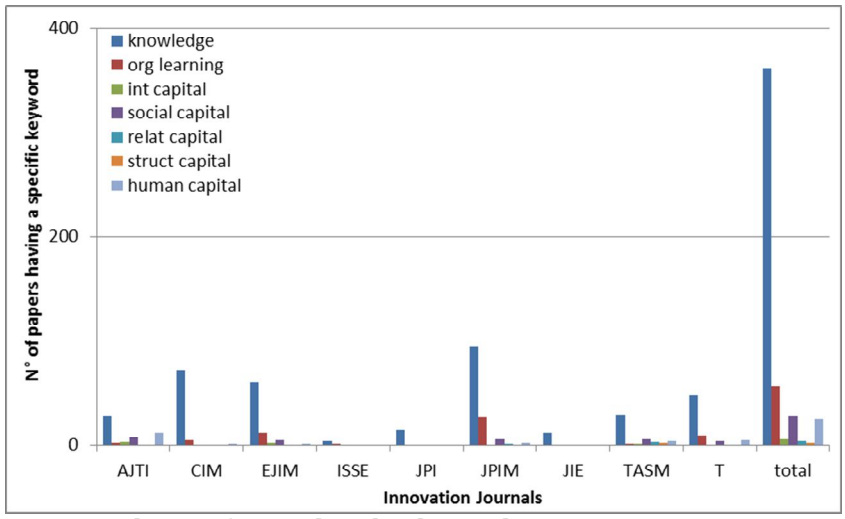

Figure 3. Distribution of papers based on keyword appearance – Innovation journals

As regards the type of study (Figure 4 and 5), papers based on empirical research are largely prevailing in both kinds of literature. This may mean that reflections on the development of conceptual or theoretical grounds are still missing, and scholars are more interested in analyzing empirical data for incidental opportunities of specific studies that fall in the intersection of the two kinds of literature.

In KM journals, 69.63% of the analyzed articles can be labeled as "research papers" while 22.78% of them can be described as "conceptual papers"; only 7.59% of the analyzed papers concentrate on exclusively reviewing the literature (Figure 4). Almost half of the research papers are published in 3 journals, namely: Journal of Knowledge Management (JKM), Electronic Journal of Knowledge Management (EJKM), and International Journal of Learning and Intellectual Capital (IJLIC). On the other hand, most of the conceptual papers are published in 6 journals, namely: Journal of Knowledge Management (JKM), VINE, Electronic Journal of Knowledge Management (EJKM), Learning Organization (LO), International Journal of Knowledge and Learning (IJKL), and International Journal of Knowledge Management Studies (IJKMS). Last but not least, the literature review articles seem to be more attractive for 4 journals, namely: Journal of Knowledge Management (JKM), Electronic Journal of Knowledge Management (EJKM), VINE, and Knowledge Management Research & Practice (KMRP). Synthesizing, the conceptual papers are more appealing to Learning Organization (LO), International Journal of Knowledge and Learning (IJKL), and International Journal of Knowledge Management Studies (IJKMS) while the literature review articles tend to be published especially in Knowledge Management Research & Practice (KMRP).

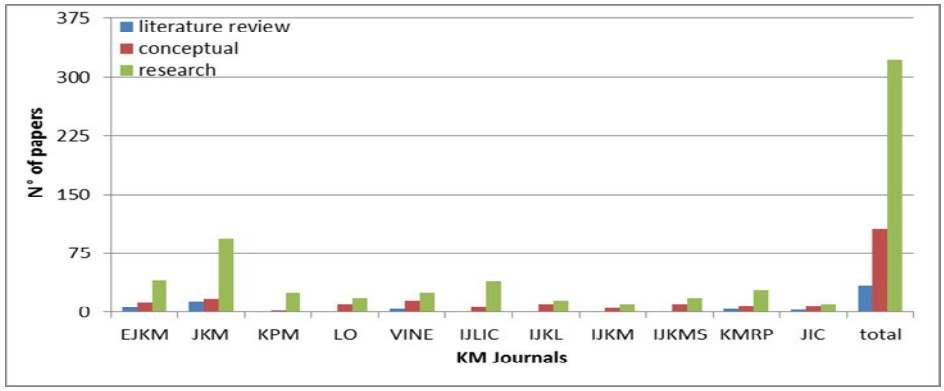

Figure 4. The main types of papers published in KM journals

In Innovation journals, 81.06% of the analyzed articles can be labeled as "research papers" while 12.93% of them can be described as "conceptual papers"; only 6.01% of the analyzed papers concentrate on exclusively reviewing the literature (Figure 5). More than half of the research papers are published in 3 journals, namely: Journal of Product Innovation Management (JPIM), European Journal of Innovation Management (EJIM), and Creativity and Innovation Management (CIM). On the other hand, most of the conceptual papers are published in 3 journals, namely: Asian Journal of Technology Innovation (AJTI), Creativity and Innovation Management (CIM), and Technology Analysis (TA). Last but not least, the literature review articles seem to be more attractive for 3 journals, namely: Journal of Product Innovation Management (JPIM), Creativity and Innovation Management (CIM), and European Journal of Innovation Management (EJIM).

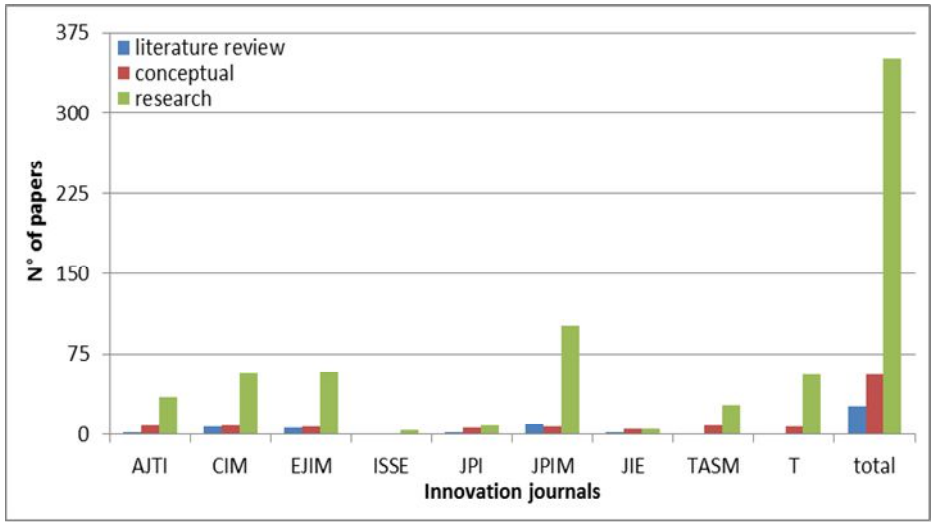

Figure 5. The main types of papers published in Innovation journals

Regarding the approach, it can be observed that the qualitative studies (e.g. case-study research, qualitative speculations, etc.) prevail in both kinds of literature (Figure 6 and

7). This is more marked in the KM literature – which, however, reflects the tradition of this field of study compared to the area of innovation management.

According to data presented in Figure 6, most KM journals focus on publishing qualitative studies regarding innovation. However, an exception exists and it is represented by the Knowledge and Process Management (KPM). Although there is a small difference between the number of qualitative and quantitative studies (3 articles), the last ones prevail.

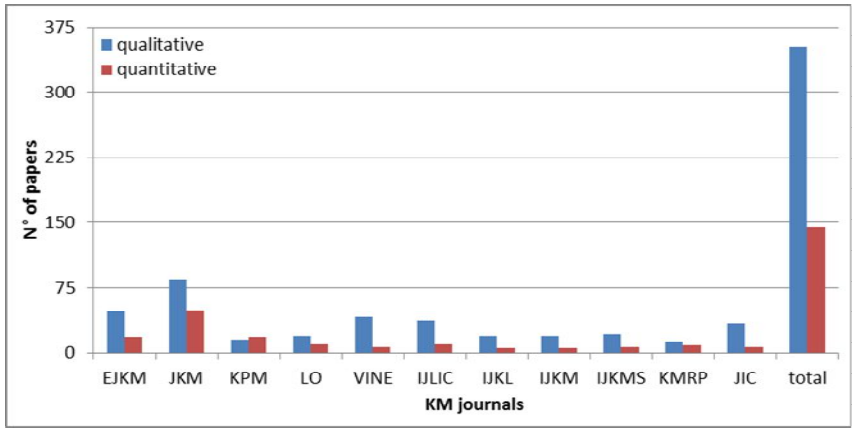

Figure 6. The scientific approaches encountered in KM journals

According to data presented in Figure 7, most Innovation journals focus on publishing qualitative studies regarding knowledge management issues. However, two exceptions exist and they are represented by the Innovations in Systems and Software Engineering (ISSE) and Technovation (T). The first one published the same number of qualitative and quantitative studies while in the second journal the quantitative studies prevail.

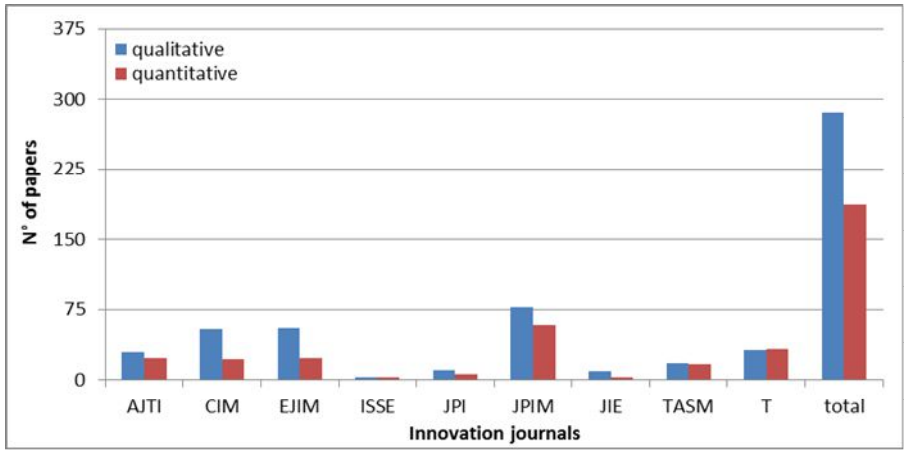

Figure 7. The scientific approaches encountered in Innovation journals

Recurring themes and topics in KM and Innovation journals

This analysis focuses on the overall detection of recurring themes and topics in the two kinds of literature: KM and innovation management.

a. KM papers that treat typical innovation topics

A first important area is that of Project Management. This is a typical subject in innovation management, but in the last years there have been a growing number of KM papers that directly focus on Project Management topics (Handzic & Durmic, 2015), such as: knowledge sharing and project documentation; project team organization; project-based companies; the use of KM technologies for managing projects etc. Indeed, projects require intense flows of knowledge between the involved participants, foster knowledge dissemination and use, support knowledge codification, and stimulate knowledge creation. Due to these, the attention of KM scholars and practitioners has increased; as it was mentioned before, 9.54% of the papers published in the KM journals address the project management issue.

A second area is represented by the implications of KM programs on innovation performance and companies' innovative capabilities. In other words, some studies attempt to investigate how the KM programs implementation can improve companies' capacity to react to external inputs and to innovate. As a matter of fact, the earlier KM applications were mainly targeted to the problem of capturing-storing-reusing knowledge especially for improving companies' efficiency. Later, it has been underlined that the production and management of innovation also requires a capability to exploit the existing knowledge contents and sources (Du Plessis, 2007). In other words, in order to innovate, the companies must identify their main sources of knowledge and they must be capable of exploiting it. Further, the nexus between KM and innovation strategy can be approached since it emphasizes how could a company use innovation as a strategic weapon (López-Nicolás & Meroño-Cerdán, 2011). For example, a special attention can be given on how to plan and design the KM programs so they can fit company's innovation strategy. Indeed, the topic of knowledge strategy – i.e. formulating a strategy to strengthen company's cognitive capabilities – has direct implications on the innovation strategy since it is deemed that a company can innovate effectively only if it manages appropriately its cognitive resources (Bratianu & Bolisani, 2015).

Product development is another issue that is often treated in the KM papers addressing innovation themes (Prieto, Revilla & Rodríguez-Prado, 2009). On the one hand, designing new products implies innovative capability but also an explicit capability of: (i) creating new knowledge, (ii) managing the existing one, and (iii) connecting with external sources. Therefore, for KM scholars, product development becomes a possible field of application of KM practices. In other words, it is the area where knowledge becomes visible, tangible and easy to quantify.

Last but not least, the R&D management is also a typical topic in innovation management which has captured the attention of the KM scholars (Leon, 2015; Park & Kim, 2006). The link between them is more visible and strong due to the fact that R&D is an area where knowledge workers and cognitive assets represent the core resource (Leon, 2011, 2015). The employees are the owners of individual knowledge and the

only ones capable of transforming all the other organizational resources based on their values, beliefs, skills, attitudes and competencies.

b. Innovation papers that treat typical KM topics

Considering that innovation, in itself, implies the generation, acquisition, and transfer of knowledge, an important KM area from where scholars have drawn models, concepts or simple terms is that of KM processes.

A second important KM topic is that of communities where different people collaborate and share knowledge for a common goal. For example, the literature on communities of practice, which are a popular topic in KM, has also become of particular interest for innovation scholars (Bertels, Kleinschmidt & Koen, 2011). This situation appeared due to the fact that in many cases the production and management of innovation are based on sharing knowledge in structures that recall the concept of a community of practice. On the other hand, against the backdrop of a fast technological process, most companies use virtual communities in order to gain access to higher and various amount of knowledge with lower costs (in terms of both time and money).

A third topic is represented by SMEs. Apparently, the management of innovation in small companies implies a peculiar consideration of the special processes and mechanisms of KM that occur in these environments (Du, Wu, Lu & Yu, 2013). Especially, the management of tacit knowledge becomes a critical issue. Consequently, innovation scholars often adopt KM models or concepts to explain innovation in SMEs.

Discussions

The prospects of a tighter connection between the area of innovation management and KM rest on the development of the common points of interest that characterize the two kinds of literature, and the topics that can therefore represent a shared focus of study and application. Some of these are highlighted further.

a. Knowledge-based view of the firm; learning organization

Under a KM perspective, the company is naturally seen as an organization where knowledge is the basic resource. So, even when KM scholars don't mention it, the knowledge-based view of the firm (Grant, 1996) is the implicit theoretical framework. Another reference theory is that of the learning organization (Senge, 1990). In innovation studies, both the knowledge-based theory and the learning organization theory are just one of the possible references. However, these conceptual approaches have gained popularity in recent times: an innovative company is increasingly seen as an organization "that learns", and where knowledge resources are considered and exploited intensively. Therefore, a further development of these two theoretical areas and of their practical implications for both KM and innovation management can be a first important intersection point of the two fields.

b. Knowledge-intensive business services (KIBS)

KIBS are companies whose main characteristic is, by definition, to exploit knowledge resources for providing services to other companies (Miles, 2005). KIBS are, therefore, an elective object of analysis of KM studies, because it is important to investigate how these knowledge resources can be effectively developed and used for business purposes (Smedlund & Toivonen, 2007). At the same time, the role of KIBS for innovation is increasingly recognized in the innovation management literature (Chairatana, 2009). KIBS are therefore a second important topic where a joint analysis that adopts a KM and an innovation management approach can be useful and important.

c. Knowledge protection, intellectual property

The management of intellectual property is, clearly, a central topic in innovation management. While patents and their management have often been the focus of analysis, in consideration of the importance of "intangibles" that also include intellectual capital, there is an upsurge of interest in the investigation of protection methods not only in the form of patents (Hurmelinna, Kyläheiko & Jauhiainen, 2007). Especially, there is recognition that knowledge is the main ingredient of intellectual property. This implies a definition of appropriate methods that, clearly, involves not only concepts and theories developed in the innovation management field, but also those that are typical of KM (Bolisani, Paiola & Scarso, 2013). At the same time, in the KM literature, there is growing interest in the relationship that a company has with external entities like suppliers, customers, or competitors. The economic value of knowledge is seen in relation to the knowledge exchanges that occur, which also raises the issue of protection (Roy & Sivakumar, 2011).

d. Networks and networking

In innovation management, the analysis of networks is increasingly important (Cantner, Meder & Ter Wal, 2010). Especially with the upsurge of R&D collaboration and open innovation approaches (Bergman, Kärkkäinen, Jantunen & Saksa, 2010), it is recognized that a company must extend its reach to external sources of valuable knowledge. The processes by means knowledge are captured, assimilated, and integrated into a company's base are essential for managing innovation. Therefore, the analysis of collaboration networks becomes important for innovation management (Hardwick, Anderson & Cruickshank, 2013), not only in terms of structural aspects (i.e. network configuration, the role of nodes, etc.) but also of the mechanisms of knowledge transfer and sharing that are or can be adopted. Again, the KM literature can become an important source for innovation studies.

Conversely, the consideration that knowledge exchanges in networks and their functioning are particularly important in the case of joint R&D and product development provides a fresh area of study and application to KM scholars and practitioners (Fang & Pigneur, 2010).

Conclusions

The research findings have both theoretical and practical implications. On the one hand, it synthesizes how the link between KM and innovation management evolved in the last 10 years. As it has been proved, according to the annual trends, the interest of the two kinds of literature for the topics of the other field has remained substantially constant over time.

On the other hand, the results of this research may serve as a handbook of managerial guidelines; it brings forward the KM approaches and tools which can be used for product or process innovations. The studies published in the last 10 years had already brought forward the link between knowledge and several aspects like: product and process development, project management, and process improvement, and also the relationship between innovation and KM various issues, such as: organizational learning, intellectual capital, social capital, human capital, relational capital, and structural capital.

Despite its valuable insights, the research is limited by the number of keywords searched in international databases like, EBSCO, Scopus and Thomson Reuters, and also by the fact that the analysis only centered on the KM and Innovation journals. Significant papers which link KM and innovation may have been published in general management or strategic management journals. However, although what was found in the analyzed studies is just a fraction from what was written, it is still able to reflect the weak connection between specific KM topics and various innovation management issues. As it was previously highlighted, the nexus between KM and innovation tends to be approached from a wider, general perspective. On the other hand, the intention was not to offer a complete overview of the issue but rather to present the interest of the KM journals on the topics which are usually analyzed in the Innovation journals, and vice versa.

Starting from these, several directions for further research may be identified, namely: (i) extending the analysis at the level of all management journals, indexed in Scopus and Thomson Reuters databases; (ii) analyzing the specific topics on which knowledge and innovation intersect; (iii) determining the KM and innovation topics which are mainly approached from a qualitative perspective; and (iv) determining the KM and innovation topics which are mainly approached from a quantitative perspective.

References

Amara, N., D'Este, P., Landry, R., & Doloreux, D. (2016). Impacts of obstacles on innovation patterns in KIBS firms. *Journal of Business Research*, 69(10), 4065-4073.

Bergman, J., Kärkkäinen, H., Jantunen, A., & Saksa, J.-M. (2010). Knowledge convergence in an open innovation process. *International Journal of Knowledge Management Studies*, 4(1), 47-64

Bertels, H.M., Kleinschmidt, E.J., & Koen, P.A. (2011). Communities of practice versus organizational climate: Which one matters more to dispersed collaboration in the front end of innovation?. *Journal of Product Innovation Management*, 28(5), 757-772.

Bolisani, E., Paiola, M., & Scarso, E. (2013). Knowledge protection in knowledge-intensive business services. *Journal of Intellectual Capital*, 14(2), 192-211.

Bratianu, C., & Bolisani, E. (2015). Knowledge Strategy: An Integrated Approach for Managing Uncertainty. In A. Garlatti & M. Massaro (Eds.), *Proceedings of the 16th European Conference on Knowledge Management* (p.169). Reading: Academic Conferences International Limited.

Cantner, U., Meder, A., & Ter Wal, A.L. (2010). Innovator networks and regional knowledge base. *Technovation*, 30(9), 496-507.

Chairatana, P.A. (2009). Knowledge, innovation, and service system in latecoming Southeast Asia. *Asian Journal of Technology Innovation*, 17(1), 143-163.

Cowan, R., & Jonard, N. (2009). Knowledge portfolios and the organization of innovation networks. *Academy of Management Review*, 34(2), 320-342.

Du Plessis, M. (2007). The role of knowledge management in innovation. *Journal of knowledge management*, 11(4), 20-29.

Du, J., Wu, D., Lu, J., & Yu, H. (2013). Knowledge networks and technological capabilities of SMEs: the role of technology strategies and its implications for knowledge service intermediaries. *Asian Journal of Technology Innovation*, 21(S2), 80-98.

Duriau, V.J., Reger, R.K., & Pfarrer, M.D. (2007). A Content Analysis of the Content Analysis Literature in Organization Studies: Research Themes, Data Sources and Methodological Refinements. *Organizational Research Methods*, 10(1), 5-34.

Fang, G., & Pigneur, Y. (2010). The configuration and performance of international innovation networks: some evidence from the Chinese software industry. *International Journal of Learning and Intellectual Capital*, 7(2), 167-187.

Feldman, M.P. (2000). Location and innovation: the new economic geography of innovation, spillovers, and agglomeration. In G.L. Clark, M.P. Feldman, & M.S. Gertler (Eds.), *The Oxford Handbook of Economic Geography* (pp.372-394). Oxford: Oxford University Press.

Fram, S.M. (2013). The Constant Comparative Analysis Method Outside of Grounded Theory. *The Qualitative Report*, 18(1), 1-25.

Grant, R.M. (1996). Toward a knowledge-based theory of the firm. *Strategic management journal*, 17(S2), 109-122.

Handzic, M., & Durmic, N. (2015). Knowledge Management, Intellectual Capital and Project Management: Connecting the Dots. *Electronic Journal of Knowledge Management*, 13(1), 51-61.

Hardwick, J., Anderson, A.R., & Cruickshank, D. (2013). Trust formation processes in innovative collaborations: networking as knowledge building practices. *European Journal of Innovation Management*, 16(1), 4-21.

Hurmelinna, P., Kyläheiko, K., & Jauhiainen, T. (2007). The Janus face of the appropriability regime in the protection of innovations: Theoretical re-appraisal and empirical analysis. *Technovation*, 27(3), 133-144.

Kogut, B., & Zander, U. (1992). Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science*, 3(3), 383-397.

Leiponen, A., & Helfat, C.E. (2010). Innovation objectives, knowledge sources, and the benefits of breadth. *Strategic Management Journal*, 31(2), 224-236.

Leon, R.D. (2011). Creating the future knowledge worker. *Management & Marketing. Challenges for the Knowledge Society*, 6(2), 205-222.

Leon, R.D. (2015). The Future Knowledge Worker: An Intercultural Perspective. *Management Dynamics in the Knowledge Economy*, 3(4), 675-691.

Lett, J. (1990). Emics and etics: Notes on the epistemology of anthropology. In T.N. Headland, K.L. Pike, & M. Harris (Eds.). *Emics and etics: The insider/outsider*

debate. Frontiers of anthropology (pp.127-142). Newbury Park, California: Sage Publications.

López-Nicolás, C., & Meroño-Cerdán, Á.L. (2011). Strategic knowledge management, innovation and performance. *International journal of information management*, 31(6), 502-509.

Miles, I. (2005). Knowledge intensive business services: prospects and policies. *Foresight*, 7(6), 39-63.

Mott-Stenerson, B. (2008). Integrating qualitative and quantitative theoretical perspectives in applied advertising research. *Journal of Business Research*, 61(5), 431–433

Nelson, R.R., & Winter, S.G. (1982). *The evolutionary theory of economic change*. Cambridge, MA: Belknap Press.

Park, Y., & Kim, S. (2006). Knowledge management system for fourth generation R&D: KNOWVATION. *Technovation*, 26(5), 595-602.

Prieto, I.M., Revilla, E., & Rodríguez-Prado, B. (2009). Managing the knowledge paradox in product development. *Journal of Knowledge Management*, 13(3), 157-170.

Roy, S., & Sivakumar, K. (2011). Managing intellectual property in global outsourcing for innovation generation. *Journal of Product Innovation Management*, 28(1), 48-62.

Senge, P. (1990). *The fifth discipline: The art and science of the learning organization*. New York: Currency Doubleday.

Serenko, A., & Bontis, N. (2004). Meta-review of knowledge management and intellectual capital literature: citation impact and research productivity rankings. *Knowledge and Process Management*, 11(3), 185–198.

Smedlund, A., & Toivonen, M. (2007). The role of KIBS in the IC development of regional clusters. *Journal of Intellectual Capital*, 8(1), 159-170.