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A Scientometric Analysis of Knowledge Management Research and Practice Literature: 2003 – 2015

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A Scientometric Analysis of *Knowledge Management Research and Practice* Literature: 2003 – 2015

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A Scientometric Analysis of *Knowledge Management Research and Practice* Literature: 2003 - 2015

Abstract

The purpose of this paper is to explore the current research trends in Knowledge Management (KM) through a scientometric analysis of all literature published in KMRP between 2003 and 2015 (506 articles). The review framework explores three sets of review questions addressing Research Productivity, Research Themes and Methods, and Citation Analysis. The study elucidates wide global interest in KM and an increasing trend towards multi-author collaboration. Although more than 55 different industries have featured in the journal, certain knowledge-intensive sectors remain underrepresented. Country productivity shows few nations taking the lead with an interesting correlation between research activity and economic prosperity. Moreover, a growing tendency towards empirical methods is observed in contrast to a decrease in literature review papers, coupled with a recent rise in articles that integrate KM and Information Technology (IT). In terms of citation and influences, few published articles have stood out in the journal's history. This is the first comprehensive scientometric research of KMRP describes the state-of-the-art value and provides an outlook of the future.

Keywords – Scientometric Analysis, KMRP, Knowledge Management, Intellectual Capital.

Introduction

Knowledge management (KM) has become a predominant field within the business and management landscape for both researchers and practitioners (Moustaghfir & Schiuma, 2013). The recognition of the fundamental role of knowledge in value creation spawned the concept of the *Knowledge Economy*, making it one of the pillars

of contemporary management thinking (Roberts, 2009; Weir *et al.*, 2010). Economic growth is no longer reliant on physical capital and labour only as established in nineteenth century theories, but also on the human capital comprised of "knowledge workers" whose innovative capabilities lead the advancement of the current "knowledge society" (Drucker, 1994). This was highlighted by a 1999 World Bank report which provided one of the first comprehensive accounts of the emerging role of knowledge in economic development through a focus on acquisition, application, and transfer of knowledge (*World Bank Annual Report*. September, 1999). By the end of the twentieth century, the notion of managing knowledge had evolved at the corporate level as organisations acknowledged the need to leverage and exploit their knowledge resources (Carmeli and Tishler, 2004). KM is now considered a vital organisational function and a key source of sustainable competitive advantage (Davenport & Vo, 2006). On the other hand, progressive academic works have also established KM as an independent and rich scientific discipline. As a research field, KM has witnessed an exponential growth rate in publications amounting to 50% per year, supported by the foundation of a number of dedicated KM journals and conferences (Serenko et al., 2010).

One of the key peer-reviewed journals in the KM field is *Knowledge Management Research and Practice (KMRP)*. Available online since 2003, KMRP is the first KM journal to gain an impact factor (Thomson Reuters, 2015). Its aim is to provide an outlet for high quality peer reviewed publications including both academic and practical dimensions and the relationship between both perspectives. The journal pays particular attention to cross disciplinary research, mixtures of techniques, and differing schools of thought adopting a broad spectrum of publication themes including empirical research and case studies as well as conceptual and theoretical papers (Springer, 2017). Moreover, KMRP was placed third in 2008 then the second in 2013, according to expert survey rankings conducted on a sample of 25 key KM journals (Serenko & Bontis, 2013a).

While the KM field continues to grow, reflections on literature can allow for more efficient future deliberations on subjects within the discipline, minimise repetition, and create starting points for further advancements in KM theory and practice. This paper provides insights into KM research published in the KMRP, which could arguably apply to the whole KM domain considering that KMRP is a representative example of the wider KM literature. To present the work, the paper is divided into five sections. Following the introduction, the second section offers a brief survey of relevant literature and presents the study's research questions. Section 3 details the study's methodology and the development of the review framework. Findings are presented and analysed in the fourth section, while the final section discusses the work's conclusions and implications for future research.

Background and Research Questions

A literature review is a "*critical analysis of a segment of a published body of knowledge through summary, classification, and comparison of prior research studies*" (Jafari and Kaufman, 2006). It helps to interpret what is known about a research field and to identify gaps in the existing knowledge (Jesson, Matheson and Lacey, 2011). Several reviews covered KM publications and journals using a number of methods over different time periods. These include but are not be limited to: Citation Analysis (Huang, Chen and Stewart, 2010; Ma and Yu, 2010; Ribière and Walter, 2013; Serenko and Bontis, 2013a; Serenko and Dumay, 2015) Content Analysis (Fteimi and Lehner, 2016), Journal Ranking (Serenko and Bontis, 2009, 2013b), Meta-review (Serenko and Bontis, 2004) and Scientometric Analysis, the approach adopted in this study (Serenko, Bontis and Grant, 2009; Serenko *et al.*, 2010).

Scientometrics is *science about science* with distinct identity and methodology (Garfield, 2009). The term has grown in popularity and recognition in the last decades, especially after the founding of the dedicated *Journal of Scientometric*s by Tibor Braun in 1978. It is used to describe the study of science including growth, structure,

interrelationships, and productivity of a certain research discipline (Hood and Wilson, 2001). Scientometrics portrays a comprehensive picture of research activity within the field and is able to present existing trends supported by quantitative data. In this study, the scientometric approach is adopted to investigate three main research issues within KMRP during the review timeframe:

(1) *Productivity* - Demographic patterns in the production of KMRP research;

(2) *Themes and Methods* - Trends in topics examined and research tools applied; and

(3) *Citation* - Analysis of referencing frequency of the journal's papers.

Accordingly, three groups of research questions were formulated to guide the research process as follows:

Research Productivity in KMRP

RQ1. What are the dominant trends in authorship distribution?

RQ2. What is the prevailing affiliation of KMRP authors (Academics vs Practitioners)?

RQ3. Which countries are leading in KM research?

RQ4. Is there a relationship between a country's economy and its contribution to KM research?

RQ5. What is the institutional productivity in the journal?

Research Themes and Methods in KMRP

RQ6. Which research methodologies are most used by authors?

RQ7. What are the most popular industrial sectors in KM research?

RQ8. What are the main research themes in the journal?

RQ9. What is the degree of integration of Information Technology in KM research?

Citation Analysis of KMRP

RQ10. Which articles are the most influential in the journal's history?

Methodology

The research methodology adopted in this study can be summarised in a series of steps. First, the boundaries of article selection for analysis were drawn using criteria for inclusion and exclusion. This set initially included 506 articles published in KMRP

between the year 2003 - when the first issue was published – and up to 2015. Editorials, position papers, and book reviews were excluded from the article list. Accordingly, a total of 344 peer-reviewed journal articles was retained for analysis, while 162 were excluded. Second, the research framework was synthesised in light of previous similar works (Serenko & Bontis, 2004; Serenko *et al.*, 2010; Serenko & Dumay, 2015; Fteimi and Lehner, 2016). The subsequent design allows exploration into the various attributes of publications within the selected sample (Table 1).

A pilot review of ten articles was initially conducted by two researchers for validation purposes. The outcomes of this exercise led to minor modifications of the framework, and helped identify what the authors refer to as *grey areas*, which are article attributes within the framework that are subjective in nature and can vary according to the views of the coder. Grey areas are mainly confined to two review parameters: research method and research topic where the same article can be classified under more than one category within the coding scheme. In such cases, the researchers agreed to code the article under the most predominant theme then cross-check their results.

Table 1: Research Framework

Theme	*Variables*
Productivity	• Number of authors- *Single vs. multiple authors* • Affiliation of author- *Academic vs. Practitioner* • Country of Residence- *where the author is based, not where the work was conducted.*

Research Method *Includes data collection method, more than one can be selected*	• Case study • Interviews • Literature review • Modelling tools • Surveys • Other qualitative – e.g. *Focus groups, Delphi, site observation, action research, content analysis, ethnography.*
Research Topic *Most prominent topic in the paper, more than one can be selected*	• Intellectual Capital • Innovation • Organisational Learning • Culture & Social Issues (Social Capital) • Performance Management • Information System • Communities of Practice • Knowledge Measurement • Knowledge Philosophy/Ontology • Other Knowledge Management • Knowledge Sharing • Knowledge Transfer • Knowledge Creation • Knowledge Process • Knowledge Acquisition • Knowledge Exchange • Use of Knowledge • Knowledge Audit • Other
Technology Adoption	• Use of Technology (*yes/no*)
	Type of KM Technology: • Knowledge management system • Internet • Communication technology • Wiki • Social Media • Prototype • Database • Blogs • Decision support systems • Other
Referencing	• Number of citations from Google Scholar database • Keywords

In the subsequent stage, the articles were mutually coded by both researchers. Finally, full analysis of the resultant dataset was undertaken to identify patterns. When addressing Research Questions 2-5 pertaining to Research Productivity, methods utilising credit analysis were enacted and the researcher had to select the most

appropriate method. Authorial credit is generally provided using one of four methods depicted in Table 2 below.

Table 2: Methods for Assigning Author Credit

Method	*Description*	*Example*	*Criticism*
Normalised Page Size	Number of pages is divided by the number of authors.	For 15 pages and 3 authors: Author 1= 5 Author 2= 5 Author 3= 5	- Assumes longer papers make higher contribution. - Affected by journal pages' limits
Author Position	Values are assigned according to the author's order in the citation.	For 4 authors: Author 1= 0.415 Author 2= 0.277 Author 3= 0.185 Author 4= 0.123	- Co-authors are sometimes listed in alphabetical order; so those whose names are earlier in the alphabet are unjustly favoured. - Does not consider cases where authors have equal contributions.
Direct Count	A value of 1.0 is assigned to each author.	For 3 authors: Author 1= 1 Author 2= 1 Author 3= 1	- Gives advantage to researchers who co-author numerous papers regardless of their contribution.
Equal Credit	Each author receives an equal credit equivalent to the inverse of the number of authors, regardless of author position.	For 3 authors: Author 1= 0.333 Author 2= 0.333 Author 3= 0.333	- Avoids the drawbacks of previous methods.

Table adapted from (Chua and Cousins, 2002; Lowry, Karuga and Richardson, 2007)

The Equal Credit Method was selected because it avoids the shortcomings of the three other methods and provides mostly unbiased authorial credit. In addition to Equal Credit, the Direct Count Method was employed in Research Questions 2 and 3 as well and results of both methods were compared. It is worth noting that studies have suggested that the Direct Count, Author Position, and Equal Credit methods can

produce similar results, particularly when utilising aggregate data (Serenko et al., 2008).

In addressing Research Question 10 regarding citation impact of influential KMRP publications, each paper's citation impact index was computed to determine the single most highly cited article. The most commonly used measure is the calculation of the total number of citations of each paper since its publication. However, according to Holsapple et al. (1994), the weakness of this method is that it does not consider the publication date of the article. It will provide the same score to two publications that are cited the same number of times even if they are published in different years, although the most recent of them would have a higher average number of citations per year. This suggests that the latter publication has had a higher contribution to the field having achieved the same number of citations in a shorter time period, an aspect which the traditional citation index overlooks. To overcome this drawback, Holsapple et al. (1994) propose the use of *Normalized Citation Impact Index (NCII)* which accounts for the paper's longevity thus reflecting the relative contribution of each article. It is calculated by dividing the number of times the article has been referenced by the number of years the article has been available [NCII = Total Citations (count) / Longevity in years]. The NCII method is hence adopted in this study in order to provide more reliable results. Individual article citations obtained from the *Google Scholar* database are used to compute the NCII for each article and publications are ranked in descending order according to their indices.

Finally, author keywords were extracted from the review pool using the open source bibliography reference software *JabRef*. Keywords were then electronically sorted and counted as a part of trend analysis.

Findings

In an attempt to identify the trends within the current sample, the analysis results are presented over two time periods (2003 - 2008) and (2009 - 2015). This format helps in

highlighting the major changes in the nature of research work published in the journal over its lifetime.

Authorship Trends

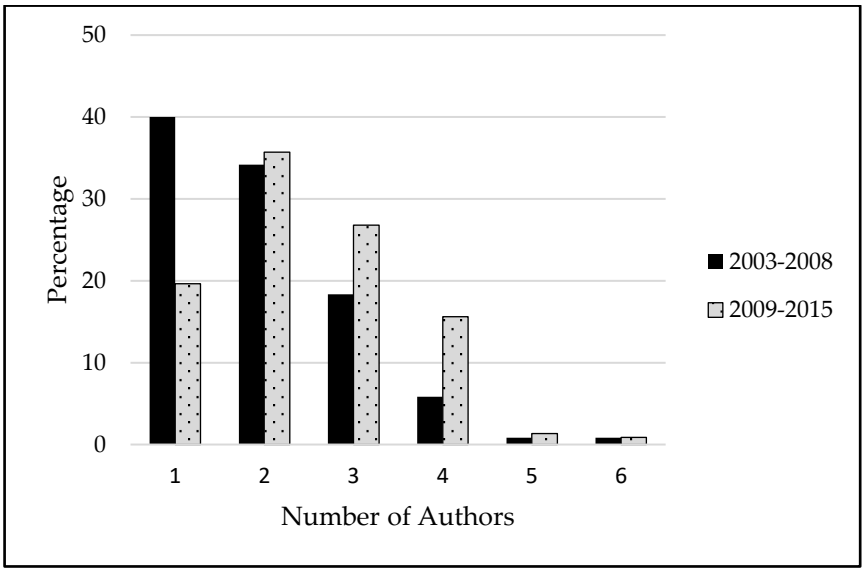

Figure 1: Number of Authors

The average number of authors within the sample is 2.28 authors per paper, however, a growing trend towards multi-authored papers is evident. While the average paper authorship in the first time period (2003 – 2008) is 1.96 authors per paper, it increased to 2.46 authors per paper in the second time period (2008 – 2015). The median number of authors has also increased from two to three after 2013 (Table 3). The percentage of single authored papers dropped from 40% in 2003-2008 to less than 20% in 2009-2015, whereas papers with two, three, and four authors witnessed significant increases of 1.5%, 8.5%, and 9.8% respectively (Figure 1). This confirms the findings of Akhavan, Ebrahim et al. (2016) who observe a decline in single-authored works over time and the emergence of collaboration patterns among KM scholars.

Table 3: Co-authorship Distribution - Number of Authors

Year	2003	2004	2005	2006	2007	2008	2009
Mean	1.78	1.93	1.61	2.07	2.32	1.86	2.18

Median	2	2	1	2	2	2	2
Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	
Mean	2.34	2.48	2.34	2.48	2.83	2.58	
Median	2	2	2	2	3	3	

Author Affiliations

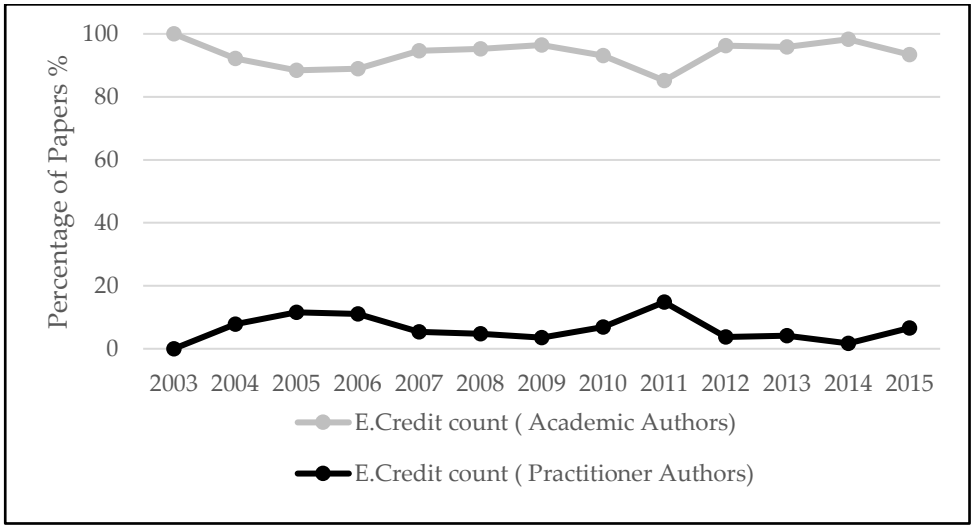

Figure 2: Author Affiliation

From an affiliation perspective, more than 90% of authors have an academic background and are in direct affiliation with educational and/or research institutions. The remaining 10% of authors are practitioners from service or industrial sectors. Both the Direct Count and Equal Credit methods are used to compute the contribution of practitioners and academic authors and no statistically significant difference is found between the results of both methods (*p-value* = 0.592).

Country Productivity and GDP

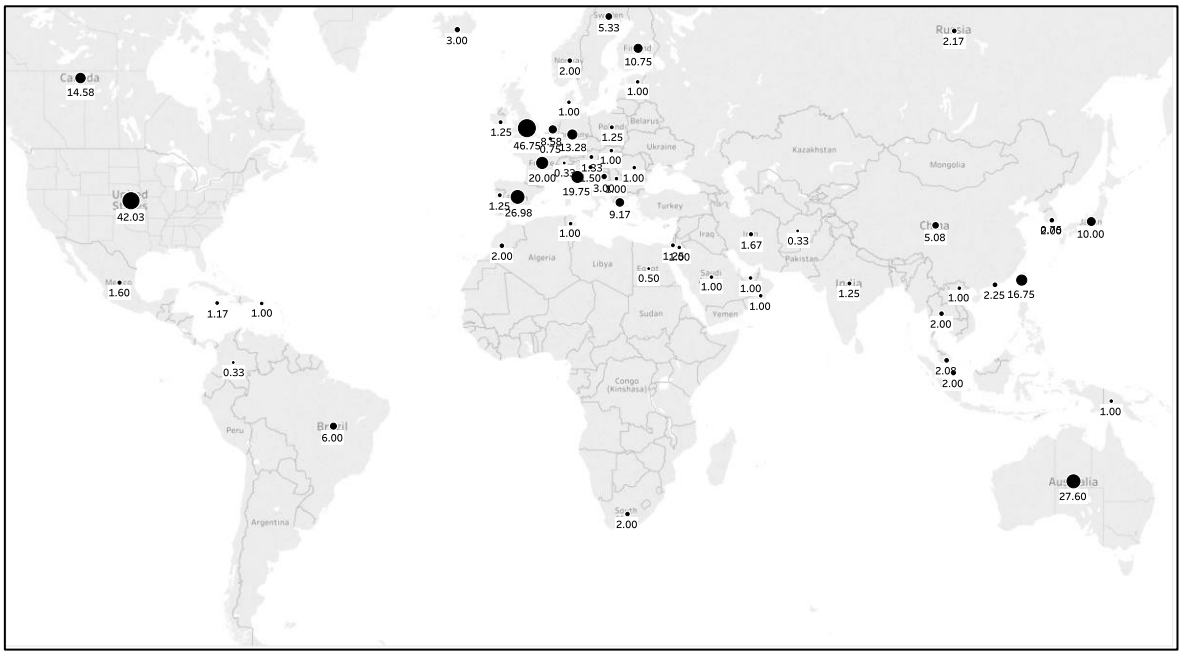

Figure 3: Country Productivity (Equal Credit Score)

In order to identify the leading countries in the KM field, the relative contributions of 57 countries whose papers are published in the KMRP are traced and ranked using both the Equal Credit and Direct Count methods. Similar results from both methods are obtained and the Pareto Principle or "*The Law of Vital Few*" is heavily observed (Pareto, 1971). The majority of publications originate from roughly 20% of participating countries as shown in (Figure 3) and (Table 4). To confirm the findings, the number of citations from each country is counted using the NCII method for all the countries. The same countries of the highest contribution to the journal are found to be on the top of the articles citation list. Statistical analysis also revealed a moderate positive correlation (*0.559*) between the country Gross Domestic Product (GDP) and contribution to KM research.

Table 4: Country Productivity Ranking

Rank	Equal Credit Method		Direct Count Method		NCII	
	Country	*Percentage*	*Country*	*Percentage*	*Country*	*Percentage*
1.	UK	13.76%	UK	12.74%	UK	12.92%
2.	USA	12.37%	USA	12.02%	USA	12.52%
3.	Australia	8.13%	Spain	7.69%	Japan	8.95%
4.	Spain	7.94%	Australia	7.69%	Spain	7.67%
5.	France	5.89%	Italy	5.53%	Canada	7.49%
6.	Italy	5.81%	France	5.05%	Italy	6.74%
7.	Taiwan	4.93%	Canada	4.81%	Finland	4.25%
8.	Canada	4.29%	Taiwan	4.09%	Germany	4.14%
9.	Germany	3.91%	Germany	3.85%	France	4.10%
10.	Rest of the world	32.95%	Rest of the world	36.54%	Rest of the world	31.22%

Institutional Productivity

When examining institutional productivity, Equal Credit is the method of choice for organisations as well. Analysis revealed that, to-date, more than 400 unique institutions have published articles in the KMRP. The noticeable finding is the minimal variation among individual contributions of each institution where no single institution dominates publications in the journal as shown in (Table 5) (*range* = 3.8, *standard deviation* = 0.65). By the same token, the top fifth of contributions comes from more than 27 different institutions. It is also noted that two thirds of papers are the product of a single institution and 38.6% of the papers are the outcome of multi-institutional collaboration. Furthermore, the top 20% contributors are all academic organisations, which coincides with the prevalence of academic authorship as previously mentioned.

Table 5: Institutional Productivity

Rank	Institution	Equal Credit	Percentage	Cumulative Sum
1.	National Technical University of Athens	3.999	1.16%	1.16%
2.	University of Sydney	3.999	1.16%	2.33%

Rank	Institution	Equal Credit	Percentage	Cumulative Sum
3.	Tampere University of Technology	3.998	1.16%	3.49%
4.	Queens University	3.916	1.14%	4.63%
5.	University of Southampton	3.5	1.02%	5.64%
6.	University of Hull	3.166	0.92%	6.56%
7.	National Taiwan Ocean University	3	0.87%	7.44%
8.	Universidad Computense de Madrid	3	0.87%	8.31%
9.	University of Sao Paulo	3	0.87%	9.18%
10.	Politecnico di Milano	2.75	0.80%	9.98%
11.	Hitotsubashi University	2.5	0.73%	10.71%
12.	University of South Australia	2.5	0.73%	11.43%
13.	University of Southern Queensland	2.499	0.73%	12.16%
14.	Kingston University	2.333	0.68%	12.84%
15.	University of Salento	2.333	0.68%	13.52%
16.	University of Sheffield	2.333	0.68%	14.19%
17.	Loughborough University	2.166	0.63%	14.82%
18.	Bangkok University	2	0.58%	15.40%
19.	Edith Cowan University	2	0.58%	15.99%
20.	Politecnico di Bari	2	0.58%	16.57%
21.	Robert Gordon University	2	0.58%	17.15%
22.	Soochow University	2	0.58%	17.73%
23.	University of Akureyri	2	0.58%	18.31%
24.	University of Alicante	2	0.58%	18.89%
25.	University of Castilla La Mancha	2	0.58%	19.47%
26.	University of Melbourne	2	0.58%	20.06%
27.	University of New South Wales	2	0.58%	20.64%
28.	Other 375 unique institutions	N/A	79.36%	100

Research Methods

Research methods can be described as all the data collection and analysis techniques that are used for conduction of research activities to solve research problems (Kothari,

2004). Nearly half of the articles (47%) utilised a single method, while the rest of articles used two or more. A mild to moderate increase in published empirical studies, both quantitative and qualitative, is observed in the second review time period (2009-2015) in comparison to conceptual models and literature reviews which are prevalent in the first review period (Figure 4). Nevertheless, modelling tools and frameworks are still the most used methodology by KMRP researchers, followed by case studies.

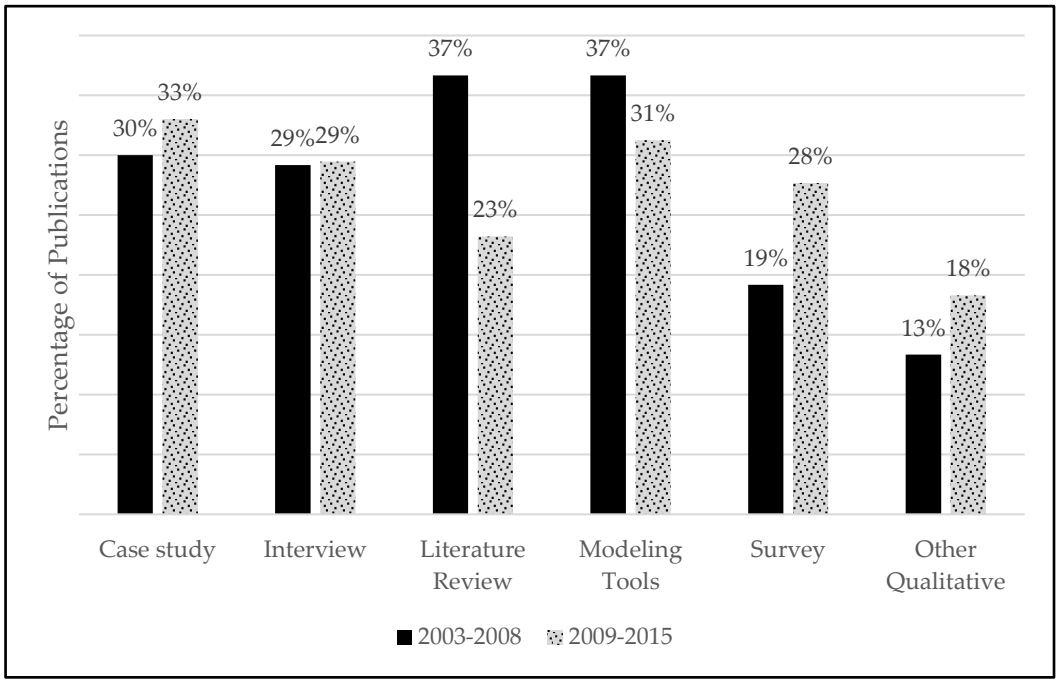

Figure 4: Research Methods

Industrial Sectors

Expanding on the findings from the previous section, articles were thoroughly surveyed for industries which are selected as research fields. While 33% of studies are classified as conceptual studies and thus have no industries, the other two thirds are conducted in more than 57 different industries and service sectors. Moreover, 15% of papers do not specify a single sector used in data collection. Instead, a mixture of different businesses is used as a non-industry specific convenience sample. This is expected since researchers often tend to gather data from companies in their network and the ones that they have access to.

Moreover, research and education institutions are on the top of the popularity list. Approximately 12% of the studies are conducted either within universities, research labs and/or rely on the classroom as a case study. Once again, this could be simply attributed to convenience. Information and Communication Technologies (ICT), Healthcare, and High-Tech firms come in the second, third, and fourth places respectively. Nonetheless, some knowledge intensive industries such as Pharmaceuticals, Aerospace, and Energy have not received adequate attention in industry-specific publications. Table 6 illustrates the main industry/service sectors in the articles and their relative percentage.

Table 6: Industrial Sectors

Rank	Industry	%	Rank	Industry	%
1	Multi Sectoral	14.8%	11	Engineering	1.2%
2	Research & Education	11.6%	12	Entertainment	1.2%
3	ICT	8.7%	13	Insurance	1.2%
4	Healthcare	5.2%	14	Metal industry	1.2%
5	Technology	4.1%	15	Oil and Gas	1.2%
6	Civic Society	2.3%	16	Aerospace	0.9%
7	Consulting & Training	2.0%	17	Banking	0.9%
8	Automotive	1.7%	18	Pharmaceuticals	0.9%
9	Unspecified	1.7%	19	Other industries	13.1%
10	Construction	1.2%	20	Conceptual (none)	32.8%

Research Themes

Two approaches are adopted to identify the common research themes within the KMRP body of literature. First, two researchers qualitatively categorised the papers according to their research topic as explained in the review framework. A counter review of the same papers by the other researcher was used to confirm the categorisation of each paper under a single theme. In cases where researchers coded a paper differently, the article was jointly reviewed by both researchers until a

classification is agreed, or third opinion was sought. Secondly, a quantitative keywords analysis is used in parallel in order to compare the findings of the thematic analysis.

Results show that 61% of research papers falls within five topics; (1) Knowledge Sharing, (2) Intellectual Capital, (3) Knowledge Creation, (4) Knowledge Transfer, and (5) Culture. Some research themes indicate significant growth in the second review time period (2009 - 2015) in comparison to the first period (2003 - 2008). For example, there is a growing interest in Intellectual Capital, Knowledge Transfer, Innovation and Culture, while issues such as Knowledge Creation, Knowledge Measurement, Organisational Learning, Information Systems, Communities of Practice have received less interest (Figure 5).

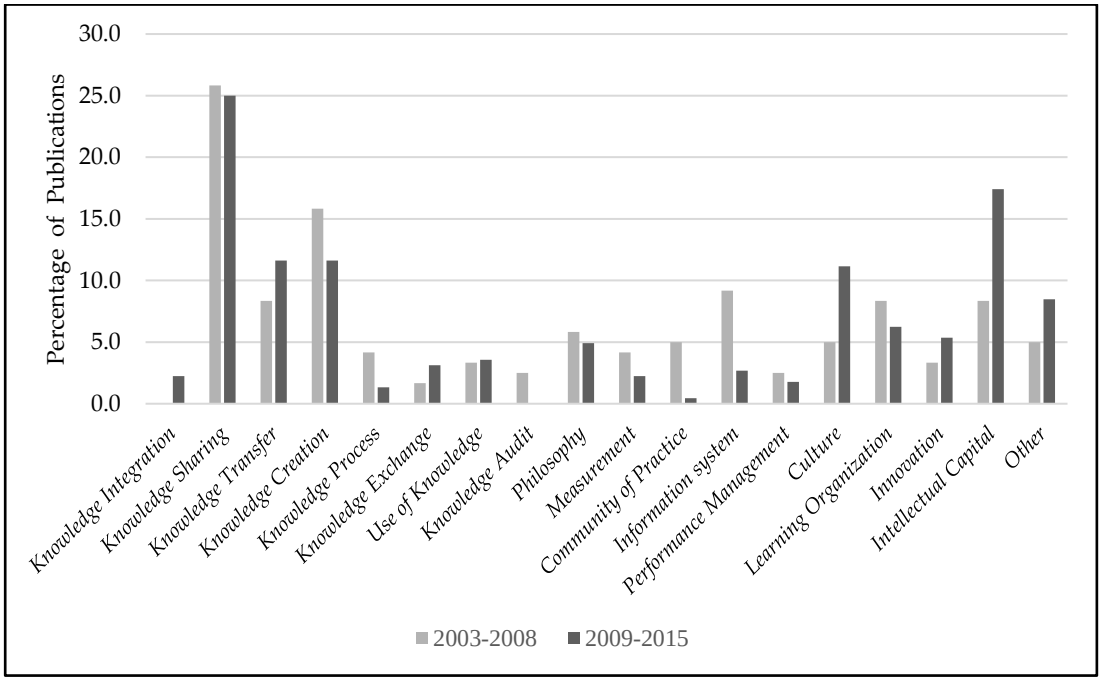

Figure 5: Research Themes

Keyword Analysis

A comprehensive keyword analysis of KMRP articles between 2003 and 2012 undertaken by Ribière and Walter (2013) demonstrate that *Knowledge Sharing* is the most used keyword in the journal. A similar exercise extending until 2015 conducted

in this research unsurprisingly yielded the same outcome (Figure 6). The predominance of *Knowledge Sharing* as a keyword, as well as a research theme, confirms the validity of the thematic analysis outcomes of the previous section. It also elucidates the emphasis researchers have placed on the knowledge sharing process as a precursor of effective KM. Whether the objective is spreading best practice, disseminating innovative ideas, or creating digital repositories, sharing knowledge is often at the core of KM initiatives.

Figure 6: Keyword Analysis

KM Technology

The role of Information Technology (IT) in KM is widely discussed in the literature (Ragab and Arisha, 2013). A common view is that KM should not be reduced to a solely IT-based project as there is a tacit dimension of knowledge which cannot be managed using technological tools (Schiuma, 1998; Chatzkel, 2007). IT is rather envisaged as an essential KM catalyst and an enabler of knowledge sharing processes within and between organisations (Tsui, 2005). This view seems to be reinforced by scientometric figures as, overall, 91% of papers did not include reference to IT.

However, by contrasting the first review period (2003-2008) to the second (2009-2015) in regards to discussing technology, an increase from 4.2% to 11.6% is observed (Figure 7). This demonstrates a movement towards further integration of IT in KM. In this area, the Internet, Databases and Social Media are the most popular IT solutions within the published papers, a trend in tandem with the digital revolution and the explosive growth of social networking (Figure 8).

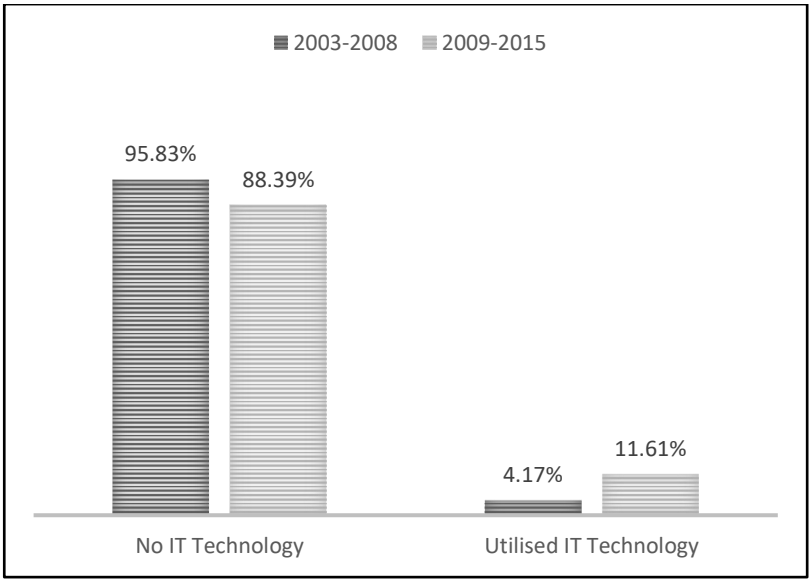

Figure 7: Integration of IT in KM Research

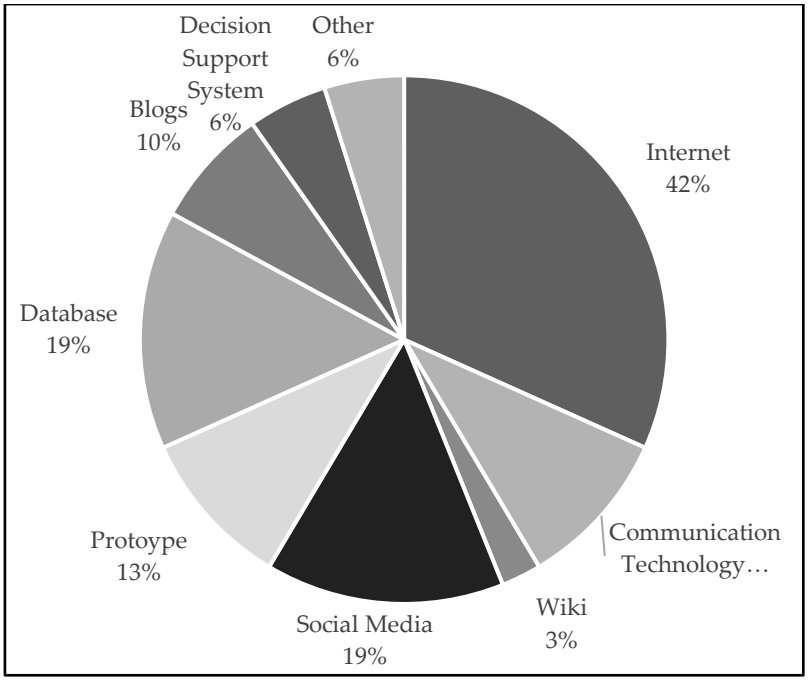

Figure 8: IT Technologies

Citation Analysis

By examining citation frequency, three articles stand out as the most influential articles in the journal's history based on their NCII (Table 7). It is noted that the top three articles gained 11.8% of the NCII score for all the articles and approximately 80% of citations came from the top 144 articles (≈40%). Interestingly, the most cited article is authored by renowned KM thinker Ikujiro Nonaka and extends on his SECI model (Nonaka, 1994) of knowledge creation, which is regarded as one of the most seminal and highly-cited theories in the history of KM at large, cited 21360 times.

Table 7: Highest Cited KMRP Articles

Author	Title	Year	NCII
Nonaka, Ikujiro & Toyama, Ryoko	The Knowledge-Creating Theory Revisited: Knowledge Creation as a Synthesising Process	2003	77.1
Baskerville, Richard & Dulipovici, Alina	The Theoretical Foundations of Knowledge Management	2006	26.8
Usoro, Abel; Sharratt, Mark W; Tsui, Eric & Shekhar, Sandhya	Trust as an Antecedent to Knowledge Sharing in Virtual Communities of Practice	2007	18.8

Implications and Conclusion

In a global economy of knowledge-intensive nature, KM efforts have become a necessity for any organisation to survive and prosper (Davenport and Prusak, 1998). The capacity of an organisation to create value is tied to its ability to identify, manage and renew its key knowledge assets (Stewart and Ruckdeschel, 1998). The journal of *Knowledge Management Research and Practice* (KMRP) depicts one of the key scientific outlets that has significantly contributed to the development of main research streams in the field of KM. KMRP publications have paid considerable attention to models, tools, factors, and mechanisms that can support managers in translating knowledge into business performance. After almost 15 years since the foundation of KMRP by the Operations Research Society, the scientometric analysis in this study portrays a comprehensive picture of the growth, structure, interrelationships, and productivity of the published research activities within the journal.

Initially, the study elucidates an increasing trend towards multi-author collaboration especially in recent years. This posits an indication of the maturity of the KM domain where authors develop relationship networks and collaborate to overcome the current increasingly challenging journal acceptance rates. The findings are also in line with the broader bibliometric studies of Metz (1989) and Terry (1996) which report a general phenomenon of progressive trends in co-authorship in other research disciplines. An additional indicator of maturity is represented in the findings of unbiased distribution of papers among a wide range of research and professional organisations. Over 400 institutions are involved in KM research, either in individual or cooperative studies, emphasising the growing interests in knowledge-based research.

Looking at research methods, there is an increasing propensity towards empirical methods in contrast to a decrease in literature review studies. This is further suggestive

of maturity and an ongoing shift from theory to practice where field studies are increasingly undertaken to explore KM issues in real-life contexts and collect first hand data. This tendency seems to be a general trend in the KM field, as indicated by results of similar studies. For example, a recent content analysis of the proceedings of the European Conference of Knowledge Management (ECKM) between 2006 and 2013 revealed that model and framework development were the most favoured research method followed by case studies and questionnaires (Fteimi and Lehner, 2016). With respect to the contribution of practitioners, the study reveals it is academic authors and institutions who dominate publications with the percentage of practitioners averaging around 10% over the years. Despite the apparent stability in the percentages of practitioners to academic authors in KMRP over the years (Figure 2), other studies have shown otherwise. A study by Serenko et al. (2009) revealed that the number of practitioners declined from approximately one third of all contributors in the late 1990s to 10% by 2008. These findings suggest an impetus to deeper engagement of practitioners in KM research to support the movement towards the development of applied KM solutions.

While this study encompasses a multitude of research topics, knowledge sharing emerges as the leading choice of researchers. Along the same line, knowledge sharing technologies (e.g. internet and social media) are the leading IT solutions employed to support the KM process. The prevalence of the knowledge sharing theme elucidates the emphasis researchers have placed on the knowledge sharing process as a precursor of effective KM. Whether the objective is spreading best practice, cultivating and disseminating innovative ideas, or creating digital repositories, sharing knowledge is often at the core of KM initiatives. KM work often focuses on the role of *knowledge flows* among individuals and between individuals and the organisation to drive value creation (Schiuma, 2006; Bolisani & Oltramari, 2012). It is hence not surprising that the most influential article published by the journal extends Nonaka's work on the *SECI*

Model, a fundamental theory of knowledge creation and sharing antecedents within organisations.

Furthermore, statistical analysis has revealed a correlation between KM research activity and economic prosperity as the leading contributing countries are in North America, Western Europe, and Australia. The link between the focus on knowledge and national wealth reinforces the theory established by Drucker (2011) in his discussion of the post-WWII economic transformations from goods to intangibles in what is dubbed today as the *Knowledge Economy*. Nevertheless, from an industry perspective, key knowledge-intensive industries remain underrepresented in KM research. This could be considered as an opportunity for future researches to direct their efforts towards such relatively under-published sectors. The fact that most KM research is conducted in education and research institutions could be simply attributed to convenience. Researchers often find access within their own organisations, or in similar academic ones, more feasible than the challenge of penetrating new industries to obtain data. Unless sectorial comparison is sought, Limited access could also explain why 15% of authors opted to gather data from multiple sectors within the same study.

In conclusion, this study provides evidence that the field of KM is reaching maturity which poses at least two challenges. Firstly, the need to identify key future trends of research development in the field, and second, the need to conduct research of more applied nature. KMRP publishes both quantitative and qualitative papers, however, the discriminating factor to bear in mind is the relevance of the contribution to KM practice. Emphasis must be placed upon the consideration that while managers are interested in knowledge and its management, it is often not for the sake of mere KM theories. Rather, their interest is rooted in the need to understand how organisational knowledge assets can be translated into drivers that positively impact and enhance business value creation mechanisms.

Limitation of this study lies in the fact that it encompasses only one single journal (i.e. KMRP). While KMRP is one of the most established periodic in the KM field, exclusion of others does not ensure the generalisability of findings across wider KM landscape. It is therefore recommended that a similar review framework would be applied to other KM journals in future studies to enable comparison and validation of results garnered from this project.

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