

# Citation classics published in knowledge management journals. Part I: articles and their characteristics

Alexander Serenko and John Dumay



Alexander Serenko is an Associate Professor based at the Faculty of Business Administration, Lakehead University, Thunder Bay, Canada.

John Dumay is an Associate Professor based at the Department of Accounting and Corporate Governance, Faculty of Business and Economics, Macquarie University, Sydney, Australia.

## Abstract

**Purpose** – The purpose of this study is to develop a list of citation classics published in knowledge management (KM) journals and to analyze the key attributes and characteristics of the selected articles to understand the development of the KM discipline.

**Design/methodology/approach** – This study identifies 100 citation classics from seven KM-centric journals based on their citation impact reported by Google Scholar and analyzes their attributes.

**Findings** – The KM discipline is at the pre-science stage because of the influence of normative studies espousing KM practice. However, KM is progressing toward normal science and academic maturity. While the discipline does not exhibit the signs of the superstar effect, scholars from the USA and UK have made the most significant impact on the development of the KM school of thought. KM scholars should be more engaged in international collaboration.

**Practical implications** – Practitioners played a key role in the development of the KM discipline and thus there is an opportunity to develop more scientific research approaches based on critical and performative research agenda.

**Originality/value** – The study is novel and a must read for KM scholars because it is the first to comprehensively analyze the ideas that are the origins of the KM discipline.

**Keywords** Research, Knowledge management, Sciences

**Paper type** Research paper

## 1. Introduction

The purpose of this study is to develop a list of citation classics published in knowledge management (KM) journals and to analyze the key attributes and characteristics of the selected articles to inform us about how KM has developed as a discipline. Understanding the current state of the KM discipline is a “logical first step in strategically orienting the discipline and establishing paths for future progress” (Petty and Guthrie, 2000, p. 156). From previous investigations into the identity of the KM discipline, this task is not yet complete, thus offering researchers the opportunity to ask and answer “what are the attributes of KM citation classics and how do they inform us about the development of KM as a discipline?”

This study uses a method similar to those used in other published works, such as de Villiers and Dumay (2013), Dumay and Garanina (2013), Guthrie *et al.* (2012) and Serenko *et al.* (2010). The research process has four different stages. First, the core research framework was formulated based on the need to understand KM citation classics. Second, articles and their corresponding numbers of citations were extracted from 25 KM-centric journals as ranked by Serenko and Bontis (2013a), and the top 100 KM-centric articles were identified using Harzing’s *Publish or Perish* software tool based on Google Scholar data. Third, the initial version of the research framework was pilot tested, resulting in additional changes to the framework before coding the articles. Fourth, descriptive statistics were developed to identify patterns from the articles, providing the foundation for a meta-analysis and discussion of the KM citation classics.

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**“The purpose of this study is to create a list of KM citation classics and to explore their key attributes in order to better understand the identity of the KM discipline.”**

The study is novel because it is the first to comprehensively analyze the ideas that are the origins of the KM discipline. As a result, the findings and implications inform academics and practitioners about what precedes contemporary research and practice by establishing the roots of KM. Additionally, the implications also open up new opportunities to explore KM as it moves from its conception as an interesting and practical idea toward a “normal science”, which requires additional empirical evidence to critically evaluate and understand how KM is applied inside organizations.

To present the study, the paper is divided into the following sections. Section 2 offers a literature review outlining the normative theory behind citations and citation classics, followed by a discussion of citation-based KM research to develop the research question. Section 3 then details the research methodology before Section 4 presents the meta-analysis of this study’s results. Finally, Section 5 lists implications and Section 6 offers concluding remarks, describes future research avenues and identifies several limitations.

## 2. Literature review

### 2.1 *The normative theory of citation*

Building on the works of previous researchers is as old as science itself. Over three centuries ago, Isaac Newton described the process of advancing scientific thought as “standing on the shoulders of the giants who have gone before” (Merton, 1993, p. 8). By using existing knowledge, researchers avoid duplicating previous mistakes, reuse earlier validated inquiry methods, apply theories in new contexts and extend the knowledge base, which accelerates the pace of scientific development. Prior to the sixteenth century, scholars reused and duplicated previous knowledge without acknowledging its source. Over time, authors sought to improve the credibility of their ideas by referring to previously documented works, and the concept of citation was born (Cronin, 1984; Snyder *et al.*, 1995; Nicolaisen, 2007). Nowadays, citations are an irrevocable part of scientific research in all disciplines (Price, 1961, 1963; Small, 2010; Bisman, 2011; Ardanuy, 2013).

Normative theory and the social constructivist perspective generally explain citing behavior (MacRoberts and MacRoberts, 1987; Nicolaisen, 2007; Bornmann and Daniel, 2008). Normative theory posits that scholars acknowledge the intellectual significance, contribution or impact of works by citing publications (Merton, 1988, 1993; Small, 2004). While it is virtually impossible for authors to cite all prior works that influenced their research ideas, normative theory assumes that authors cite the works they most heavily use. According to normative theory, the basis of citation behavior is solely the cited work’s bias-free scientific merit.

However, the social constructivist view on citation behavior challenges the normative perspective (Knorr-Cetina, 1981, 1991). The constructivist sociology of science outlines that “scientific knowledge is socially constructed through the manipulation of political and financial resources and the use of rhetorical devices” (Baldi, 1998, p. 830), suggesting an article’s content has little bearing on its probability of being cited. Instead of recognizing prior work, citations serve as a tool of persuasion or self-interest because authors exhibit various biases in their citation behavior by citing secondary works, ignoring informal sources and favoring works of well-known scientists (MacRoberts and MacRoberts, 1996).

Thus, social constructivists argue that citations are not an appropriate tool for assessing the state and evolution of science.

For example, recently [de Villiers and Dumay \(2013, p. 878\)](#) examined citations in three leading interdisciplinary accounting journals and outlined how the rankings and recognition of published research by different research assessment exercises in different countries could impact both the citations and the choice of where to publish:

There are many differences between journal quality rankings. For example, AAAJ [Accounting, Auditing and Accountability Journal] is not included in the Thomson ISI rankings. Therefore academics whose promotion and tenure prospects are predicated on Thomson ISI ranked journals are likely to ignore AAAJ and favour other journals. Australian based academics may see AAAJ as a target journal, because AAAJ is included in the Australian ERA rankings, but a North American based academic is likely to prefer the journals backed by the American Accounting Association.

Additionally, [de Villiers and Dumay \(2013\)](#) found evidence to suggest that authors publishing in the most highly ranked interdisciplinary accounting journal cited that journal more often than the two lower-ranked journals. Drawing on [Tahai and Meyer \(1999\)](#), who found an average 5 per cent journal self-referencing rate with a range of 0-9 per cent among top-ranking North American management journals, [de Villiers and Dumay \(2013, p. 898\)](#) observed that the top-ranking interdisciplinary accounting journal self-cited 13.4 per cent, while the two lower-ranked journals self-cited only 6.4 and 6.3 per cent. Thus, at least in the accounting discipline, there is evidence to argue that there are political forces in play which influence authors to choose to cite one journal's articles over another.

As such, the influence of a work and its probability of being cited depends on "what one says" according to normative theory and "who one is" based on the constructivist position ([Camacho-Miñano and Núñez-Nickel, 2009](#)). Despite these conflicting views described above, empirical evidence demonstrates that authors generally cite works based on their intellectual content and contribution to their line of research ([Baldi, 1998](#)). As a result, citation data are highly correlated with other measures of research quality ([Cole and Cole, 1971](#); [McAllister et al., 1980](#)), including perceived paper importance ([Abt, 2000](#)) and peer judgments of impact, relevance, originality and appropriateness of research methods ([Rinia et al., 1998](#); [Van Raan, 2006](#); [Mohammadi and Thelwall, 2013](#)). The number of highly cited papers published by faculty members during their entire career is another reliable predictor of scientific output quality ([Plomp, 1994](#)). Citation count is strongly related to the number of times an article is downloaded and presumably read ([Kurtz et al., 2005](#); [Bazrafshan et al., 2015](#); [Mohammadi et al., 2015](#)). Citation count is also a robust indicator of the research performance of academic departments ([Seng and Willett, 1995](#)).

The influence of citation impact goes beyond the academic world ([Hung and Wang, 2010](#)). For example, experts and inventors agree that highly cited patents are of greater technical importance than those less frequently cited ([Albert et al., 1991](#)), and they often disclose seminal inventions ([Karki, 1997](#)). Citations to patents also significantly affect the stock market valuation of a knowledge-intensive company ([Hall et al., 2005](#)). Overall, patent citation analysis has become a widely used measure of the quality, influence and diffusion of technical information, which shows the robustness of the citation count approach.

Therefore, authors cite prior works to ([Garfield, 1979](#); [Liu, 1993](#); [Ahmed et al., 2004](#); [Harwood, 2009](#); [Case and Miller, 2011](#)):

**“This research is informative because it provides empirical evidence on how the KM discipline is evolving and the underlying influences for future KM research and practice.”**

**“The KM discipline is at the pre-science stage, but it has been progressing towards normal science and academic maturity.”**

- provide historical background;
- describe previous findings;
- define constructs, terms and concepts;
- develop theoretical arguments;
- pay due respect to the originators of classic or seminal studies;
- trace the development of ideas over time;
- present alternative viewpoints;
- demonstrate knowledge of the literature to justify one's competence in the area of study;
- provide background reading;
- correct one's own work or the work of others;
- acknowledge the source of data;
- justify methodology;
- draw attention to the important yet unnoticed work;
- bridge a gap between different disciplines;
- identify knowledge gaps;
- support conclusions;
- establish legitimacy of the line of research;
- direct a reader to other sources to keep argument on track and avoid excessive length;
- critique, dispute or disclaim the works of others; and
- propose avenues for future research.

Thus, researchers cite articles because they perceive them to be relevant, acknowledge the use of expressed ideas and they want to draw attention to these works. Based on the discussion above, the normative theory of citing behavior is the theoretical underpinning in the present study because citations represent a relatively accurate (yet imperfect) measurement of the scholarly quality, importance and influence of each publication.

### *2.2 Citation classics*

The idea to identify and classify citations to previous works may be traced back to the legal field when in 1743, judicial reports started including tables with cited cases (Shapiro, 1992). The first dedicated citation index, published in 1860, quickly became popular among legal practitioners because it eased the establishment of precedential authority. Afterward, citation indexes attracted the attention of scientists, who realized that these may serve as a tool to assess the state and evolution of their academic disciplines (Baird and Oppenheim, 1994; Hood and Wilson, 2001; Smith, 2012). In the 1950s, Garfield (1955) proposed a bibliographic system for scientific publications. It was later implemented as the Science Citation Index (Garfield, 1964), which accelerated the development and application of various scientometric techniques (Garfield, 1972, 1979, 2009; Moed, 2005).

Particularly, it allows researchers to measure the relative impact of their work on the progress of their chosen discipline.

It is a fact that scientists differ in their scholarly output and impact (Merton, 1968, 1988). In terms of productivity, only a minority of researchers ever achieve a high level of scientific output (Lotka, 1926; Egghe, 2005). For example, in the information systems (IS) discipline in Canada, the top 30 researchers generate over 50 per cent of the country's IS research output (Serenko and Jiao, 2012). With respect to research impact, the differences are even more significant because a fraction of works attracts a disproportionate number of citations, whereas a majority of publications remain unnoticed (Seglen, 1992; Albarrán *et al.*, 2011). For instance, only 1 per cent of business academics generate one-third of all citations within the business discipline (Erkut, 2002). Therefore, it is important for scientometric scholars to identify and study these well-cited seminal works.

Garfield (1977, 1989) proposed the term "citation classics" and defined these as works that have been very highly cited in their fields. Several factors justify the need to develop citation classics lists in all academic disciplines. First, citation classics represent the foundation, identity and intellectual roots of a field. When published, they attract the attention of the scholarly community and help establish future research directions. Second, citation classics lists are often analyzed to understand the attributes of these seminal works, characteristics of their authors, norms, popular topics, competing paradigms and major research methods. Third, graduate students, new researchers or scholars from other disciplines may use citation classics lists to familiarize themselves with the name of influential scholars, leading journals and key concepts. Fourth, citation classics' lists officially recognize the scientific contribution of authors. For example, they are useful for tenure and promotion, merit pay increases, funding applications and hiring packages to demonstrate one's achievements. Fifth, citation classics dramatically boost national citation indicators and promote national scholars (Aksnes and Sivertsen, 2004).

It is possible that, in some cases, ideas expressed in a well-cited article may become obsolete, refuted or even harmful, yet this work may continue receiving citations as advocated by the social constructivist view. Thus, extra care should be taken when assessing the current scientific value of each individual work.

### 2.3 Purpose of the study

There are various stakeholders that wish to understand the identity of the KM discipline (Serenko, 2013; Serenko and Bontis, 2013b). These are academics, journal editors, conference organizers, granting agencies, managers of research centers, university administrators, practitioners and students who need to make informed decisions that will affect their careers, academic institutions or organizations. It is for this reason that a number of scholars have previously investigated the history, development and identity of KM as a scholarly discipline (Heisig, 2009; Serenko *et al.*, 2009; Curado *et al.*, 2011; Lambe, 2011; Ragab and Arisha, 2013; Ribièrè and Walter, 2013; Walter and Ribièrè, 2013). Accordingly, Petty and Guthrie (2000, p. 156) state that "understanding the state of play is a logical first step in strategically orienting the discipline and establishing paths for future progress".

The development and analysis of citation classics' lists is a popular and well-defined line of research in scientometrics. Citation classics' lists have been constructed in most

**“Researchers from the USA and the UK have made the most significant impact on the development of KM school of thought.”**

disciplines, for example, in social work (Ho, 2014), dentistry (Nieri *et al.*, 2007; Fardi *et al.*, 2011), medicine (Paladugu *et al.*, 2002; Baltussen and Kindler, 2004), health studies (Smith, 2009), political science (Sigelman, 2006), information and library science (Yang, 2009) and geography (Wrigley and Matthews, 1986). They also gained recognition in the management domains, including IS (Walstrom and Leonard, 2000), entrepreneurship (Ratnatunga and Romano, 1997), and business ethics (Calabretta *et al.*, 2011). In the KM field, a number of previous studies identified highly cited scholars (Ma and Yu, 2010), and there is high interest in KM research and KM scientometrics (Ragab and Arisha, 2013). However, to the best knowledge of the authors, none has approached the issue from the perspective of citation classics. As a result, previous research findings have been somewhat limited. For example, they presented very short lists of well-cited works (Croasdell *et al.*, 2003; Jennex and Croasdell, 2005; Ma and Yu, 2010), did not distinguish among publication types (e.g. in a single study, they combined books, book chapters and journal articles which are sometimes difficult to compare) (Landrum *et al.*, 2010; Walter and Ribièrè, 2013), relied exclusively on Thomson Reuters citation indexes that exclude most KM-centric journals (Timonen and Paloheimo, 2008) and selected references from only a few journals (Serenko and Bontis, 2004). Despite their limitations, the contribution of the studies above is unarguable. Nevertheless, analyzing the KM discipline from the perspective of citation classics may help researchers uncover new insights to understand the identity of the KM discipline. Thus, this study's research question is:

*RQ1.* What are the attributes of KM citation classics and how do they inform us about the development of KM as a discipline?

### 3. Methodology

This section documents the methods for selecting and analyzing the KM citation classics. Primarily, methods used in other published studies, such as de Villiers and Dumay (2013), Dumay and Garanina (2013), Guthrie *et al.* (2012) and Serenko *et al.* (2010), were adapted. The research process was conducted in four different stages. First, the research framework proposed by de Villiers and Dumay (2013, p. 882) was adapted to understand the various attributes of KM citation classics. Second, articles and their corresponding numbers of citations were extracted from all 25 KM-centric journals ranked by Serenko and Bontis (2013a). Depending on the size of the discipline, Garfield (1989) recommends a cut-off citation count for citation classics of between 50 to 10,000 based on Thomson Reuters' Social Sciences Citation Index or Science Citation Index data. However, in this study, the boundary at 100 articles using Google Scholar citation counts was set up because it will allow identifying the main corpus of KM articles that have influenced KM scholars. In the present study, this meant that all articles having 145 or more citations as of January 3, 2014 were extracted. Google Scholar was chosen as opposed to Thomson Reuters citation indices or Scopus because it covers "all categories of publications, and counts citations from non-peer reviewed works, such as practitioner magazines, government documents and newspapers" (Serenko and Bontis, 2013c, p. 485). Additionally, out of all citation indices and databases, Google Scholar provides the most comprehensive coverage, and its index has been growing at a stable rate (Harzing and van der Wal, 2008; Harzing, 2013, 2014).

There is evidence to suggest that works citing the citations classics identified in the present study represent the KM research domain. Recently, Serenko and Bontis (2013b) tracked citations to 63 articles published in the *Journal of Knowledge Management* (JKM) that were included in JKM's *h*-index as of May 1, 2011 based on Google Scholar. They concluded that 31 per cent of all citations came from KM-centric journals. Thus, these are KM studies because it is expected that KM journals publish only KM-relevant works. Out of the remaining 69 per cent of citations that came from non-KM-centric journals, 70 per cent came from the articles devoted to KM topics. Thus, 79.3 per cent (31 per cent + 69 × 70 per cent) of all citations came from KM-relevant studies. Therefore, it may be concluded



that articles citing KM citation classics are mostly devoted to KM issues and thus represent the KM research domain.

Harzing's *Publish or Perish* software was used to retrieve Google Scholar data to identify the articles and corresponding numbers of citations. Because Google Scholar (similar to other citation indices) contains occasional duplicate or erroneous data, the dataset was manually reviewed and adjustments to citation counts were made where necessary. Two articles that had citation counts over 145 were excluded. Even though they appeared in KM-centric journals, they did not pertain to KM issues. After the cut-off point of 145, citation count declined very quickly, and there were very few borderline cases. Articles that were included in the proposed list of citation classics were published in the *Journal of Knowledge Management* (73 articles), *The Learning Organization* (12 articles), *Knowledge and Process Management* (nine articles); *Knowledge Management Research & Practice* (three articles); *Electronic Journal of Knowledge Management* (one article); *International Journal of Knowledge and Learning* (one article); and *Interdisciplinary Journal of Information, Knowledge and Management* (one article) – 100 citation classics in total. A full list of articles and citation counts appears in the [Appendix](#).

Third, the initial version of the research framework originally modeled by [de Villiers and Dumay \(2013, p. 882\)](#) was pilot tested by both authors who individually coded 12 articles and compared the results. This resulted in additional changes to the framework that were necessary to ensure the examined attributes were relevant to KM and not just accounting as was the purpose of the original framework. For example, new categories, such as “Research Method,” “Focus of Article” and “Theory” were added, and categories relating to writing style were removed. After that, both authors coded the remaining articles.

As the analysis progressed, all discrepancies were discussed in person and further modifications to the framework and the coding scheme were made. The advantage of mutual manual coding is that the coders could use their implicit knowledge of the KM discipline to “effectively interpret idiomatic and metaphorical text” ([Guthrie et al., 2012, p. 71](#)). [Table I](#) presents the final research framework. Note that up to three research methods and up to three topics per article were recorded because a single study may use several research techniques and pursue multiple purposes simultaneously. This approach is commonly used in scientometrics ([Palvia et al., 2004; 2007; Serenko et al., 2008](#)).

Fourth, descriptive statistics to identify patterns from the articles were developed. This provides the foundation for a meta-analysis and discussion of the KM citation classics. The next section explains each analysis category and offers results.

#### 4. Meta-analysis

This section provides a meta-analysis of the KM citation classics articles and answers this study's research question “What are the attributes of KM citation classics and how do they inform us about the development of KM as a discipline?”

##### 4.1 Year

As [Hannerz \(2010\)](#) outlines, highly cited articles are generally well-written and cover “hot” topics. Therefore, it is important to know when the KM discipline became “hot” as evidenced by the articles' publication year. As shown in [Table II](#), most of the articles appeared between 1999 and 2003, thus representing a core period from which seminal KM articles emanated. It is also interesting to note newer articles written in 2007 ([Al-Alawi et al., 2007; Chatti et al., 2007; du Plessis, 2007](#)) and 2009 ([Levy, 2009; Zack et al., 2009](#)) appear in [Table II](#) because there is usually a considerable lag between the time an article is published and when it receives citations. Hence, these articles appear to be addressing new and evolving KM topics. For example, [Chatti et al. \(2007\)](#) examine KM from an e-Learning perspective, while [Levy \(2009\)](#) investigates the impact of WEB 2.0. Both are topics that would not be relevant in the early 2000s.

**Table I** Research framework

<i>Category</i>	<i>Variables</i>
Research method	Action research Case study Interviews (asking respondents directly) Literature review (work is based on existing literature) Modeling tools (an analytical or descriptive tool/model for the phenomena under investigation) Other qualitative (ethnography, focus groups, interpretive study, examination of texts or documents, etc.) Survey (administration of a questionnaire with open and/or closed-ended questions) Viewpoint (speculation/commentary based on personal opinion with no empirical or literature support)
Focus of article	Communities of practice Information technology KM strategy Knowledge innovation Knowledge as a process Managing/Competitive advantage Organizational culture Problem solving Scientometrics
KM framework/model	No framework/model used Applies or considers previous framework/model Proposes a new framework/model
Theory	Which theory is used?
Year	Actual publication year
Words	Number of words excluding references
References	Number of references
Authors	Author affiliation Author country Number of authors

**Table II** Articles by year

<i>Year</i>	<i>No. of articles</i>
1997	5
1998	6
1999	13
2000	15
2001	14
2002	9
2003	15
2004	8
2005	6
2006	4
2007	3
2009	2
Total	100

One interesting aspect of [Table II](#) is the concentration of articles appearing between 1999 and 2003. During this period, KM was questioned as to whether it was just another management fashion or fad whereby citations are concentrated over a short period of time ([Ponzi and Koenig, 2002](#); [Wilson, 2002](#)). A management fad exists when a new scientific direction is discovered, quickly gains support, grows exponentially, becomes dominant, but suddenly ceases to exist because of unmet expectations and limited impact ([Abrahamson, 1991, 1996](#); [Kieser, 1997](#); [Abrahamson and Fairchild, 1999](#)). A number of scholars have discussed this issue with respect to the KM field, but no consensus has been reached ([Scarborough and Swan, 2001](#); [Scarborough \*et al.\*, 2005](#); [Lane and Snaith, 2008](#); [Hislop, 2010](#); [Serenko, 2013](#)). Considering that 23 articles from the list appear after 2004,



It is argued that KM is not a management fashion or fad; instead, it is enduring. It is expected that the foundational articles prior to 2004 will continue to gather citations as these articles form the foundation of the KM discipline. However, the fact that newer articles have gained significant citations in a shorter period of time shows that KM continued beyond the five-year time frame that [Ponzi and Koenig \(2002\)](#) attribute to being relevant for management fashions and fads. Thus, we argue that KM has outlived any critique that it is just another management fashion or fad.

#### 4.2 Research methods

The results presented in [Table III](#) reveal the research methods used in the articles and the spread of methods used. It shows that literature reviews are most prevalent ([Bhatt, 2000](#)) followed by case studies ([Ardichvili et al., 2003](#)) and surveys ([Yahya and Goh, 2002](#)). Nineteen studies used multiple research methods ([Sveiby and Simons, 2002](#)); hence, the total of [Table III](#) exceeds 100.

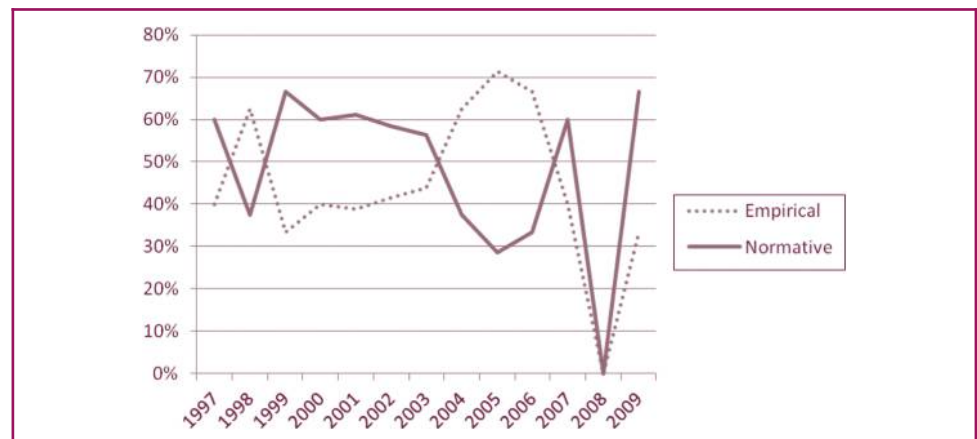
Interestingly, viewpoints, articles with no empirical or literature support presenting a personal opinion of the author, are also prominent ([Gurteen, 1998](#); [McElroy, 2000](#)). It is possible that in the initial period of interest in KM, very few empirical studies would have been completed and submitted for publication. Similarly, the results in [Figure 1](#) add weight to this argument by revealing that from 1999 to 2003, literature review and viewpoint methods, which are normative research as opposed to empirical research, represent the greatest percentage of citation classics articles. Additionally, literature reviews and viewpoint articles are typical of the initial development of a discipline as they introduce both new ideas and set the foundation for future research.

**Table III** Research methods used

Method	No. of articles
Literature review	52
Case study	20
Survey	18
Viewpoint	14
Interviews	8
Other qualitative	7
Action research	1
Modeling tools	1
Total	121

Note: Up to three research methods were recorded per article

**Figure 1** Empirical versus normative citation classics in KM (1999-2009)



### 4.3 Article theme

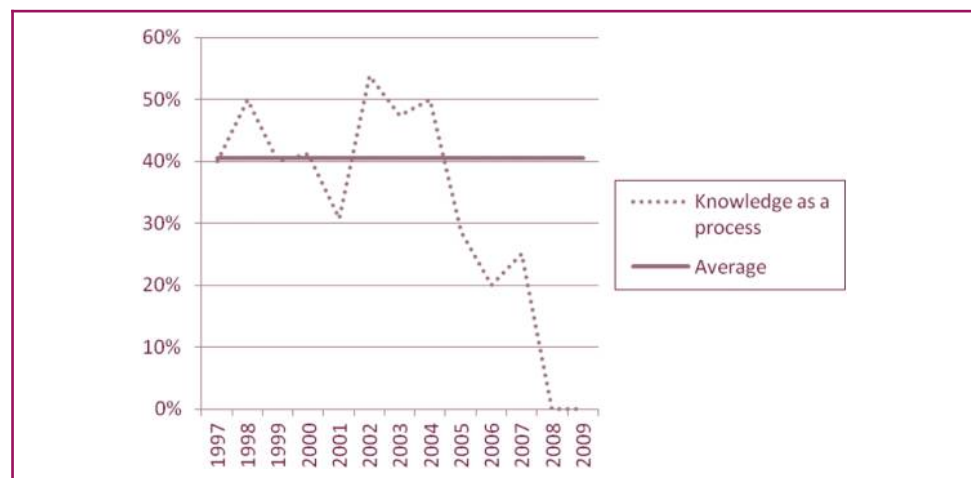
The theme of the citation classics articles is important because it points to the specific areas that may be of interest to other scholars. As shown in Table IV, the two dominant article themes are knowledge as a process and managing/competitive advantage, with organizational culture, information technology and communities of practice significantly less common. Prominent examples of articles with the theme knowledge as a process are Snowden (2002), Nonaka and Toyama (2003), Riege (2005) and Smith (2001). Similarly, good examples of managing/competitive advantage articles are Bhatt (2001), Goh (2002), Wiig (1997a) and Bollinger and Smith (2001). Interestingly, all these articles are literature reviews and thus present a normative view of how KM should be rather than what KM is based on empirical evidence.

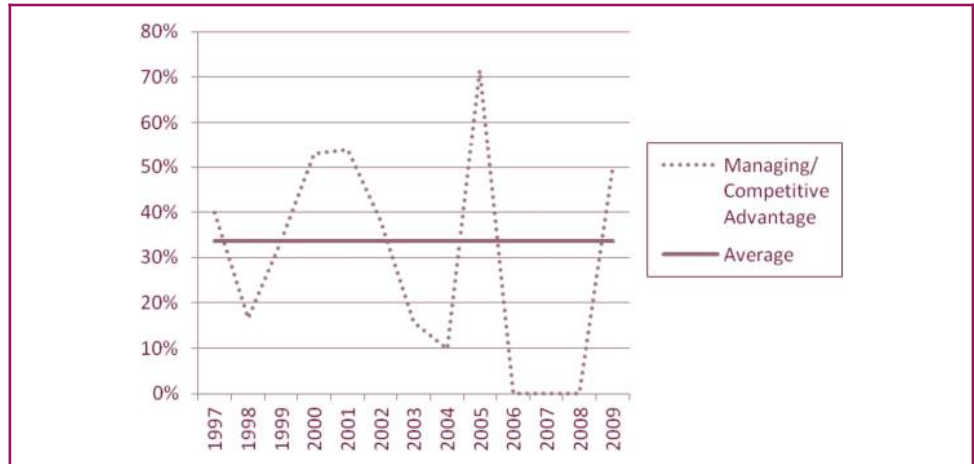
Knowledge as a process and managing/competitive advantage dominate earlier rather than later articles as shown in Figures 2 and 3. Interestingly, these figures display a noticeable decline in knowledge as a process as a share of citation classics articles. Similarly, the same goes for managing/competitive advantage articles with the apparent resurgence in 2009 attributed to one article (Zack *et al.*, 2009). Further analysis reveals that after 2005 no one theme dominates. Instead, citation classics are spread over the themes of communities of practice (Ardichvili *et al.*, 2006; Dubé *et al.*, 2006), information technology (Chatti *et al.*, 2007; Levy, 2009), knowledge innovation (du Plessis, 2007), organizational culture (Al-Alawi *et al.*, 2007) and scientometrics (Baskerville and Dulipovici, 2006). This points to a maturing KM discipline. The earlier articles have set the scene for a

Theme	No. of articles
Knowledge as a process	47
Managing/Competitive advantage	39
Organizational culture	8
Information technology	8
Communities of practice	6
Knowledge innovation	3
KM strategy	2
Scientometrics	2
Problem solving	1
Total	116

Note: Up to three topics were recorded per article

**Figure 2** Percentage of citation classics focusing on knowledge as a process (1999-2009)



**Figure 3** Percentage of citation classics focusing on managing/competitive advantage (1999-2009)

broader view of how to utilize KM or how it should be through prescriptive viewpoint articles, whereas later articles tried to understand KM's status through literature reviews and empirical research.

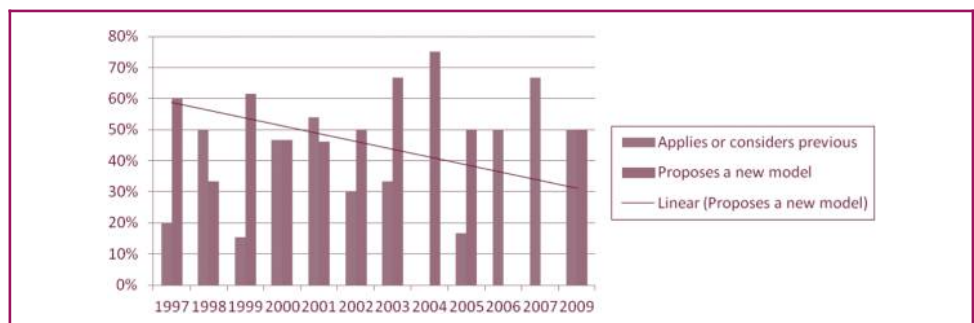
#### 4.4 KM frameworks/models used

Analyzing the use of existing or proposing new frameworks and models also helps to understand whether a discipline is maturing (Guthrie *et al.*, 2012). Our argument is that in the early days of KM research, there were very few frameworks or models to draw on. Thus, works proposing new frameworks or models should be highly cited as the foundation articles establishing KM as a discipline. The results in Table V support this argument with 51 articles proposing a new framework or model.

However, a longitudinal analysis shown in Figure 4 reveals a declining proportion of citation classics articles proposing new KM models. This provides further evidence of a maturing

**Table V** KM frameworks/models used

Framework/model	No. of articles
Proposes a new framework or model	51
Applies or considers previous	34
No model used	15
Total	100

**Figure 4** KM frameworks/models used (1997-2009)

KM discipline that has established KM as management studies field. As a result, more authors utilize existing frameworks to undertake their research (Guthrie *et al.*, 2012, p. 76) instead of inventing new ones.

#### 4.5 Theories applied

This category was added to the research framework because it is important to know whether the identified citation classics applied existing theory (if so, which one) or were atheoretical. As shown in Table VI, the majority of articles (65) used no theory at all, while the remaining articles used a wide array of theories with Nonaka's dynamic theory of organizational knowledge creation (10) and the resource-based view of the firm (7) dominating. However, because so few articles referred to these theories, it would be difficult to argue that either theory underpins the KM discipline.

Further examining the data reveals that these three most utilized theories appeared in the citation classics very early, and that they have since given way to either no theory or the multitude of theories listed above. For example, Nonaka's dynamic theory of organizational knowledge creation has not appeared as the dominant theory in citation classics since 2003. Additionally, in every case, this theory was part of a literature review, with one article adding a case study as a secondary research method (Augier *et al.*, 2001). This finding is consistent with the conclusion of Scholl *et al.* (2004) who also report that Nonaka's theory is not considered a promising theoretical or practical approach in KM. Similarly, the resource-based view of the firm has not appeared as the leading theory since 2005 and in five of seven cases helped frame a literature review. The use of various theories of learning is only found in *The Learning Organization* journal in 2001 and prior. In contrast to expectations, studies that used no theory appeared continuously from 1997 to 2009. This demonstrates that many citation classics studies have been atheoretical in nature throughout the entire period of discipline development.

#### 4.6 Article attributes

Two common complaints about academic articles are that they are long and boring (Bennis and O'Toole, 2005; Booker *et al.*, 2012; Serenko *et al.*, 2012). For example, many KM practitioners do not read academic journals because they do not have time to go through multiple pages of a publication to obtain only a few insights (Booker *et al.*, 2008). This may cause readers to take shortcuts when reading the article, and thus readers might not fully assess the reliability and validity of the article (de Villiers and Dumay, 2013). A recent study examining articles published in leading accounting academic journals showed that the majority of articles exceeded the publishers' own length guidelines and had a median word count of over 10,000 (de Villiers and Dumay, 2013). In the case of the journals which published KM citation classics, some do have word length guidelines and others do not. For example, word length guidelines for *The Learning Organization* is 2,000-5,000 words and for the *Journal of Knowledge Management* is 7,000-10,000 words, while *Knowledge and Process Management* does not stipulate a word count requirement. These word count

Table VI Theories applied	
Theory	No. of articles
None applied	65
Nonaka's dynamic theory of organizational knowledge creation	10
Resource-based view of the firm	7
Various theories of learning	7
Complexity theory	2
Other (the theory was used only one time)	16
Total	107

Note: Up to three theories were recorded per article

guidelines are significantly less than those of the leading accounting journals which range from 9,000 to 12,000 words (de Villiers and Dumay, 2013, p. 887).

Considering that the majority of articles come from the *Journal of Knowledge Management*, the results in Table VII suggest that most KM citation classics are relatively short. The longest article was by Davenport (1997) and the shortest by Brand (1998).

Similarly, with citations there is some criticism that academics cite too many sources, and at times, they over-cite and give preference to specific journals. When compared to the aforementioned study of accounting articles (de Villiers and Dumay, 2013), commensurate with the lower word counts, there were lower citation counts with the KM classics articles having a median of 40 citations compared to 64 for accounting articles.

#### 4.7 Authors

The last meta-analysis focused on author attributes. As Bornmann *et al.* (2012) outline, well-cited papers are often written by authors with strong reputations. Therefore, it is important to know the names of influential authors in the KM discipline, their countries of origin and their affiliations, which may potentially uncover any dominant trends and biases.

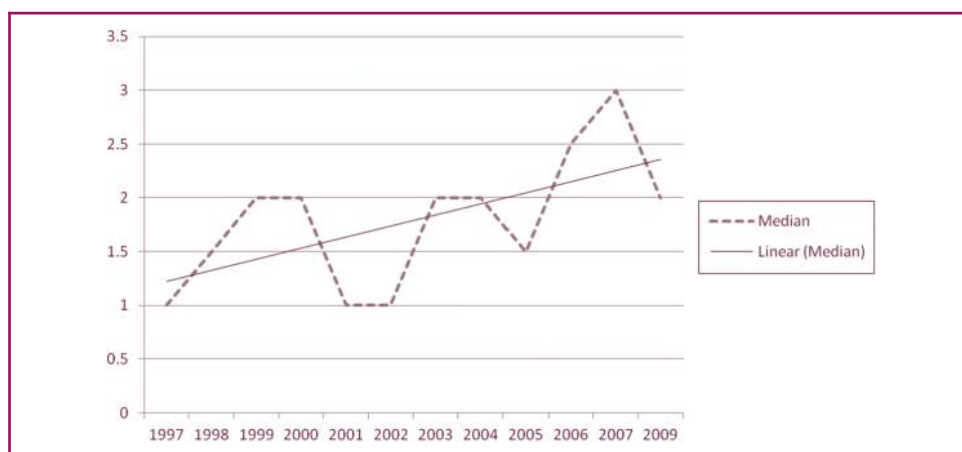
The 100 citation classics had 183 authors (1.83 authors per paper, on average). Of these, there were 158 unique authors with three authors publishing three papers each, and 18 authors publishing two papers each. Table VIII presents a list of KM citation classics authors who published at least two papers and Table IX shows the authorship distribution by the number of authors per article. A longitudinal authorship pattern analysis as shown in Figure 5 reveals an increasing trend toward multi-authored articles as the mean number of authors in 1997 is one, and it is consistently above one since 2003.

Table VII Article attributes		
	No. of words	No. of citations
Median	6,837	40
Maximum	14,050	154
Minimum	4,019	0
SD	1,990	28

Table VIII Top KM classics authors	
Name	No. of papers
Bhatt, G.	3
McAdam, R.	3
Wiig, K.	3
Ardichvili, A.	2
Aspinwall, E.	2
Augier, M.	2
Darroch, J.	2
Davenport, T.	2
Kakabadse, A.	2
Kakabadse, N.	2
Kouzmin, A.	2
López, S.P.	2
Ordás, C.J.V.	2
Örtenblad, A.	2
Peón, J.M.M.	2
Scarbrough, H.	2
Smith, R.	2
uit Beijerse, R.P.	2
van den Hooff, B.	2
Vendelø, M.T.	2
Wentling, T.	2
Wong, K.Y.	2

**Table IX** Number of authors per paper

No. of authors	No. of articles
1	43
2	39
3	14
4	2
5	1
6	0
7	1

**Figure 5** Median number of authors per article (1997-2009)

The calculations for institutional and country productivity use an equal credit method, whereby each institution/country receives the score of  $1/N$ , where  $N$  is the number of authors. For example, for a single-authored paper, each institution/country receives the score of 1.0, two-authored paper – 0.5, three-authored paper – 0.33 and so on. The equal credit method was selected because it is simple to use yet it provides results highly comparable to those generated by a more complicated author position approach (Serenko and Jiao, 2012). The top five organizations are:

1. Knowledge Research Institute, Inc, Arlington, Texas, USA (3);
2. Morgan State University, Baltimore, Maryland, USA (3);
3. University of Amsterdam, The Netherlands (2.5);
4. University of St. Gallen, Switzerland (2.5); and
5. University of Warwick, UK (2.25).

Table X presents author country of origin and shows that over 50 per cent of citation classics authors resided in the USA and the UK.

Almost 20 per cent of all authors affiliate with practitioner organizations (i.e. non-universities). Six per cent have multiple affiliations; out of them, most affiliate with a practitioner organization and a university simultaneously. Additionally, 40 per cent of all co-authored articles involve individuals from different institutions. At the same time, only 16 per cent of co-authored articles involve researchers from different countries.

## 5. Discussion

Various stakeholders who want to become familiar with, or better understand, the evolution and state of the KM discipline may use the list of citation classics identified in this research[1]. Examples of stakeholders include KM researchers, academics from other



**Table X** Author country of origin (equal credit method)

Country	Score
USA	31.50
UK	23.50
The Netherlands	6.00
Canada	5.67
Australia	4.00
Germany	4.00
Denmark	3.33
Sweden	3.00
Japan	2.00
New Zealand	2.00
Spain	2.00
Switzerland	2.00
Other	11.00
Total	100.00

disciplines, journal editors, authors, graduate students, practitioners and librarians. This research is informative because it provides empirical evidence on how the KM discipline is evolving and the underlying influences for future KM research and practice. As a result, this study constructs a list of citation classics published in KM-centric journals based on the number of citations obtained from Google Scholar. It also analyzes the key attributes and characteristics of the identified citation classics. Based on the findings, several implications emerged that warrant further elaboration.

#### *5.1 Implication #1: The KM discipline is at the pre-science stage, but it has been progressing towards normal science and academic maturity*

In this study, six findings point out to the relative youth of the KM field. First, normative research methods, which include viewpoints and literature reviews, are the most prevalent in KM citation classics. Second, citation classics mostly focused on only two topics: knowledge as a process and managing/competitive advantage resulting from KM practices. Moreover, these works pertain to a normative view of KM and are not supported by strong empirical evidence. Third, over half of all citation classics proposed a new framework or model instead of rigorously testing an existing one. Fourth, 65 works contained no theory at all, and this phenomenon is consistent over the entire period. Fifth, as academic publications, the identified citation classics are shorter and contain fewer references to previous studies than is generally expected. Sixth, no dominant theory was discovered. Instead, citation classics used a wide array of theories, with Nonaka's dynamic theory of organizational knowledge creation, the resource-based view of the firm, and various learning theories the most frequently applied.

Previous assessments of the stage of KM within a developmental life cycle of an academic discipline (Kuhn, 1962, 1977) resulted in mixed conclusions. For example, Baskerville and Dulipovici (2006, p. 101) state that KM "is now a solid, maturing field of study that is building out", whereas Hazlett *et al.* (2005) argue that KM exhibits little synergy and convergence. The present study reveals that KM is currently at the pre-science stage within a developmental life cycle of an academic discipline because it has no clear direction, has no strong theoretical base, uses questionable inquiry methods (i.e. normative speculations) and lacks consensus. The stage of the paradigm generally corresponds to the degree of the maturity of the field (Cole, 1983; Pfeffer, 1993). Thus, it is concluded that KM research is at the early stage of development. However, it is expected for a new academic discipline to be at the embryonic stage of development.

Most importantly, there are five signals that KM is progressing toward normal science and academic maturity with no apparent anomalies. First, citation classics exhibit a trend

toward multi-authored works. As a field of science matures, it advances its body of knowledge, attracts leading scholars from other disciplines, establishes scientific rigor and raises a standard for publishing in its leading journals. This creates a need for collaboration, which is evident in an increase in the average number of authors per publication. Second, the most recently published citation classics focused on new issues, including the impact of e-learning and Web 2.0, which shows that KM is gradually expanding its knowledge base. Third, a longitudinal analysis of research methods shows that empirical studies have gradually become more common than normative studies. Fourth, the two major research topics – knowledge as a process and managing/competitive advantage – dominate earlier articles, recently yielding to a variety of newer themes, including communities of practice, information technologies and organizational culture. Fifth, there has been a longitudinal decline in the number of articles proposing new KM frameworks and models. As the KM discipline matures, researchers are expected to shift their focus from framework development to framework reuse and rigorous framework testing. This evidence indicates that KM is moving towards normal science, and it is not a management fashion or fad.

### *5.2 Implication #2: The KM discipline does not exhibit the signs of the superstar effect*

The superstar (or Matthew) effect in science appears when a small fraction of researchers or institutions produce the most works and attract a disproportionate number of citations (Merton, 1968, 1988; Zuckerman, 1977; Rosen, 1981). It exists in all well-established scientific domains, including management (Erkut, 2002). In this study, there is no evidence of any disproportionately influential individual or institution; only three researchers produced three citation classics, and this effect was even lower at the institutional level. Thus, the citation classics research output is relatively equally spread among all contributors.

The superstar effect is prevalent in many advanced areas of human activity, including well-established academic disciplines. The absence of the superstar phenomenon in KM reveals the embryonic stage of the field – it is relatively easy for researchers to enter a new field and gain visibility. It also shows that editors of KM journals do not show bias toward a small group of influential scholars in their paper acceptance decisions. At the same time, an extremely unequal distribution of “citation wealth” may create anomalies within the domain when only a select few may unilaterally set the direction and ultimately influence the development of academic thought. Our finding is supported by Serenko *et al.* (2011) who analyzed publication data from 11 KM and intellectual capital journals and concluded that the superstar effect does not impact the KM discipline.

One reason for a lack of the superstar effect is that KM requires an interdisciplinary or multi-disciplinary research approach (Scholl *et al.*, 2004). This type of research takes time and rarely uses the multitude of datasets that exist, for example, for accounting based capital markets data that might allow one or two researchers to dominate the field. Additionally, as Carayol and Thi (2005, p. 1) outline “traditional academic career incentives do not stimulate interdisciplinary research”.

However, as Scholl *et al.* (2004, p. 33) advocate, future KM research is more practice-based “through the integration of KM activities into business processes” which fits well with an interdisciplinary research approach, or as Dumay (2014b) outlines that a transdisciplinary approach is also relevant in achieving “state-of-the-art” research. Thus, KM researchers may be more “stimulated” to perform practice-based interdisciplinary, multi-disciplinary and transdisciplinary research through “connections with industry” (Carayol and Thi, 2005, p. 1). This is because KM needs to be researched in its context and not in a laboratory or through an abstract database, disconnected from practice. As a result, the field is not dominated by a few highly productive scholars.

### *5.3 Implication #3: Researchers from the USA and the UK have made the most significant impact on the development of KM school of thought*

As indicated in Table X, US and UK researchers produced over half of the entire output in terms of KM citation classics. This finding is not surprising because the US's and UK's top country-level productivity lists in all disciplines and are often used as a benchmark for scientific rankings (Schulz and Manganote, 2012). Previous independent studies from different disciplines reach similar conclusions (Schwartz, 2005; Curado *et al.*, 2011; Dwivedi *et al.*, 2011). Evidence also suggests that research output may contribute to the wealth of nations. For example, the volume of publications is strongly related to various economic indicators including the gross domestic product (Hart and Sommerfeld, 1998; Inglesi-Lotz and Pouris, 2013).

### *5.4 Implication #4: KM scholars should be more engaged in international collaboration*

Forty per cent of all co-authored citation classics involved the collaboration of individuals from different institutions. This fact is encouraging for KM's future development given its multi-disciplinary nature. To develop KM effectively, it requires the convergence of different points of view, the use of knowledge from reference disciplines, and the requirements to improve the rigor of KM publications.

However, only 16 per cent of all co-authored works involved researchers from different countries. This is understandable given that the USA and the UK dominate the KM research arena. However, involvement in international collaboration may open new horizons and bring new perspectives to KM. Therefore, it is recommended that leading KM researchers consider engaging more in international collaborative research programs.

### *5.5 Implication #5: Practitioners play a key role in the development of the KM discipline*

In this study, data show that 20 per cent of all authors published their citation classics under the affiliation of a practitioner organization. Additionally, most of practitioner-based authors affiliate with both a practitioner organization and a university. This supports previous claims that practitioners play a key role in the development and promotion of KM both in industry and academia (Serenko *et al.*, 2010). In fact, KM has emerged naturally due to the growing pressure on organizations to increase their effectiveness and efficiency because of economic, technological and societal changes (Wiig, 1997b; Grover and Davenport, 2001; Prusak, 2001). In the second half of the twentieth century, industry professionals recognized KM value and developed first KM concepts, principles and frameworks. Subsequently, these practitioners documented their ideas in relatively short, yet ground-breaking, peer-reviewed journal articles that boosted academic KM research and subsequently became citation classics.

### *5.6 Implication #6: Future research needs to be critical and performative*

The implications for future KM researchers is that they need to think seriously about how their future research will be interesting enough and make a significant contribution to KM (and maybe even become a citation classic). As concluded earlier, the KM discipline is maturing toward a normal science. Therefore, there is a need for more empirical work based on critical and performative KM, as opposed to more normative articles by practitioners advocating KM benefits and suggesting what to do. For example, only 5 out of 100 citation classics mention the word "critical" in their titles; four of these are based on literature reviews as a research method (McAdam and McCreedy, 1999; Beeby and Booth, 2000; Mårtensson, 2000) and only one offers an empirical study based on survey data (Al-Alawi *et al.*, 2007). This will require researchers to get their hands dirty working inside organizations rather than analyzing KM using a "helicopter view" from a distance (Dumay, 2012).

It is suggested that KM could benefit by heading down a similar path as has the closely related intellectual capital (IC) discipline which is now progressing toward the "third stage" of IC research, which takes a critical and performative view of IC practices

(Guthrie *et al.*, 2012; Dumay, 2013; Dumay and Garanina, 2013; Serenko and Bontis, 2013c). Mouritsen (2006, p. 820) also argues for a performative research agenda where “it is possible and advisable to develop research that has an ambition to understand [KM] as a concept and not only as an application of a pre-set idea”. Thus, because of the strong connection to KM practitioners identified above, there is the opportunity to develop research agendas that include action research or interventionist approaches that contribute to both theory and practice (Dumay, 2010; Chiucchi, 2013).

Action or interventionist research is not commonly accepted or practiced and hence changing the way researchers conduct their studies is a risky undertaking because it requires a different set of research skills and includes embarking on and exploring new territory beyond researchers’ comfort zones (Dumay, 2010). Additionally, “undertaking innovative research sometimes falls foul of scholars espousing a more traditional application of accepted research methods” (Dumay, 2014a, p. 20). However, if KM is to evolve and scientifically demonstrate its value to organizations and the scholarly community, it will require stronger empirical support beyond the comfort of normative studies. This is not to say that researchers should ignore normative studies because as the present study shows, these works are necessary for introducing new ideas and concepts such as the impact of the Internet on KM practice (Levy, 2009). Nevertheless, it is time for a theoretical and methodological paradigm shift in the KM research community.

## 6. Conclusion

### 6.1 Summary

The purpose of this study is to create a list of KM citation classics and to explore their key attributes to better understand the identity of the KM discipline. For this, 100 articles were selected from seven KM-centric journals according to their citation impact generated by Google Scholar.

The development and analysis of citation classics is a long-standing tradition in all scholarly domains. This study demonstrates the fruitfulness of this method of inquiry in a relatively new, niche discipline, such as KM. Based on the findings, it is concluded that KM is at the pre-science stage within a developmental life cycle of an academic discipline. Even though researchers from the USA and the UK published a majority of the identified citation classics, the discipline does not exhibit signs of the superstar effect, which is generally observed in all advanced domains of scholarly activities. This finding, however, reflects a regular pattern of the progress of scholarly disciplines from the initial to the highest maturity level. Most importantly, no apparent abnormalities within the KM field were uncovered, and it is concluded that it is progressing well toward normal science.

The authors of KM citation classics were frequently involved in inter-institutional collaboration, which is a healthy attribute of the field given its multi-disciplinary nature. At the same time, more international collaboration is needed because only 16 per cent of co-authored citation classics were written by researchers residing in different countries. Practitioners have also played a very important role in forming the foundation of the KM discipline. The results indicate that 20 per cent of all authors were affiliated with a practitioner (i.e. non-academic) organization. In addition, most authors who reported multiple affiliations were affiliated with both a university/college and professional organization. It is the combination of effort by both academics and practitioners that may help KM researchers engage in critical and performative research to demonstrate the value of KM for organizations yet maintain scholarly rigor.

### 6.2 Future KM citation classics research

The authors of the present study have established a long-term research agenda to analyze the past, present and future development of the KM discipline from the perspective of citation classics. The entire project consists of four phases. The first stage is the current

study, which develops a list of citation classics and analyzes the attributes of these influential works. The second phase will identify, classify and explore evolving research trends in KM by means of citation analysis. Within the identified citation classics, the authors will explore citation trends based on different article attributes with declining, stable and increasing citations, which will uncover declining, stable and growing research trends. The third phase will survey citation classics authors to uncover the key reasons why these articles have become citation classics because KM researchers may wish to know how they may achieve academic success. The fourth stage will investigate the social and personal characteristics of the authors of citation classics. Generally, researchers know little about the individual characteristics of the members of the scientific elite who produce seminal works and determine research directions. An understanding of this issue may shed some light on the reasons for success and help scholars establish their research careers.

### 6.3 Limitations

Despite its innovativeness, this study has several limitations. First, the major limitation is the fact that the research framework and subsequent interpretation of the results rely on the authors' subjective knowledge of the KM discipline. However, the authors have endeavored to provide an open and unbiased analysis based on factual rather than subjective attributes such as personal ratings. Therefore, it is argued that given a similar framework and task, other researchers would be likely to attain similar results. At the same time, the implications presented in this section are the authors' interpretations, and they take sole responsibility for them.

Second, this study focused on KM-centric journals exclusively. It is possible that more insights will be obtained by also analyzing well-cited KM books and articles from KM-relevant journals. This is because in the early 2000s as interest in KM was increasing, institutional pressures in other disciplines forced many KM scholars to submit their manuscript to prestigious, highly ranked non-KM-centric journals that were included in Thomson's Journal Impact Factor reports. This led to the questioning as to whether KM was a management fad or fashion, which the present study has argued is not the case. Some of these articles could well be highly cited, as discussed earlier. However, even if these articles were included in this study, the magnitude would not change the results significantly because the wider diversity of disciplines these articles come from would only reinforce the diversity that has been observed in this study's dataset.

Third, KM is a niche discipline, and citation behavior of scholars in niche disciplines may be very unique. In addition, a multi-disciplinary nature of KM research may also affect citation preferences of KM authors. This issue, however, was not accounted for. Fourth, it is unknown why the identified citation classics have been so frequently cited. The present study also does not identify the growing and declining research trends within the discipline. Fifth, over a half of all authors of the identified citation classics resided in the USA or the UK. Even though these two countries dominate the KM research arena, this study's conclusions may not always apply to KM research in all countries. Sixth, this study followed a descriptive approach instead of providing a critical reflection of the extant literature and considering additional evidence on the development of the KM field. Nevertheless, the used method is very popular in scientometrics because it offers an alternate, valid perspective on the development of a scientific domain.

### Note

1. It is possible that some of the citation classic articles identified in the present study may no longer be relevant or contain useful insights for contemporary researchers and practitioners. We will explore this issue in more detail in subsequent investigations.

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### Further reading

- Serenko, A., Bontis, N. and Moshonsky, M. (2012), "Books as a knowledge translation mechanism: citation analysis and author survey", *Journal of Knowledge Management*, Vol. 16 No. 3, pp. 495-511.



## Appendix

**Table A1** List of citation classics as of January 3, 2014

Article	No. of citations
Hendriks, P. (1999), "Why share knowledge? The influence of ICT on the motivation for knowledge sharing", <i>Knowledge and Process Management</i> , Vol. 6 No. 2, pp. 91-100	953
Ardichvili, A., Page, V. and Wentling, T. (2003), "Motivation and barriers to participation in virtual knowledge-sharing communities of practice", <i>Journal of Knowledge Management</i> , Vol. 7 No. 1, pp. 64-77	888
McDermott, R. and O'Dell, C. (2001), "Overcoming cultural barriers to sharing knowledge", <i>Journal of Knowledge Management</i> , Vol. 5 No. 1, pp. 76-85	778
Bhatt, G.D. (2001), "Knowledge management in organizations: examining the interaction between technologies, techniques, and people", <i>Journal of Knowledge Management</i> , Vol. 5 No. 1, pp. 68-75	752
Snowden, D. (2002), "Complex acts of knowing: paradox and descriptive self-awareness", <i>Journal of Knowledge Management</i> , Vol. 6 No. 2, pp. 100-111	693
Swan, J., Newell, S., Scarbrough, H. and Hislop, D. (1999), "Knowledge management and innovation: networks and networking", <i>Journal of Knowledge Management</i> , Vol. 3 No. 4, pp. 262-275	662
Nonaka, I. and Toyama, R. (2003), "The knowledge-creating theory revisited: knowledge creation as a synthesizing process", <i>Knowledge Management Research &amp; Practice</i> , Vol. 1 No. 1, pp. 2-10	607
Goh, S.C. (2002), "Managing effective knowledge transfer: an integrative framework and some practice implications", <i>Journal of Knowledge Management</i> , Vol. 6 No. 1, pp. 23- 30	544
Wiig, K.M. (1997), "Knowledge management: an introduction and perspective", <i>Journal of Knowledge Management</i> , Vol. 1 No. 1, pp. 6-14	465
Bollinger, A.S. and Smith, R.D. (2001), "Managing organizational knowledge as a strategic asset", <i>Journal of Knowledge Management</i> , Vol. 5 No. 1, pp. 8-18	463
Riege, A. (2005), "Three-dozen knowledge-sharing barriers managers must consider", <i>Journal of Knowledge Management</i> , Vol. 9 No. 3, pp. 18-35	442
M&aring;rtensson, M. (2000), "A critical review of knowledge management as a management tool", <i>Journal of Knowledge Management</i> , Vol. 4 No. 3, pp. 204- 216	387
Smith, E.A. (2001), "The role of tacit and explicit knowledge in the workplace", <i>Journal of Knowledge Management</i> , Vol. 5 No. 4, pp. 311-321	359
van den Hooff, B. and de Ridder, J.A. (2004), "Knowledge sharing in context: the influence of organizational commitment, communication climate and CMC use on knowledge sharing", <i>Journal of Knowledge Management</i> , Vol. 8 No. 6, pp. 117-130	355
Deakins, D. and Freel, M. (1998), "Entrepreneurial learning and the growth process in SMEs", <i>The Learning Organization</i> , Vol. 5 No. 3, pp. 144-155	348
Hildreth, P., Kimble, C. and Wright, P. (2000), "Communities of practice in the distributed international environment", <i>Journal of Knowledge Management</i> , Vol. 4 No. 1, pp. 27-38	340
Seufert, A., von Krogh, G. and Bach, A. (1999), "Towards knowledge networking", <i>Journal of Knowledge Management</i> , Vol. 3 No. 3, pp. 180-190	339
Darroch, J. (2005), "Knowledge management, innovation and firm performance", <i>Journal of Knowledge Management</i> , Vol. 9 No. 3, pp. 101-115	329
Carneiro, A. (2000), "How does knowledge management influence innovation and competitiveness?", <i>Journal of Knowledge Management</i> , Vol. 4 No. 2, pp. 87-98	327
Storey, J. and Barnett, E. (2000), "Knowledge management initiatives: learning from failure", <i>Journal of Knowledge Management</i> , Vol. 4 No. 2, pp. 145-156	325
Sveiby, K-E. and Simons, R. (2002), "Collaborative climate and effectiveness of knowledge work—an empirical study", <i>Journal of Knowledge Management</i> , Vol. 6 No. 5, pp. 420-433	311
Kakabadse, N.K., Kakabadse, A. and Kouzmin, A. (2003), "Reviewing the knowledge management literature: towards a taxonomy", <i>Journal of Knowledge Management</i> , Vol. 7 No. 4, pp. 75-91	305
Yahya, S. and Goh, W-K. (2002), "Managing human resources toward achieving knowledge management", <i>Journal of Knowledge Management</i> , Vol. 6 No. 5, pp. 457-468	301
Dervin, B. (1998), "Sense-making theory and practice: an overview of user interests in knowledge seeking and use", <i>Journal of Knowledge Management</i> , Vol. 2 No. 2, pp. 36-46	298
Meso, P. and Smith, R. (2000), "A resource-based view of organizational knowledge management systems", <i>Journal of Knowledge Management</i> , Vol. 4 No. 3, pp. 224-234	292
uit Beijerse, R.P. (1999), "Questions in knowledge management: defining and conceptualising a phenomenon", <i>Journal of Knowledge Management</i> , Vol. 3 No. 2, pp. 94-110	290
Soliman, F. and Spooner, K. (2000), "Strategies for implementing knowledge management: role of human resources management", <i>Journal of Knowledge Management</i> , Vol. 4 No. 4, pp. 337-345	280

(continued)

Table A1

Article	No. of citations
Gebert, H., Geib, M., Kolbe, L. and Brenner, W. (2003), "Knowledge-enabled customer relationship management: integrating customer relationship management and knowledge management concepts", <i>Journal of Knowledge Management</i> , Vol. 7 No. 5, pp. 107-123	271
McAdam, R. and McCreedy, S. (1999), "A critical review of knowledge management models", <i>The Learning Organization</i> , Vol. 6 No. 3, pp. 91-101	271
Binney, D. (2001), "The knowledge management spectrum—understanding the KM landscape", <i>Journal of Knowledge Management</i> , Vol. 5 No. 1, pp. 33-42	269
Bhatt, G.D. (2000), "Organizing knowledge in the knowledge development cycle", <i>Journal of Knowledge Management</i> , Vol. 4 No. 1, pp. 15-26	267
Bender, S. and Fish, A. (2000), "The transfer of knowledge and the retention of expertise: the continuing need for global assignments", <i>Journal of Knowledge Management</i> , Vol. 4 No. 2, pp. 125-137	255
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### About the authors

Dr Alexander Serenko is an Associate Professor of Management Information Systems in the Faculty of Business Administration at Lakehead University, Canada. Dr Serenko holds a PhD in Management Information Systems from McMaster University. His research interests pertain to scientometrics, knowledge management and technology addiction. Alexander has published over 60 articles in refereed journals, including *MIS Quarterly*, *Information & Management*, *Communications of the ACM*, *Journal of Informetrics* and *Journal of Knowledge Management*. He has also won awards at several Canadian, American and international conferences. In 2007, Dr Serenko received the Lakehead Contribution to Research Award which recognizes him as one of the university's leading researchers. Alexander Serenko is the corresponding author and can be contacted at: [aserenko@lakeheadu.ca](mailto:aserenko@lakeheadu.ca)

John Dumay is an Associate Professor in Accounting at Macquarie University, Sydney. He worked for over 15 years as an independent business consultant across a wide variety of industries before joining academia after completing his PhD in 2008. The PhD entitled *Intellectual Capital in Action: Australian Studies* won the prestigious Emerald/EFMD Outstanding Doctoral Research Award for 2008 in the Knowledge Management category. John continues to research on the topics of intellectual capital, knowledge management, non-financial accounting and reporting, innovation, management accounting, qualitative research methods and academic writing. Since starting his thesis in 2006, John has achieved an outstanding record as the author or co-author of more than 30 peer-reviewed

academic journal articles in prestigious journals such as *Accounting Auditing & Accountability Journal*, *British Accounting Review*, *Financial Accountability & Management*, *Journal of Intellectual Capital*, *Public Management Review* and *VINE*. He has co-authored with different authors from many countries such as Australia, Italy, Canada, Russia, USA, Poland, Japan and China. He has won Highly Commended Paper awards thrice for the *Journal of Intellectual Capital* (2008 and 2012, 2014) and once for the *Journal of Accounting and Organisational Change* (2014). John also won the Outstanding Reviewer Award for the *VINE* journal (2012). John is the Australasian Regional Editor of the *Journal of Intellectual Capital*. He is also a member of the Editorial Boards of Advice for the *Accounting Auditing & Accountability Journal*, *Journal of Accounting & Organisational Change*, *Meditari Accountancy Research* and *Electronic Journal of Knowledge Management*.

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