

Knowledge Management Research Trends: An analysis of an Academic Journal

Andrea Potgieter

University of Johannesburg, Johannesburg, South Africa

apotgieter@uj.ac.za

Abstract: This paper discusses information and knowledge management (IKM) research trends, based on the abstracts, titles and keywords of original research articles published in the South African Journal of Information Management (SAJIM) between 1999 and 2017. Leximancer, a natural language analysis software tool, was employed to examine the titles, abstracts and keywords of articles published in this journal. The findings of this paper report on the evolution of the field of IKM research over 19 years of publication, and compares the findings to global trends in IKM research.

Analyses of trends in academic journals are used to guide researchers in identifying pockets of abundance, emerging focus areas, and topics in need of more rigorous exploration within a field of research. This paper will aid researchers in the field of IKM to identify topics that have been popular and thus frequently investigated. Furthermore, the findings of this study enable researchers to identify areas in need of exposure to advance the research field, while also highlighting contemporary issues identified by the data analyses and literature review.

Founded in 1999, SAJIM is an open access IKM journal that has served as an international platform for discussion and debate in this dynamic field. The journal has published 49 issues since its inception, with topics ranging from corporate culture as a foundation for successful knowledge management, to e-mail overload and the emergence of crowdsourcing. Not surprisingly, a recent shift to include the social media phenomenon and its effect on information sharing is clear when the findings are reviewed. Artificial intelligence, especially when considering big data analysis, is revealed as an underexposed topic within the journal's publications. The research is moreover valuable to industry stakeholders in the field of IKM, as the paper gives an impression of the evolution of, and current trends within the journal, while comparing these trends to the global IKM environment. Therefore, the findings are valuable not only to the journal's governing body, but those academics and practitioners interested in the field of IKM.

Keywords: Information and Knowledge Management, Research Trends, Academic Journal, Natural Language Analysis, Leximancer, The South African Journal of Information Management.

1. Introduction & rationale

Kamhawi and Weaver (2003:7) state that publication trends in journals can aid researchers to identify "areas of strength and weakness, and of abundance and scarcity" in their field of research. By exploring research topic trends, as identified within the articles published in SAJIM over almost two decades, it is the aim of this paper to reveal which IKM topics and research methods, have been most popular during this period and how these trends have evolved since 1999.

The goal of this research is to aid researchers in the field of IKM, to identify topics that may have been neglected, when considering the global information and knowledge management environment. By charting the growth of the journal, the research can also be valuable to the governing body of SAJIM. As noted by Reis and Stiller (1992:465), "as part of their ongoing process of self-reflection", researchers may "look backward" to evaluate how research practices have changed. As such, this paper aims to give the journal's stakeholders a glimpse of the evolution of the journal, and "is likely to be of use to researchers in assisting them to identify currently under-explored themes" (Dwivedi, Venkitachalam, Sharif, Al-Karaghoulis & Weerakkody, 2011:43). Such an under-exploration of relevant fields is mentioned by Daft and Lewin (2008:182) as they warn against "creeping parochialism" in the context of academic journals.

As noted by Lee and Chen (2012:48), "[r]esearch within the field of KM has consistently grown and accumulated great importance in both academia and business." As such, it is important to take stock of a channel, such as a peer reviewed academic journal, to determine which trends and topics are prevalent within the landscape of IKM (Jordaan, Wiese, Amade & de Clercq, 2013: 435). Botha, Lilford and Pitt (2011:89) agree that it is crucial for the development of a study field and its researchers to be informed about the scholarly literature available to

them. To this end, this paper aims to provide scholars and practitioners with an overview of SAJIM's main research topic publication trends over the past 19 years.

Founded in 1999, the South African Journal of Information Management (SAJIM) functions an open access information and knowledge management (IKM) journal that "serve[s] as a platform for discussion and debate in this developing field" (SAJIM, 2018). The journal has published 49 issues since its inception, with topics including innovations in information, knowledge and content management, knowledge economy, intellectual capital, business and competitive intelligence, records management, information entrepreneurship, design and delivery, social media and online social networking (SAJIM, 2018).

2. Research problem

Academic journals serve a community of practitioners, academics, and students who are interested in specific fields of study. Being representative of global trends in a subject area is crucial for a journal to add value to the community that it serves. SAJIM has been in existence for nearly two decades, publishing peer reviewed articles focused on the field of IKM. It is necessary to establish if and how the journal has progressed since 1999, specifically in terms of research topics and their relevance to global IKM trends.

3. Research design and methodology

This study functioned within an **interpretivist** philosophical paradigm, as interpretivism allows researchers to "make sense of the world around [them]" (Saunders, Lewis & Thornhill, 2012:142). Since this research aims to compare the prevalent research topics within SAJIM to IKM trends that were relevant during each period of analysis, this philosophical paradigm is appropriate, since the interpretation of complex issues is likely to become a reality (Ang, 2014:53).

A **deductive** research approach formed the basis of enquiry during this study, where the natural language analysis of the data formed the general premise of a finding, which was then tested against prevalent IKM issues during the corresponding period (Salmons, 2016:164). The research paradigm and methodological choice employed during this study was a **mono-method, qualitative approach**, since a **content analysis** research strategy was selected for this study. Although the research considered data of which the content spanned 19 years, the study was conducted in a **cross-sectional** manner, and proved to be appropriate to "obtain an overall 'picture' as it stands at the time of the study" (Kumar, 2014:134).

3.1 Sampling method, sample size and data collection

A **purposive sampling** method was employed, in the form of **total population sampling**. The study considered all 327 "original research" articles published in SAJIM since its inception until 2017, as both the population and the sample relevant to the study (Etikan, Musa & Alkassim, 2016:3). Data was collected by harvesting the title, abstract, and keywords for all 327 articles from the SAJIM website. The data was inserted into .csv formatted Excel spreadsheets, as shown below in Figure 1.

Title	# of Authors	Abstract	Keywords
Nine drivers of knowledge transfer between universities and industry R&D partners in South Africa.	3	This article presents part of the findings of the Research Marketing and Technology Commercialization Survey conducted in South Africa during 2005 and 2006. Part IV (Q4) of this survey was designed to examine nine drivers of knowledge transfer between South African universities in their research and development (R&D) collaborations with industry firms. Respondents from a judgemental sample ranked the knowledge transfer for R&D collaboration between university departments and industry as: (a) the need to extract appropriate knowledge at the right time to make critical decisions; (b) the perception that knowledge is a valuable resource; (c) the emphasis on getting a return on investment in research; (d) the need to protect knowledge for competitive advantage; (e) the need to close the knowledge gap; (f) international trade; (g) the need to protect intellectual property such as patents and trademarks; (h) geographic proximity between the knowledge source and recipient; and (i) war, terrorism and natural disasters.	Knowledge transfer, university/industry collaboration, systems of innovation.
Key word placing in Web page body text to increase visibility to search engines.	2	The growth of the World Wide Web has spawned a wide variety of new information sources, which has also left users with the daunting task of determining which sources are valid. Many users rely on the Web as an information source because of the low cost of information retrieval. It is also claimed that the Web has evolved into a powerful business tool. Examples include highly popular business services such as Amazon.com and Kalahari.net. It is estimated that around 80% of users utilize search engines to locate information on the internet. This, by implication, places emphasis on the underlying importance of Web pages being listed on search engines indices. Empirical evidence that the placement of key words in certain areas of the body text will have an influence on the Web sites' visibility to search engines could not be found in the literature. The result of two experiments indicated that key words should be concentrated towards the top, and diluted towards the bottom of a Web page to increase visibility. However, care should be taken in terms of key word density, to prevent search engine algorithms from raising the spam alarm.	Search engine optimization, body text, key words, location, prominence.

Figure 1: Data from SAJIM Vol. 9, No. 1 captured in an Excel spreadsheet; the issue consisted of four articles.

3.2 Data analysis

The data was analysed through Leximancer, an online platform that automatically analyses text-based documents through **natural language processing** (Leximancer, 2017:9). Leximancer is a widely recognised analysis tool and has been used for qualitative data analysis in several contexts including academia, business, social studies and education research (Crofts & Bisman, 2010:188). Smith and Humphreys (2006:262) explain that Leximancer employs a "method for transforming lexical co-occurrence information from natural language into semantic patterns in an unsupervised manner." It is argued that computer generated analysis tools such as Leximancer "create rigour in the analysis in several ways", and that Leximancer assists the researcher in remaining objective by not considering "prior knowledge gained in the data collection phases" (Harwood, Gapp & Stewart, 2015:1032). It must be noted that "the algorithms used [by Leximancer] are statistical, but they employ nonlinear dynamics and machine learning" (Smith & Humphreys, 2006:262). Notably, Harwood, Gapp and Stewart (2015:1032) also state that Leximancer promotes reliability "through stability and reproducibility."

To allow for the development of a trend, the researcher realised that it was necessary to allow a "period" in which to analyse the data sets. Therefore, these data sets were examined in an **era-stratified** manner, with the years grouped as 1999–2003, 2004–2008, 2009–2013, and 2014–2017. Leximancer provides both a conceptual and a relational evaluation of the analysed data, and in Figure 2 below, the conceptual representation of a SAJIM dataset can be seen. In this map, spheres indicate themes and are heat-mapped to show importance and the dots showing seed words define concepts (Leximancer, 2017:9).

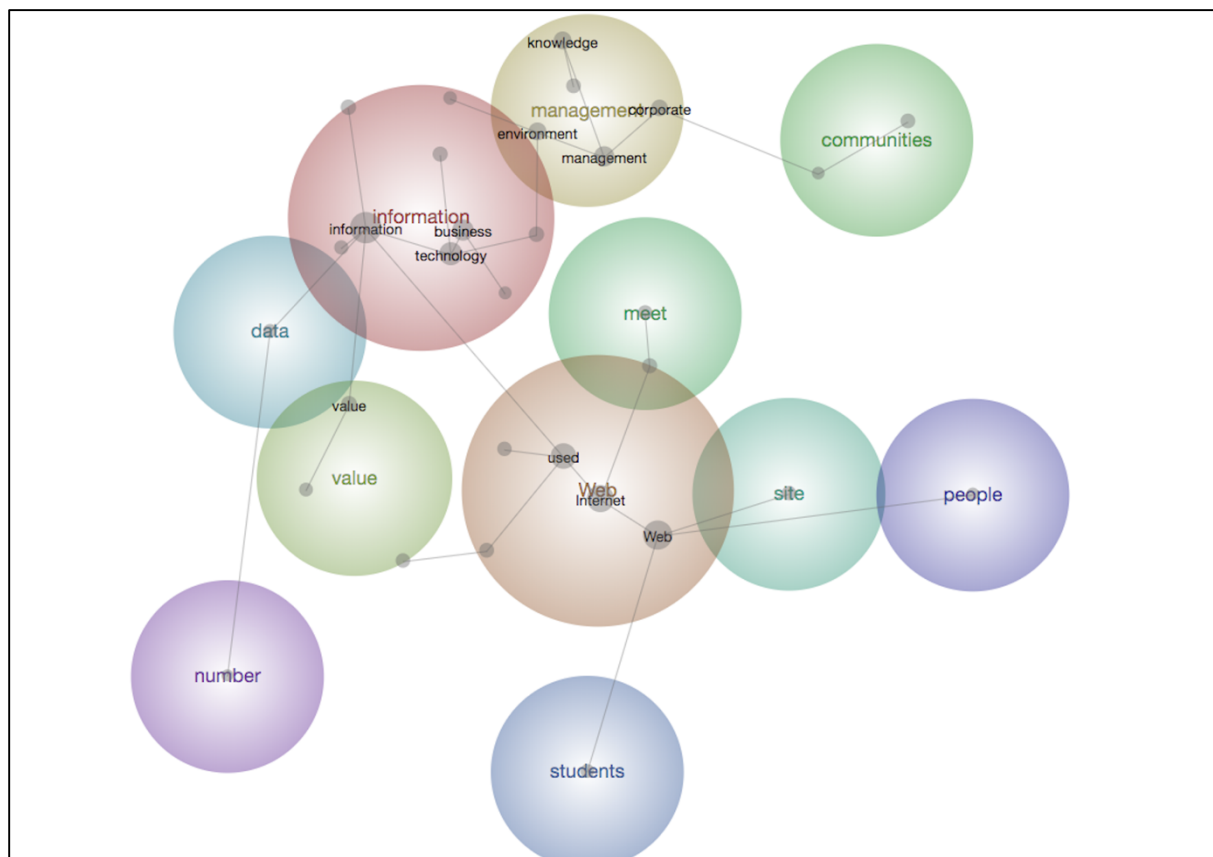


Figure 2: A concept map generated by Leximancer, using SAJIM data.

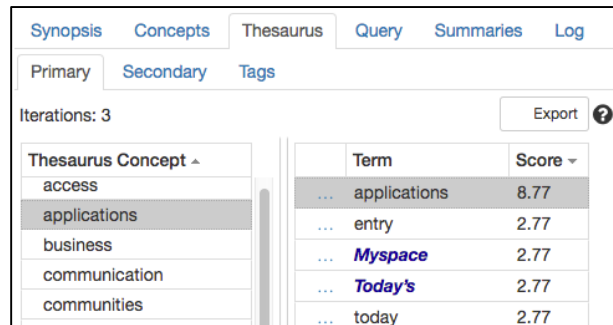
The concepts indicated within the themes on the concept map, are also represented in a histogram format, as shown in Figure 3 below. In this format, concepts are shown in ranked order, from most to least relevant. This histogram is also interactive, allowing the user to click on a concept to access a list of thesaurus terms – also generated by Leximancer – that further explore the themes and concepts (Leximancer, 2017:22). Text excerpts used in the discussion of findings of this paper, were obtained by querying the thesaurus functionality.

4. Discussion of findings

The top ranked theme for each period, as well as its relevance to global trends at the time, will be discussed here. The discussion of these themes will focus on subject-field relevant concepts, that were associated with noteworthy thesaurus concepts, related to the ranked theme.

4.1 SAJIM during 1999 – 2003

The top ranked theme for the period between 1999 and 2003, was **Web**. The theme 'web' was strongly associated with the generated thesaurus concept 'applications.' Notably, the terms 'entry' and 'Myspace' were found to have a high relevancy to the concept 'applications', as is shown in Figure 3 below.



Thesaurus Concept ^	Term	Score v
access	... applications	8.77
applications	... entry	2.77
business	... Myspace	2.77
communication	... Today's	2.77
communities	... today	2.77

Figure 3: The thesaurus concept 'applications' shown with its co-occurring and high relevancy terms

Finding such as these are pertinent, since "A high relevancy word may not be frequent, but if it appears, it usually appears with other strong words for its concept" (Leximancer, 2013). This implies that the presence of the word 'Myspace' predicts the concept 'applications'. Since the social networking website, Myspace, was created in 2003 (Encyclopædia Britannica, 2018), the high relevancy of the mention of this website shows a timeliness in the articles published in SAJIM within this period.

By 2000, the Web had seen an exponential growth, giving users access to over 10 million websites (DiMaggio, Hargittai, Neuman & Robinson, 2001:308). 'Entry', another high relevancy term associated with applications, was shown to refer to users' access, through portals and applications, using a web browser, as shown in the text excerpt below. This excerpt was generated by Leximancer to illustrate the relation of the theme ('web') with the concept ('applications') and the terms ('entry' and 'applications').

*"Portals enable users to access multiple **applications** via a single point of **entry** with a browser ... Leveraging knowledge – both internal and external – is the key to using a portal as a centralized database of best practices that can be applied across all departments and all lines of business within an organization ..."*

Considering the era of growth that the web was finding itself in at the time (DiMaggio et al, 2001:308), the high relevancy of terms discussing ways to access or gain 'entry' to the 'web', further supports the notion that SAJIM, at that point in time, was publishing articles that focused on pertinent IKM issues.

4.2 SAJIM during 2004 – 2008

The most prominent theme during this period, was discovered to be **information**.' This does not reveal much about research topics explored within SAJIM at the time, however concepts associated with the theme 'information' proved insightful. 'Information', 'organisations', 'technology', 'corporate', and 'system' were concepts associated with this theme. An excerpt linked to the theme 'information', read as follows:

"One of the major changes occurring in information and communications technology (ICT) is the ability to deliver systems via the Web. The major challenge in today's digital environment is for managers and staff to understand the role of ICT with regard[s] to the strategic advantages it provides through the provision of solutions."

During this period, a burgeoning recognition of the value of information technology within organisations was taking place (Leidner & Kayworth, 2006:381; Melville, Kraemer & Gurbaxani, 2004:311). SAJIM research topics that focussed on organisational information and the technologies, specifically systems, that managed that information appears aligned with the IKM landscape at the time.

4.3 SAJIM during 2009 – 2013

During this period, the most prevalent theme to emerge from the data, was '**knowledge**'. 'Knowledge' was most likely to be related to the concept 'sharing' and presented a marked relevancy to the terms 'retention', 'tacit', and 'contribution'. These themes were compared to ten topical themes in knowledge management, as identified by knowledge management authority David Skyrme, in 2011. The ten Skyrme (2011) themes can be seen in the left-hand column in Table 1 below. The Leximancer concept 'sharing' and the terms retention, 'tacit', and 'contribution', are shown to the right of the figure, with check marks indicating their relevance to the topical themes as identified by Skyrme (2011).

Skyrme Themes	Leximancer concepts and themes related to the main theme 'knowledge'		
	'sharing'	'tacit'	'contribution'
Smarter Strategies - ensuring not only that KM and business strategies are aligned, but thinking how KM can create new business opportunities.			✓ a knowledge contribution
KM with Everything - applying a 'knowledge lens' to all facets of the business.			
Human-centric KM - putting people first; understanding the social and cultural dimensions of KM.	✓ <i>people share knowledge</i>		✓ personal knowledge contributions
PKM (Personal Knowledge Management) - understanding the nature of knowledge work, so that individuals create, develop and manage their own information and knowledge more effectively.		✓ recognising your own tacit personal knowledge	✓ developing and managing knowledge
Tapping Tacit Knowledge - mapping your 'know-who' and then putting in place mechanisms to capture and share this knowledge.	✓ share within your network	✓ capture tacit knowledge	✓ contributing to your network by capturing and sharing knowledge
Cultivating Communities - how inter-organisational communities of practice (and purpose) can be the engines of innovation.	✓ sharing through communities of practice		✓ contributing through knowledge innovation
Collaborative Technologies - exploiting the power of social and collaborative technologies such as blogs and wikis.	✓ sharing through collaboration		✓ contributing through collaboration
Meaningful Measures - developing realistic ways of measuring the value of knowledge and knowledge management.			
Commercialising Knowledge - knowledge as a business: turning KM inside-out by exploiting your knowledge as knowledge products and services in the wider marketplace.			✓ contributing to the market through competitive intelligence
Governance and Ethics - taking responsibility for your knowledge assets and not misusing them to the detriment of others.			

Table 1: Skyrme's (2011) "Ten Topical Themes" as compared to the theme 'knowledge' and its concepts

As shown in Table 1, many of Skyrme's (2011) themes were comparable to the theme 'knowledge' as identified by the data. This implies that, the articles published in SAJIM during this time, were mostly aligned with global trends identified by knowledge management practitioners. When considering the gaps shown by the comparison with Skyrme's themes governance, ethics and measurement were notably understated in SAJIM during this time.

4.4 SAJIM during 2014 – 2017

During the final period examined in this study, the theme 'knowledge' was again the most highly ranked theme. However, in contrast to the preceding period, the concepts ranked most relevant to 'knowledge' in this context, were 'social' and 'technology.' The concept 'social' showed a high relevancy to the terms 'social', 'media', and 'online.' This, in addition with exploring text excerpts to confirm the hypothesis, convinced the researcher that 'social' as a concept, related to 'knowledge' in this period, referred to "online social media." Furthermore, upon investigation of the thesaurus terms associated with 'social', it was evident that 'adoption' showed a remarkable relevancy to the concept 'social.' The following text excerpt illustrates an example of "online social media" 'adoption' being studied within SAJIM.

"Social media has become imperative for branding because of the brand's ability to connect with consumers in a more interactive and individualised manner. Brands thus have a growing interest in social media-based brand communities to cultivate relationships with consumers through community building activities."

Social media began its rise in the early 2000s (McFadden, 2017), creating interest and apprehension in equal measure. According to Edosomwan, Prakasan, Kouame, Watson and Seymour (2011:86), businesses soon realised that engagement with their markets through social media, held the prospect of communicating brand value and for creating "open forms of communication" with clients. Smart Insights, a publisher and learning platform focused on online marketing, notes that the number of social media users increases with up to 13% each year, with the global number of social media users worldwide currently estimated at 3.2 billion (Chaffey, 2018). Considering the potential benefits of businesses engaging with clients online, and the exponential growth of the social media market globally, the recent prominence of social media as a research topic within SAJIM, is to be expected.

Although social media was appropriately represented within the publications of this period, two prominent emerging fields in the IKM landscape big data and artificial intelligence (Mizerski, Hilger, Pairman & Blumauer, 2018:3&17; Wang, Zhu, Song, Hou, & Zhang, 2018:24; Trees, 2017), did not feature. It is necessary for SAJIM to include these issues in its offering, as they are prominent within the IKM field. To stimulate the submission of articles focused on these critical issues, the journal could publish a special issue with these topics as the focus.

5. Conclusion

This paper set out to identify the evolution of research topics published in SAJIM over the course of 19 years. It was established that the topics featured in each period of analysis, echoed the prevalent trends in the IKM landscape at the time. However, in certain instances, the data revealed that certain topics were under-exposed.

At its inception, SAJIM showed a strong focus on the Web and technologies used to access online platforms. During the period between 2004 – 2008, articles published in SAJIM showed a preference to information management and the technologies used to accomplish that. The following five years saw a rise in topics that focused on knowledge management, sharing and contribution. These themes seemed consistent with trends at the time, however a focus on governance, ethics and measurement was lacking.

The final period that was analysed revealed a focus on online social media. The literature established that this trend was coherent with a shift in the global business environment in recognising the value that social media can bring to an organisation, especially when engaging with customers. Finally, it was noted that SAJIM requires a focus on the emerging trend of artificial intelligence, and the pressing issue of big data. The researcher recommended the publication of a special SAJIM issue, focusing on these trends, to ensure the reflection of all relevant global trends within the articles published in SAJIM.

Acknowledgement: The author would like to mention the following Honours students who captured the SAJIM data earlier in 2018: Ms Pretty Mashigo, Ms Tumelo Ntikane, and Ms Mmaseisa Sisa.

6. References

- Ang, S.H. (2014) *Research design for business & management*, Sage, London.
- Botha, E., Lilford, N. & Pitt, L. (2011) "South African management literature over the past fifteen years: Content analysis of the three top South African management journals", *South African Journal of Business Management*, Vol. 42, No. 4, pp.89–98.
- Chaffey, D. (2018) "Global social media research summary 2018", [online], <https://www.smartinsights.com/social-media-marketing/social-media-strategy/new-global-social-media-research/>.
- Crofts, K. and Bisman, J. (2010) Interrogating accountability: An illustration of the use of Leximancer software for qualitative data analysis. *Qualitative Research in Accounting & Management*, 7, No. 2, pp. 180–207.
- Daft, R.L. & Lewin, A.Y. (2008) Perspective—Rigor and relevance in organization studies: Idea migration and academic journal evolution. *Organization Science*, Vol. 19, No. 1, pp. 177–183.
- DiMaggio, P., Hargittai, E., Neuman, W.R. and Robinson, J.P. (2001) "Social implications of the Internet", *Annual Review of Sociology*, Vol. 27, No. 1, pp. 307–336.
- Dwivedi, Y.K., Venkitachalam, K., Sharif, A.M., Al-Karaghoul, W. & Weerakkody, V. (2011) "Research trends in knowledge management: Analyzing the past and predicting the future", *Information Systems Management*, Vol. 28, No. 1, pp.43–56.
- Edosomwan, S., Prakasan, S.K., Kouame, D., Watson, J. & Seymour, T. (2011) "The history of social media and its impact on business", *Journal of Applied Management and Entrepreneurship*, Vol. 16, No. 3, p.79.
- Encyclopædia Britannica. (2018) "Myspace", [online], <https://www.britannica.com/topic/Myspacecom>.
- Etikan, I., Musa, S.A. & Alkassim, R.S. (2016) "Comparison of convenience sampling and purposive sampling", *American Journal of Theoretical and Applied Statistics*, Vol. 5, No. 1, pp.1–4.
- Harwood, I., Gapp, R.P. & Stewart, H.J. (2015) Cross-check for completeness: Exploring a novel use of Leximancer in a grounded theory study. *The Qualitative Report*, Vol. 20, No. 7, pp. 1029–1045.
- Jordaan, Y., Wiese, M., Amade, K. & De Clercq, E. (2013) "Content analysis of published articles in the South African Journal of Economic and Management Sciences", *South African Journal of Economic and Management Sciences*, Vol. 16, No. 4, pp.435–451.
- Kamhawi, R. & Weaver, D. (2003) "Mass communication research trends from 1980 to 1999", *Journalism & Mass Communication Quarterly*, Vol. 80, No. 1, pp.7–27.
- Kumar, R. (2014) *Research methodology: A step-by-step guide for beginners*, Sage, London.
- Lee, M.R. & Chen, T.T. (2012) "Revealing research themes and trends in knowledge management: From 1995 to 2010", *Knowledge-Based Systems*, Vol. 28, pp.47–58.
- Leidner, D.E. and Kayworth, T. (2006) "A review of culture in information systems research: Toward a theory of information technology culture conflict", *MIS quarterly*, Vol. 30, No. 2, pp.357–399.
- Leximancer. (2017) "Leximancer user guide release 4.5", [online] <http://doc.leximancer.com/doc/LeximancerManual.pdf>
- Leximancer. (2013) "Understanding Displays and Outputs", [online], https://www.leximancer.com/faq/display_and_output.html.
- McFadden, C. (2017) "A chronological history of social media", [online], <https://interestingengineering.com/chronological-history-of-social-media>.
- Melville, N., Kraemer, K. and Gurbaxani, V. (2004) "Information technology and organizational performance: An integrative model of IT business value", *MIS quarterly*, Vol. 28, No. 2, pp.283–322.
- Mizerski, N., Hilger, J., Pairman, J. & Blumauer, A. (2018) "Information Management Survey 2018: Trends and insights for data and knowledge professionals", [online], <https://semantic-web.com/>.
- Reis, H.T. and Stiller, J. (1992) Publication trends in JPSP: A three-decade review. *Personality and Social Psychology Bulletin*, Vol. 18, No. 4, pp. 465–472.
- SAJIM. (2018) "South African Journal of Information Management: Journal information", [online], <https://sajim.co.za/index.php/sajim/pages/view/journal-information>.
- Salmons, J.E. (2015) *Doing qualitative research online*, Sage, London.
- Saunders, M.L., P. & Thornhill, A. (2012) *Research methods for business students*, Oxford University Press, London.
- Skyrme, D. (2011) "Ten topical themes", [online], <https://www.skyrme.com/kmthemes/index.htm>.
- Smith, A.E. and Humphreys, M.S. (2006) Evaluation of unsupervised semantic mapping of natural language with Leximancer concept mapping. *Behavior Research Methods*, Vol. 38, No. 2, pp. 262–279.
- Trees, L. (2017) "What Will Scare Knowledge Management in 2018", [online], <https://www.apqc.org/blog/what-will-scare-knowledge-management-2018>.
- Wang, P., Zhu, F.W., Song, H.Y., Hou, J.H. & Zhang, J.L. (2018) "Visualizing the Academic Discipline of Knowledge Management", *Sustainability*, Vol. 10, No. 3, p.682.