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Original Research

Growth Analysis of Research Output in the Knowledge Management Domain in Africa

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Abstract

This study accounts for the growth analysis of research output in the knowledge management (KM) domain in Africa, using the Web of Science database between 1974 and 2019. The implication that necessitates this study was the intertwined nature of the KM domain associated with other fields of study. The interpretive content/document analysis was used to extract publications using key terms of knowledge management from the Web of Science database within 45 years. The extract of the document analysis and the presentation of results took four weeks. The findings indicated that 2,564 publications such as articles, conference papers, reviews, and proceedings were the platforms used the most within the period. Management was at the top of the list of subject areas. A top journal that publishes KM papers is the South African Journal of Science. The most productive institutions by affiliation were the University of Cape Town and the University of Pretoria, and inter-continental collaboration in research in KM was affirmed with the United States of America (USA). The National Research Foundation of South Africa is among the top bodies that fund research in Africa. The growth analysis of publication output in KM in Africa indicates a slow productivity rate of 6.4 percent within the period covered. This paper demonstrates that the KM domain remains an evolving and interesting phenomenon, which requires integration in different organizations. Every actualization of work performance today by individuals depends on tacit and explicit knowledge application, which forms the spectrum of KM.

Keywords: Growth analysis, research output, knowledge management perspectives, visibility/bibliometric analysis, Web of Science, Africa

Introduction

Research studies in the domain of knowledge management (KM) are not new in the developed world. However, it is still in its infancy in Africa, as not many institutions or organizations know much about its importance and application in their service delivery. KM has existed for the past four decades, but most people in academia in Africa do not understand its emphasis and application (Drucker, 1997, 1995; Wiig, 2000; Nonaka & Takeuchi, 1995; Davenport & Prusak, 1998). KM incorporates the procedures and practices adopted by business

professionals and engineers working in different organizations to achieve results and best performance. It is believed that KM applications are used by these different business professionals and engineers in companies in developed countries based on what they know best. Nevertheless, the business professionals, engineers, and other related workers do not understand its implications until more research was done by Nonaka and Takeuchi (1995) and Davenport and Prusak (1998). These authors emphasized that the working knowledge in an organization cannot hold up if the organization does not know how to manage what they know best (Davenport & Prusak, 1998). For example, an automobile manufacturing company should not be told what to do in manufacturing or investing in cars and the necessary raw materials required in the processes of such investing.

Another example could be a medical doctor, who should not be told what to do when examining a sick patient about the apparatus required and medications to give to a sick person after confirmation of the diagnosis. This is what KM means; it must be proven to serve humanity based on available facilities, tools, and techniques applied, irrespective of the context. Each individual's knowledge is applied in the workforce for organization's sustainability (Davenport & Prusak, 1998). The organization can identify the efficacy of what it knows and how such knowledge could be preserved and managed. Even when the individual is not available, the organizations should still have access to the functions/activities created by the individual; this could enhance organizational productivity.

This makes an organization a learning enterprise because the individuals working in the organizations can learn and unlearn to acquire new knowledge and skills, which helps to recall and apply information and knowledge to add expertise to their service delivery (Davenport & Prusak, 1998). Scholars such as Nonaka and Takeuchi (1995), Davenport and Prusak (1998), Alavi, Kayworth & Leidner (2005), Serenko (2013), and Serenko and Bontis (2009) believe KM is a multidisciplinary field of study, which became a self-regulating academic field over time. The extraordinary growth of this field gave rise to a new interpretation of the field.

The accumulation of knowledge in recent times indicates that the importance of KM lies in the expertise in the organizations and how the organizations capture, process, store, and disseminate knowledge throughout the organizations. The essence of such distribution is to foster the use of information and knowledge for best practices, so that cost and time are reduced. This rests on the premise of "save it, as it might prove valuable someday in the future". KM is the intellectual capital of employees in the organizations, and Stewart (1997) defines it as the structured knowledge of individuals in the organizations, which the organizations rely on to achieve their set goals.

Based on earlier discussions on the field of KM, the author reflects on the four areas given in figure 1 below in this paper. The business definition of KM rests on two pillars: (i) capturing and documentation of employees' tacit and explicit knowledge and (ii) its dissemination in the organizations. One definition of an intelligent or knowledge asset implies the development of systems and procedures that foster how to acquire and share intellectual assets so that they would serve as useful information for individuals and teams learning together in the organizations (Stankosky, 2008). What is imperative here is managing the intellectual assets of the individual because, as emphasized by Polanyi (1966), people know more than they tell. The process-technology standpoint gives credence to information reversed into knowledge for the execution of persistent action so that those who desire it can apply it without stress (Angus, Patel & Harty, 1998). KM increases one's wisdom, and this is how innovations are established.

The understating of KM from this context indicates that it combines approaches, tools, and techniques that ensure individual capabilities are enhanced through collective nurturing, storing, training, managing, and strengthening the individual's brainpower for prosperity. The information science perspectives emphasize that KM manages tacit and explicit knowledge (Skyrme, 1997), where data and information are captured, organized, and shared among colleagues to benefit organizational growth (Bender & Fish, 2000). For the past 29 years (1990-2019), those in the academic world and business enterprises have indicated much interest in using KM in improving operations and service delivery (Jantz, 2001; Branin, 2003). This was due to the rise in efficiency of colleagues and competition with other organizations, based on their products, which was due to the application/utilization of tacit (human brain) and explicit (knowledge in book/documents) knowledge (Jantz, 2001). The analogy made above prompted the author of this paper to refer to the four platforms through which KM could function.

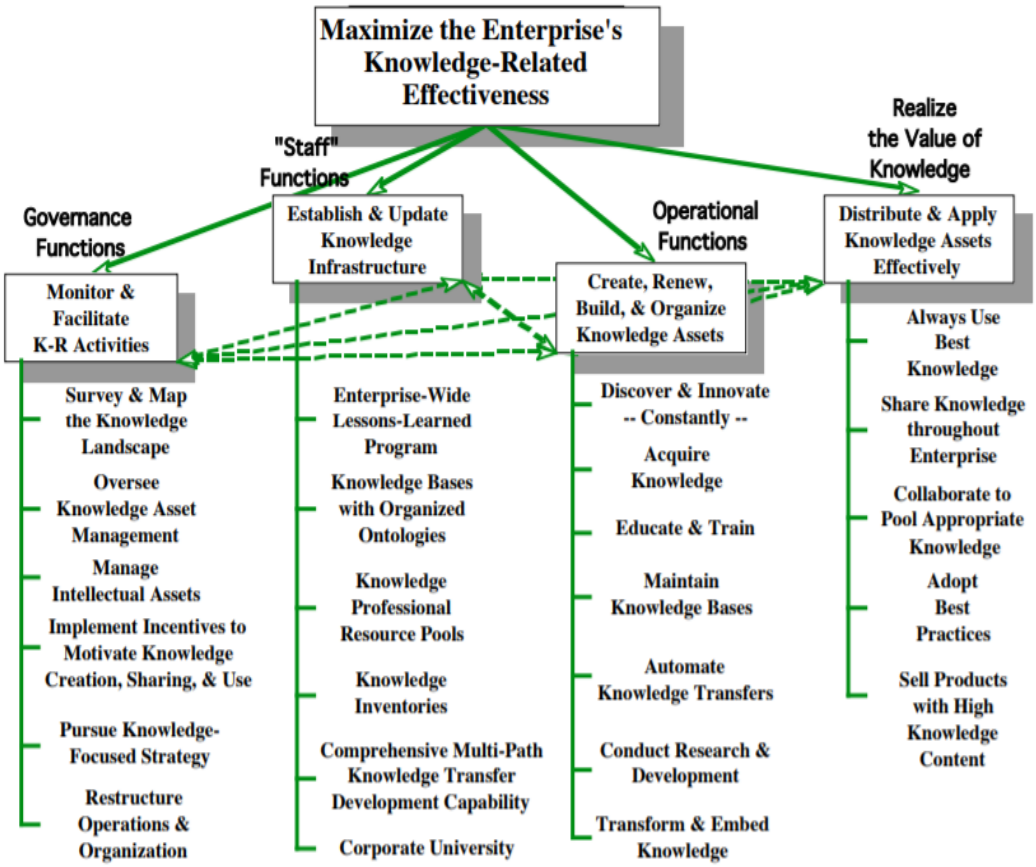

Figure 1: Four platforms through where KM could be applied/functions

Source: Wiig. (1997). Knowledge management: where did it come from, and where will it go?

Figure 1 indicates different sectors or platforms through which KM has been established. The first in the grouping is governance functions, consisting of monitoring and facilitating knowledge-related activities comprising different variables listed in the figure. The second represents staff functions, where knowledge and infrastructure are required to carry out different obligations. The third dwell considers operational functions, where creating,

renewing, building, and organizing knowledge assets are significant. Without these components, no operations could thrive in any organization. The fourth platform connotes the value placed on knowledge. The value is what enforces the emphasis on results in most organizations today. The knowledge in question here relates to the hidden knowledge in the human brain or mind (tacit), which is a key factor of the expertise of employees, while explicit knowledge is contained in books, documents, and other printed information in journals that enable the application of the tacit nature of knowledge. Notably, the author of this study adapted these four structures postulated by Pizziconi and Wiig (1997) to re-emphasize what KM can do in any established organization through human beings.

This study, which investigated the growth analysis of research output in a KM domain in Africa between 1974 and 2019, using the Web of Science database, is essential considering how KM has transformed organizational productivity and employee cognitive and mental ability in many organizations today; hence, the need to embrace its application and use. The consciousness of this, coupled with the competitive nature of the organizations, urged the author of this study to investigate the growth analysis of research output in the KM domain in Africa. Growth analysis of research output, also known as bibliometric analysis of research results, has a global touch, where scholars' systematic evaluation considers the visibility of research trends (Ani, Ngulube & Onyancha, 2017). According to Ani et al. (2017), bibliometric analysis is intended to see how researchers are doing in their different fields of endeavor. Singh and Chander (2014) emphasize that bibliometric analysis of research growth is a developing field that cut across all areas of study, as far as human knowledge is concerned.

Alan Pritchard was the originator of this term in a research publication titled "Statistical Bibliography or Bibliometrics" (Pritchard, 1969). This implies the application of statistical and mathematical methods to bibliographical studies, irrespective of the subject areas (ibid). Potter (1981) emphasizes a study that measured publication patterns either through their communication or authorship. The essence of this investigation was to draw an analogy to collections over a period to evaluate the growth, the ranking of the journal in which the papers were published, the most prolific authors, and those they collaborated with (Satija, 2004; Singh & Chander, 2014). This could help ascertain the behavior and prediction of future growth analyses of the field of study. Research involving bibliometrics indicates that most data or research papers are harvested from the Scopus and Web of Science databases. However, according to Nwagwu (2007), these two databases have no interest in indexing local journals, especially those in developing countries.

The Scopus and Web of Science databases are now widely used worldwide, specifically in Africa; hence, the author used this platform when harvesting data or research papers published in the KM domain. It was not feasible to use other local journals because they are not yet online. Previous studies by Ocholla and Ocholla (2007) suggest that very few bibliometric studies are done in Africa, especially in the subject areas of library and information science (LIS), in which KM resides. Although Aina and Mooko (1999) state that the LIS profession needs to take advantage of this opportunity to promote bibliometric studies because LIS is a well-known program globally. Nevertheless, after Ocholla and Ocholla's (2007) studies, publications in bibliometrics did increase to some extent. Previous studies in bibliometrics in Africa, after those of Ocholla and Ocholla (2007), were done by Mabawonku (2001), Ocholla and Ocholla (2007), Nelson (2013), Tella and Aisha Olabooye (2014), Ani and Okwueze (2017), and Ani et al. (2017), to mention just a few. Despite the documented studies on bibliometrics mentioned in

this present study, there is still a paucity of knowledge in the literature regarding bibliometrics studies in Africa; hence, the author's decision to emphasize the growth analysis of research output in the KM domain in Africa.

Aims

This study aimed to establish the growth analysis of research output in the knowledge management (KM) domain in Africa, with views from the Web of Science database between 1974 and 2019.

Objectives of the study

The following objectives were considered in the accomplishment of this study.

- Identify publication counts by year between 1974 and 2019
- Classify the means of communication of KM publications
- Discover different fields where the KM domain is published and its subject areas
- Examine top journals in which articles on the KM domain were published
- Determine the most productive institutions by affiliations relating to KM
- Classify countries and their external association in the KM domain
- Identify funding bodies of the KM domain in Africa
- Analyze the growth rate of research output in KM

Methodology

Conducting research investigations in bibliometric analysis has been the norm in the developed world for some time now, but is still growing in Africa, which led the author to write this paper. This type of study helps visualize a particular field of study's patterns and trends and how it affects academia and society. Goddard and Melville (2001, 16) note that research techniques today take on different forms, depending on the nature of the study carried out, which gives researchers more opportunity to find solutions to different identified problems confronting society, organizations, and individuals. The current author started an in-depth study of how the KM field grows in academia in the African context.

The interpretive content analysis of the research method was employed in this study. The interpretive content analysis of literature makes use of the Web of Science database because it is a strong platform from where data/documents of different fields of study could be harvested. This method of harvesting data/documents from any database is known as a quantitative inquiry. It could also be considered bibliometric/statistical analysis, which measures the characteristics of information, their arrangements, and their transfer process, emphasizing the impact of their growth analysis.

The bibliometric analysis uses different approaches when analyzing the results obtained, and the level and nature of collaboration between the scientist and the field of study can be determined, especially in exploratory mental development. The rationale for using the Web of Science database to collect data for this study was that it is one of the largest databases of Science Citation Index, Social Science Citation Index, Arts and Humanities Citation Index, Conference Proceeding, and Book Citation Index. In carrying out this study, the researchers used key terms of knowledge management and other factors as mentioned below to search for documents/articles published between 1974 and 2019. The reason for this was to find the growth analyses and trends of research output in the domain of knowledge management in

Africa. The search of the articles/documents and the writing of the article took three weeks. The first author searched for articles, while the second author put all the analyzed data together to write the research paper.

Two thousand five hundred sixty-four (2,564) publications were obtained from the Web of Science database for the time frame from 1974 and 2019. The 2,564 publications harvested were analyzed through the Web of Science platform as it makes provision for analysis when data is harvested. The search terms or keywords used in harvesting publications in the KM domain cover publication by year for the relevant period means of communication, field and subject areas in the domain of KM, top journals where KM is published, most productive institutions and their affiliation, countries in Africa and their external association, and funding bodies that supported research in the KM domain in Africa. The data collected were analyzed based on bibliometric publication indicators by year, authorship, and collaboration unit. The rationale of this analysis was to establish the research impact, growth analysis, and visibility of academics' productivity in the KM domain in Africa. Besides, KM is infiltrating the educational sector and other related institutions due to its use to enhance the service delivery of teaching, learning, research, and other work activities. Therefore, the need to validate its impact becomes essential in the present-day information and knowledge economy. This transformative phase has broadened scholarly communication, sharing knowledge through research published in the KM domain.

Results

The results followed the objectives that guided this study.

Publication counts by year between 1974 and 2019

The publication count between 1974 and 2019 indicated that there were 2,564 publications in Africa in this period of 45 years. There was an increase in publications in the KM domain from 1995 to writing this article, although with variances. Tremendous growth was noticed between 2015 and 2018, and the lowest number of KM publications was in 1996. Slight changes in growth occurred between each of the years. It can be deduced that the growth rate is slow considering the range of years.

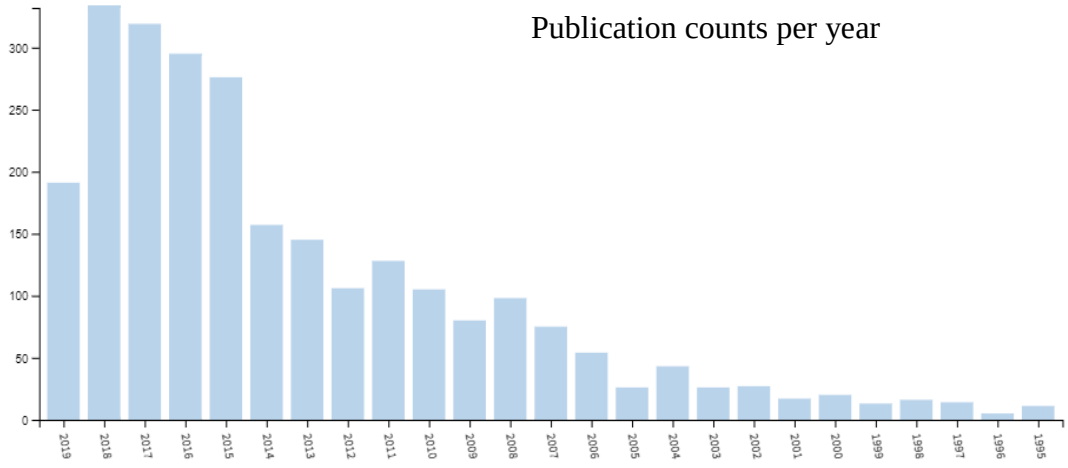

Figure 2: Trends of growth in publication counts per year

Publications by percentage count

The results are given in this section (Table 1) indicated that the most publications in the KM domain were in 2018 (332: 12.949%), followed by 2017 (317: 12.363%), 2016 (293: 11.427%), 2015 (274: 10.686 %), as the five highest publication years. The year with the least publications was 1996 (3: 0.117%). However, there was a variance in some of the years regarding publication output. The number of publications in the KM domain related to researchers' willingness and good working space to advance their thought and creativity. The authors of this paper envisaged that, in order to have an outstandingly high number of publications per year in the domain of KM, certain factors or attributes, such as availability of and accessibility to facilities and resources, are crucial in the institutions where the scholars are resident or are working.

Table 1
Publication counts per year by the percentage

Web of Science (N=2531)				Web of Science (N=2531)		
Rank	Publication year	Record count	%	Rank	Publication year	Record count %
5	2019	189	7.371			
1	2018	332	12.949			
2	2017	317	12.363			
3	2016	293	11.427			
4	2015	274	10.686			
6	2014	155	6.045			
7	2013	143	5.577			
8	2012	104	4.056			
9	2011	126	4.914			
10	2010	103	4.017			
11	2009	78	3.042			
12	2008	96	3.744			
13	2007	73	2.847			
14	2006	52	2.028			
15	2005	24	0.936			
16	2004	41	1.599			
17	2003	24	0.936			
18	2002	25	0.975			
19	2001	15	0.585			
20	2000	18	0.702			
21	1999	11	0.429			
22	1998	14	0.546			
24	1997	12	0.468			
25	1996	3	0.117			
26	1995	9	0.351			

Means of communication in KM publications

This section gives the means through which KM publications were communicated (Tabe 2). The results indicated that articles **(**2,048: 79.875%) were the highest, followed by reviews

(274: 10.686%), proceedings papers (268: 10.452%), editorial material (37: 1.443%), and book reviews (10: 0.390%). The least results were data paper, letters, meeting abstracts, and reprints (1: 0.039%). This was because many scholars/researchers now publish their work in research articles, where the most recent events are communicated.

Table 2
Means of communication in KM publications
Web of Science (N=2649)

Rank	Publication year	Record count	%
1	Article	2048	79.875
2	Review	274	10.686
3	Proceedings paper	268	10.452
4	Editorial material	37	1.443
5	Book review	10	0.390
6	Early access	6	0.234
7	Book chapter	2	0.078
8	Data paper	1	0.039
9	Letter	1	0.039
10	Meeting abstract	1	0.039
11	Reprint	1	0.039

Field in which KM articles are published and its subject areas

This section shows the field (Table 3) where the KM domain is published from 1974 to 2019. The findings indicated that the field/area most used were management (302: 11.778%), environmental sciences (250: 9.750%), ecology (211: 8.229%), information science/library science (163: 6.357%), education educational research (155: 6.045%), business (145: 5.655%), environmental studies (129: 5.031%), biodiversity conservation (128: 4.992%), public environmental occupational health (115: 4.485%), water resources (109: 4.251%) and multidisciplinary sciences (108: 4.212%). The areas least used in this context are pharmacology/pharmacy (39: 1.521%) and entomology (36: 1.404%).

Table 3
Field in which KM articles are published

Web of Science (N=2564)

Field where KM domain is published	Record count	%
Management	302	11.778
Environmental Sciences	250	9.750
Ecology	211	8.229
Information Science & Library Science	163	6.357
Education Educational Research	155	6.045
Business	145	5.655
Environmental Studies	129	5.031
Biodiversity Conservation	128	4.992
Public Environmental Occupational Health	115	4.485
Water Resources	109	4.251
Multidisciplinary Sciences	108	4.212
Marine Freshwater Biology	86	3.354
Medicine General Internal	77	3.003
Plant Sciences	77	3.003
Economics	70	2.730
Geosciences multidisciplinary	59	2.301
Computer Science/Information Systems	54	2.106
Health Care Sciences Services	51	1.989
Agronomy	49	1.911
Green Sustainable Science Technology	49	1.911
Social Sciences Interdisciplinary	43	1.677
Engineering Industrial	42	1.638
Pharmacology Pharmacy	39	1.521
Entomology	36	1.404

Top journals in which KM articles are published

In this section, the results (table 4) relating to the top journals in which KM articles are published indicated that the South African Journal of Science (45: 1.755%) was used the most, followed by PloS One (30: 1.170%), Biological Conservation (28: 1.092%), African Journal of Marine Science (24: 0.936), South African medical journal (24: 0.936%) and South African Journal of Information Management (24, 0.936%). It can be noticed that most of the journals are not only in the KM domain but also in different subject areas because KM is a multidisciplinary field.

Table 4
Top journals in which KM articles are published

Web of Science (N=2564)

Top journals	Record count	%
South African Journal of Science	45	1.755
Plos One	30	1.170
Biological Conservation	28	1.092
African Journal of Marine Science	24	0.936
South African Medical Journal	24	0.936
South African Journal of Information Management	24	0.936
South African Journal of Human Resource Management	23	0.897
South African Journal of Economic and Management Sciences	22	0.858
BMC Public Health	21	0.819
Water South Africa	21	0.819

Ecology and Society	20	0.780
South Africa Journal of Business Management	19	0.741
Tydskrif Vir Geesteswetenskappe	19	0.741
Journal of Environmental Management	16	0.624
South African Journal of Industrial Engineering	16	0.624
South African Journal of Botany	15	0.585
Sustainability	15	0.585

Most productive institution by affiliations in KM

It was established that the most productive institutions in the KM domain are in South Africa. At the top of the list is the University of Cape Town (362: 14.119%), followed by the University of Pretoria (317: 12.363%), Stellenbosch University (265: 10.335%), University of KwaZulu-Natal (245: 9.555%), University of Witwatersrand (239: 9.321%) and University of Johannesburg (170, 6.630%). The authors envisaged that these are among the best universities in Africa and specifically in South Africa (Table 5).

Table 5

Most productive institution by affiliation in KM

Web of Science (N=2564)

Productive institution by affiliation	Record count	%
University of Cape Town	362	14.119
University of Pretoria	317	12.363
Stellenbosch University	265	10.335
University of KwaZulu-Natal	245	9.555
University of Witwatersrand	239	9.321
University of Johannesburg	170	6.630
University of South Africa	164	6.396
Rhodes University	116	4.524
North West University	113	4.407
University of the Free State	91	3.549
Nelson Mandela University	88	3.432
Council for Scientific Industrial Research	82	3.198
University of the Western Cape	79	3.081
National Research Foundation	52	2.028
University of Fort Hare	46	1.794
University of Limpopo	42	1.638
Institut De Recherche Pour Le Developpement IRD	41	1.599
Tshwane University of Technology	41	1.599

Country and its external associations in the KM domain

The results in this section indicate that, of the various countries in Africa where KM articles are published, South Africa **(**2395: 93.409%) was at the top of the list. However, it also became apparent that countries in Africa have external associations with countries like the USA, England, and others. The results indicated that South Africa is doing very well in academic growth and research productivity in the KM domain compared to other African countries (Table 6).

Table 6
Country and its inter-continental association in KM domain

Web of Science (N=2564)

Country	Record count	%
South Africa	2395	93.409
USA	322	12.559
England	302	11.778
Australia	210	8.190
France	142	5.538
Netherlands	141	5.499
Canada	131	5.109
Germany	127	4.953
Kenya	99	3.861
Sweden	96	3.744
Switzerland	90	3.510
Italy	87	3.393
Belgium	78	3.042
Scotland	69	2.691
Spain	65	2.535
Nigeria	64	2.496
India	63	2.457
China	60	2.340
Brazil	59	2.301
Zimbabwe	51	1.989
New Zealand	49	1.911
Norway	45	1.755
Denmark	43	1.677
Ghana	43	1.677
Tanzania	41	1.599

Funding bodies

During the study, it was established that most of the funding bodies are South African-based organizations. This section gives these results (Table 7). The reason could be that South Africa as a country is in partnership with external countries, like the USA, England, UK, and Germany, just to mention a few, because of the influence of the whites in the country, as many of their businesses and institutions are based in South Africa. For instance, the University of Cape Town, Rhodes University, Stellenbosch University, and the University of Pretoria were highly dominated and influenced by whites; hence, research and projects are catered for, compared to other countries in Africa.

Table 7
Funding bodies for the publication in KM domain in Africa

Web of Science (N=2564)

Funding bodies	Record count	%
National Research foundation	50	1.950
Natural Environmental Research Council	24	0.936
DST NRF Centre of Excellence for Invasion Biology	23	0.897
University of Pretoria	17	0.663
Water Research Commission	15	0.585
European Union	14	0.546
National Science Foundation	12	0.468

World Health Organizations	12	0.468
Medical Research Council	10	0.390
Stellenbosch University	10	0.390
South African Medical Research Council	10	0.351
Australian Research Council	8	0.312
Council for Scientific and Industrial Research	8	0.312
Department of Science and Technology	8	0.312
Wellcome Trust	8	0.312
PFIZER	7	0.273
Rhodes University	7	0.273
University of Witwatersrand	7	0.273

Growth analysis of research output in knowledge management

The results in table 8 indicate that the growth analysis of research output as shown in the T value of 0.063757, is slow, considering about 45 years it took to have 2,564 publications. The growth analysis of research output in KM over the past 45 years shows that growth was very slow. However, there is the probability that research output in KM might increase soon. The authors envisaged that many academic journals in Africa are not yet on an online platform. Even if scholars published papers in those journals, it would not be deposited in the Scopus database. This could contribute to creating awareness for more researchers to be involved in publishing in the KM domain. Besides adequate funding, technological facilities and a conducive environment could also enhance research in KM. Overall, South Africa as a country seems to have advanced better in research practices compared to other African countries.

Table 8

Growth analysis of research output in KM domain

Variable	Coefficient	Std. Error	t-Statistic	Probability
C	5.551905	0.071237	72.11557	0.0000
T	0.063757	0.014755	5.365026	0.0001
R-squared	0.634531	Mean dependent var		6.162120
Adjusted R-squared	0.714861	S.D. dependent var		0.313786

Discussion

Knowledge management as a field of study has existed in corporate and academic organizations globally (Vu-Thi & Stenberg, 2017; Park & Kim, 2005) because of its significance in organizational success. Therefore, it was necessary to apply it to the research growth analysis of this study. Across Africa, many practitioners and academics in corporate and academic institutions (Kokol, Zlahtic, Zlahtic, Zorman & Podgorelec, 2015) are gradually incorporating KM into their regular routines. The KM application across corporate and academic institutions by practitioners and academics implies using insights and initiatives shared among colleagues to solve unprecedented difficulties and uncertainty in the organizations. The use of insights and initiatives shared among colleagues, which becomes significant in organizational performance, led the author of this paper to assess the growth analysis of research output in the KM domain and the impact that KM is likely to have on future scholars in reducing unsolved problems in academic organizations in Africa. Based on the findings from this study, it was established that KM is still new in most organizations in Africa due to the low research output identified. The publication counts within the 45-year-period in

Africa amounted to only 2,564. The reason could be that researchers might not be aware of this study field and that their interest is in another field of study, but it becomes essential to create more awareness among those already in this field. It was emphasized that there was varying research output in terms of the growth analysis across the different years of research output. This could attribute to factors such as the capability of the researchers, support system of the organizations in which they work, funds available, and nature of work operations of the scholar/researcher.

Ocholla and Ocholla (2007) study indicated that very few bibliometric studies are still being done in Africa, especially in the subject area of LIS in the KM domain. This consideration agrees with Nelson (2013), Tella and Aisha Olabooye (2014), Ani and Okwueze (2017) and Ani et al. (2017), who suggests the need to promote bibliometric studies in the LIS profession due to the unquantifiable benefits of KM in societal development. The authors of this study consider this imperative as it would act as a lens on how the KM field works in academic institutions due to its multidisciplinary nature. This study indicated that most of the research output in the stipulated 45 years was communicated through articles, compared to other forms like reviews, proceedings papers, editorial material, and book reviews. Most research outputs were in articles because the most recent outstanding findings are published in articles, and many higher education institutions prefer their academics/scholars to publish their work in the form of an article. Besides, articles are peer-reviewed more thoroughly than other means of communication. In recent times, many organizations, especially academic institutions, prefer scholars to publish their research work in article journals to establish their visibility in promoting staff members and ranking of the institutions. The KM domain's fields were identified: management, environmental sciences, ecology, information science/library science, education, educational research, business, environmental studies, biodiversity conservation, public environmental/occupational health, and water resources. This attribute to KM is in multidisciplinary sciences, which cannot be undervalued in the present-day knowledge economy. Flöck and Mekhilef (2007) attest that KM became a multidisciplinary field due to interwoven daily knowledge. The essence of the intertwined nature was because of the interpretations and broad views from different schools of thought.

Olayinka, Olawale and Idowu (2015) support this view that KM, a multidisciplinary field, is evolving and continues to grow across other sub-fields. This view was also attested to by Sağsan (2007) and Flöck and Mekhilef (2007). Ndwandwe and Onyancha (2011) support the assertion that KM as a field has expanded immensely, thus attracting many other disciplines over three decades. It was established that the top journals in which KM articles were published include South African Journal of Science, PloS One, Biological Conservation, African Journal of Marine Science, South African Medical Journal, and South African Journal of Information Management. Most importantly, it can be noticed that most of the journals are in the KM domain and different subject areas. Because of this, Davidova, Kokina and Zarina (2014) attested that KM as an idea comes from different disciplines with various names and understandings, but the most interesting thing is that it is meant to harness the organizationsal expertise of the individual.

The identified organizational knowledge and that of the individual are managed and shared among the right class of intellectuals to achieve organizational goals. Dissemination of this knowledge (tacit and explicit) among colleagues requires the individual's collaboration, trust, and oneness before it could be achieved (Rono, 2011; Hlupic, Pouloudi & Rzevski, 2002). Most

of the productive institutions in the KM domain are in South Africa, such as the University of Cape Town, the University of Pretoria, Stellenbosch University, the University of KwaZulu-Natal, the University of Witwatersrand, and the University of Johannesburg. The authors envisage that these were among the best universities in Africa and specifically those in South Africa. This could be attributed to adequate funding and provision of infrastructural facilities, thus leading to deepened research practices in the various institutions.

It was established in this study that the USA and England collaborated more with South Africa in publishing KM research output over the 45-year-period of this study. This indicates that South Africa is doing the best of all African countries in terms of academic growth and research productivity in the domain of KM. This transformation in the academic environment supported funding that comes from external partnership bodies like the USA, England, UK, and Germany. The author affirms this based on his experiences and expositions, having studied, stayed, and worked in South Africa for longer than ten years. Interestingly, the KM field of study has influenced many researchers and institutions across the globe, hence the need to continually deepen more research in the application and use of KM for the organizationsal productivity of employees.

Conclusions and recommendations

The present study indicated that KM has become crucial in every organization. It is required to strengthen research growth in the African context, especially where information and knowledge are vital resources that enable individuals to execute their jobs according to organizational goals and objectives. More research on KM has to be done to bridge the knowledge gap challenges in the African continent. The filling of the knowledge gap is to assist researchers (experienced and emerging), policy-makers, and educators in higher institutions to ensure quality service delivery. Executing any task in every workplace requires adequate knowledge of the individual and teamwork before the organization can be strengthened. KM research has become an evolving phenomenon that has infiltrated every field of study. As such, knowledge (tacit and explicit) utilized in most organizations cannot be undermined.

The study established that every industry would continue to require knowledge (tacit and explicit) to promote diagnosis, management operation/functions in offices, and many other opportunities across the globe. Therefore, the credibility of the publication of more research papers as reported in this study over the 45 years necessitates continuous growth analysis of research output in the KM domain. It was established that a variance of published papers was communicated in different sub-fields and areas in KM. The study recommends financial and institutional support for researchers, irrespective of external bodies of the National Research Foundation of South Africa and external sponsors, for exponential growth in the KM domain in Africa. The publication of articles in journals is encouraged, as most institutions must enhance their university ranking and institutional profile visibility, irrespective of their geographical location.

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