# Collaboration Patterns in Knowledge Management Research in Eastern and Southern Africa Region, 1991 - 2016

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**Abstract**

*Using a bibliometrics analysis, this chapter examines the collaboration patterns in knowledge management research in Eastern and Southern Africa (E&SA) region as indexed in Scopus database for the period 1991-2016. The study leading to this chapter used a quantitative approach as the study required numerical data to achieve its objectives. Data was collected from the SCOPUS database using a variety of keywords. The VosViewer software and Microsoft Excel were used to analyse, visualise and present the data. There were a total of 3,681 papers published on KM in Eastern and Southern Africa between 1991 and 2016. The number of publications is not consistent and varies from year to year. Seven (7) was the minimum number of publications per year while 518 was the highest. The number of publications stagnated between 1991 and 1992, with a slow growth rate being observed from 1993 to 2000. There was a significant steady increase of the number of publications from the 2001 to 2016. Two-author publications were dominant (33.93%), followed by three-author publications (23.03%) and then single-author publications (9.04%). Most of the publications emanated from academic institutions. The study has revealed collaborative efforts among authors and countries, both at the local and international level. The authors recommend that researchers should increase collaborations in the field of KM in a bid to advance KM research productivity and impact in Eastern and Southern Africa region. Both internal and external collaborations should be encouraged in a bid to increase visibility and research impact. In order to improve the impact of these publications, for instance through citations, it is highly recommended that authors should publish their findings in high quality open access journals.*

**Keywords:** *Bibliometric Analysis, Content Analysis, Knowledge Management, Eastern and Southern Africa, Scopus.*

## 1 Introduction

Knowledge management (KM) is a subject that has been embraced by many institutions all over the world (Vu-Thi & Stenberg, 2017; Park & Kim, 2005). The concept of KM has been part of the economy for decades. It is not surprising, therefore, that KM practices are deeply entrenched in the economic spheres. This can be attributed to the fact that corporate knowledge and its management has intensified over the years (Kokol, Zlahtic, Zlahtic, Zorman & Podgorelec, 2015). This concept has attracted the interest of the academics, economics and practitioners alike (Kokol, Zlahtic, Zlahtic, Zorman & Podgorelec, 2015). As a result, there has been an increasing trend of embracing knowledge management. Many organisations have since considered this concept as a tool for saving organisational costs and propelling growth (Chaudhary, 2005). As such, knowledge management has been recognised as a critical organisational management tool (Rono, 2011). The adoption of knowledge management as a management strategy has promoted a knowledge-driven organisational culture thereby enabling organisations to gain competitive advantage. The subject of KM has grown massively and thus attracted significant attention from a number of disciplines over the years (Ndwandwe & Onyancha, 2011).

The growth of KM as a discipline spans many years and can be traced way back to the 1990s during the scientific and strategic management demarcations (Park & Kim, 2005) when harnessing an organisation's knowledge, sharing expertise and disseminating knowledge at the right time to the right people was recognised as means to achieving competitive advantage (Rono, 2011; Hlupic, Pouloudi, & Rzevski, 2002). Davidova, Kokina and Zarina (2014) stress that KM is not a radically new concept since many of its principles originate from a variety of disciplines with different names. Consequently, similar ideologies have emerged that have contributed to KM's growth. However, knowledge management, as a research theme and an organisational strategy, has received varying consensus on issues such as the meaning of KM (Chua, 2009). Nonetheless, being a new research discipline, KM has boasted a great deal of scientometrics research in a bid to understand its identity better (Kokol, Zlahtic, Zlahtic, Zorman & Podgorelec, 2015).

## 2 Contextual Setting

This study focused on the Eastern and Southern African (E&SA) region in the African continent. This is a vast, geographically diverse region that stretches in the north from the Red Sea to the Cape of Good Hope in the south (UNICEF, 2017). This region comprises of 22 countries. According to the International Food Policy Research Institute (2017), the last 15 years has witnessed a massive economic growth particularly in the land and agricultural sector in Eastern and Southern Africa region. In spite of this rapid economic growth over that period, the economic outlook for E&SA, just like for Africa as a whole, remains optimistic in the face of challenging global macro-economic conditions.

In terms of research and development, the World Bank (2016) approved E&SA Higher Education Centres of Excellence Project for the purposes of supporting the region to promote specialisation among participating universities in areas that address regional challenges by strengthening their capacities to offer quality training as well as applied research. As such, there is likely to be a steady growth of research in most of the E&SA countries.

## 3 Review of Literature

KM is growing steadily and is rapidly gaining a widespread attention of the researchers, practitioners and policy makers (Harman & Koohang, 2005; Nonaka & Peltokorpi, 2006; Serenko, 2013). Serenko and Bontis (2004) emphasise that the popularity of KM has increased dramatically over the last decade amongst academics and practitioners. Even though KM is a young interdisciplinary area, the field has notably received tremendous attention and is being used to support a wide-range of applications (Qiu & Lv, 2014).

Qiu and Lv (2014) noted that research on KM have been published in a large number of journals with authors affiliated with institutions world-wide. In addition, these research studies have established a number of bibliometric projects which have been widely applied in in different disciplines. For instance, Kumar and Mohindra (2015) conducted a bibliometric analysis of KM research from 2000 to 2014 to explore the research trends in terms of growth of literature, geographical distribution, most productive journals, top authors, and highly cited papers among others. They observed that there was an average of approximately 342 articles published every year. The highest number (583) was published in 2012 while the lowest number (128) was published in 2000.

Based on the meta-review of KM and intellectual capital (IC) literature by Serenko and Bontis (2004), which focused on research productivity and citation analysis of individuals, institutions and countries, 64 most productive KM and IC researchers were identified based on their number of publications in the three journals *(Journal of Intellectual Capital, Journal of Knowledge Management and Process Management Journal)* (Dattero, 2006). Serenko and Bontis (2004) found out in their review of research publications that almost half of the research papers were written by a single researcher. On the contrary, Bapna and Marsden (2002) had done a similar study of comparing the research productivity of quantitative and technical departments in schools of business which found out that a vast majority of articles are co-authored (74.5%). Meaning therefore, that only 24.5% of the articles in their study were single-authored.

In regards to Serenko and Bontis' (2004), studies of the 64 most productive KM and IC researchers, Dattero (2006) analysed collaboration patterns among these top 64 KM and IC researchers. The results of the study revealed lack of collaboration in the KM/IC literature. It was also revealed that almost half of all the publications were sole authored. Dattero (2006) and Serenko and Bontis (2004) noted that this was due to the fact that in universities and organisations there is a single person who leads the KM/IC research efforts. In addition, Serenko and Bontis (2004) pointed out that the sharp contrast between their findings and others (Bapna & Marsden's, 2002) was due to a demonstration that KM/IC is a relatively young field in which a single person may provide a substantial contribution.

Similarly, Jena, Swain and Sahoo (2012) in their study on bibliometric analysis of the Journal Annals of Library and Information Studies (ALIS), 2002-2010 revealed that there was a high domination of multi-authored articles i.e. 67.7% over the single-authored articles i.e. 32.4%. Barik and Jena (2013) revealed in their study "bibliometric analysis of journal of knowledge management practise, 2008-2012" that majority of the articles have been multi-authored i.e. 95 of the total articles, followed by the single authored article i.e. 85 of the total articles published. Also, Thanuskodi (2011) in his study on bibliometric analysis of the journal Library Herald, 2006-2010 revealed that maximum number of articles was contributed by single author i.e. 72 (52.17%). The minimum number of articles was contributed by multi-authors, i.e. 66 (47.83%) of the total articles.

Evidently, therefore, collaboration in research is on the rise and has been embraced not only in KM research but also in many other disciplines (e.g. Wadhwana and Chikate 2016; Hazarika, Goswami and Das 2003; Das 2013; Biswas, Roy and Sen 2017)). This pattern could be attributed to the belief that collaboration in research leads to higher research production and impact than research that is conducted singly (Onyancha & Ocholla 2007; Franceschet & Costantini 2010; Hsu & Huang 2011).

## 4 Methodology

The research design applied by the present study encompassed bibliometrics and content analysis. The study targeted all articles on knowledge management published between 1991 and 2016 indexed in the Scopus database. Data was collected from the Scopus database because it is the largest abstract and citation database of peer-reviewed literature which includes scientific journals, books and conference proceedings. The period 1991 to 2016 was considered because this is the period under which scientific research output in Eastern and Southern Africa region recorded rapid growth (Park & Kim, 2005; World Bank, 2016; Rono, 2011; Hlupic, Pouloudi & Rzevski, 2002).

A search was conducted within titles, abstracts and keywords fields. Search #1 involved a search for terms in Table 1 using the OR Boolean operator. Similarly Search #2 followed the strategy in Search #1 but involved keywords in Table 2. The two searches were then combined using the AND Boolean operator, i.e. Search #3 = Search #1 AND Search #2.

Table 1: List of names of countries in E&SA regions used to search and retrieve data from Scopus database

| | | | | |
|---|---|---|---|---|
| Angola | Botswana | Djibouti | Eritrea | Ethiopia |
| Kenya | Lesotho | Madagascar | Malawi | Mauritius |
| Mozambique | Namibia | Seychelles | Somalia | South Africa |
| South Sudan | Sudan | Swaziland | Zimbabwe | Tanzania |
| Uganda | Zambia | | | |

*Source: Research Data*

Table 2: List of keywords used to search and retrieve data from the Scopus database

| | | |
|---|---|---|
| Knowledge Management | Information Management | Knowledge Sharing |
| Artificial Intelligence | Knowledge Economy | Knowledge Transfer |
| Organisational Learning | Intellectual Capital | Knowledge |
| Knowledge based Organisation | Knowledge Culture | Knowledge Audit |
| Knowledge Strategy | Knowledge Worker | Knowledge Retrieval |
| Knowledge Capture | Knowledge Creation | Knowledge Elicitation |
| Knowledge Acquisition | Knowledge Engineering | Tacit Knowledge |
| Explicit Knowledge | Knowledge Management Model | Intellectual Capital/asset |
| Organization culture | Computer science | Management science |
| Library science | Information science | Information retrieval |
| ICT/Internet | Learning organization | Project management |
| Information need | Business process | Software development |
| Knowledge structure | Knowledge flow | Contextual knowledge |
| Knowledge organization | Human Capital | Social knowledge |
| Organizational memory (OM) | Knowledge Infrastructure | Knowledge work |
| Knowledge conversion | Organizational performance | Software engineering |
| Knowledge Integration | Document management | Social network |
| Customer knowledge | Knowledge visualisation | Knowledge search |
| Knowledge modeling | Knowledge engineering | Knowledge discovery |
| Socialization | Knowledge mapping | Competitive Intelligence |
| Knowledge Management Process | Intangible asset | knowledge base |
| Knowledge dissemination | Community of Practice (CoP) | Content management |
| Knowledge life cycle | Knowledge asset | Data mining |
| Knowledge representation | Knowledge network | Knowledge managers |
| Knowledge codification | Expert system | Implicit knowledge |
| Risk management | Innovation | Knowledge flow |
| Knowledge Management Systems | Knowledge methods | Knowledge repository |
| Management | Knowledge society | Knowledge exchange |
| Knowledge market | Knowledge broker | Knowledge education |
| Knowledge based system | Learning organisation | Story telling |
| After action review | Lessons learnt | Intellectual property |
| Information systems /management systems | Knowledge sharing platform | Knowledge soliciting |
| Knowledge retention | Knowledge codification | |

*Source: Research Data*

The search results were saved in csv format which is compatible with VosViewer software that was used to analyse the data. The VosViewer is a software tool for constructing and visualizing bibliometric networks for such items as journals, researchers, or individual publications. The networks may be based on citations, bibliographic coupling, co-citation, or co-authorship relations. This study applied the co-authorship option to analyse the data in order to generate collaboration networks for authors and countries. The frequencies of authored papers per author and country were generated using VosViewer software while the number of publications per year was obtained based on an analysis of the data using Microsoft Excel.

## 5 Results and Discussions

The results of the study are presented in this section using the following subheadings: Trend of KM research publication in Eastern and Southern Africa; and research collaborations in Eastern and Southern Africa region.

### 5.1 Trend of KM research in Eastern and Southern Africa, 1991-2016

Figure 1 shows the trend of KM publications per year for the period under analysis. A total of 3,681 publications were published during the period under study. The number of publications per year varied from 7 to 518. It was observed that the number of publications stagnated between the year 1991 and 1992. A very slow growth rate was observed from

1993 to 2000. However, there was a significant steady increase in the number of publications from 2001 to 2014 with a sudden significant surge in the year 2015. Notwithstanding the variance in the number of publications, the results reveal a positive trend in the entire period under study.

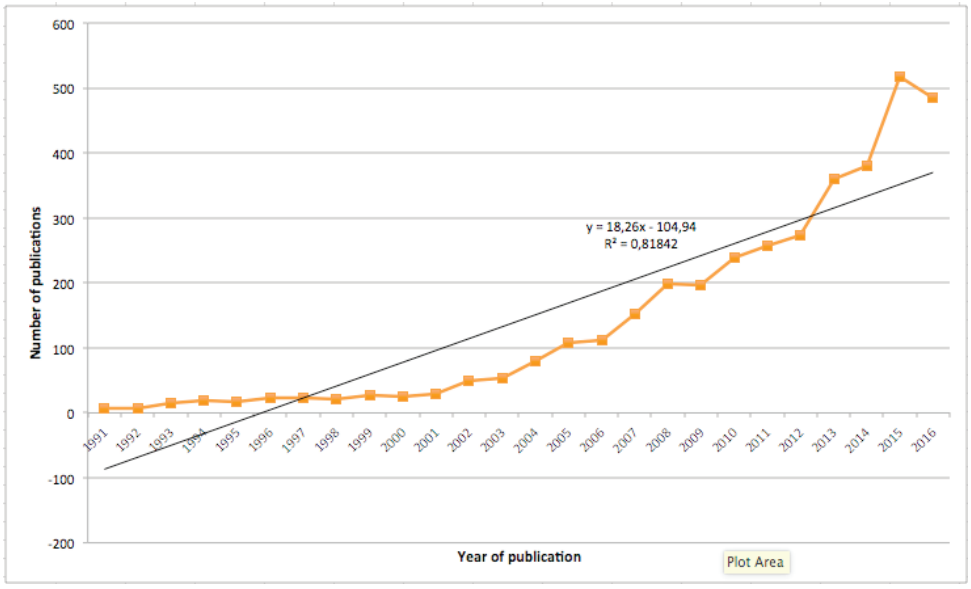


**Figure 1: Trend of publication of KM research in Eastern and Southern Africa, 1991-2016**

*Source: Research Data*

This finding is important in the field of knowledge management because it reveals that knowledge management as a discipline is advancing and has attracted a lot of attention hence the increased number of publications. Similarly, the number of scholars interested in the area is also increasing with the advancement of the discipline.

### 5.2 Collaboration in KM research in Eastern and Southern Africa, 1991-2016

This subsection presents results on author patterns and collaboration in the E&SA region.

#### 5.2.1 Author collaborations

Table 2 lists the findings by the identified authors. It indicates that the number of authors involved in writing KM research ranged between 2 and 9 based on the list of top 25 authors by contributions. The results indicate that the highest number of publications (1249; 33.93%) are by two authors. This is followed by three authors (848; 23.03%); one author contributed (757; 20.56%), while four authors contributed 333 (9.04%) publications. The number of joint contributions by five or more authors was found to be 494 (13.42%). Figure 1 visually represents the co-authorship patterns.

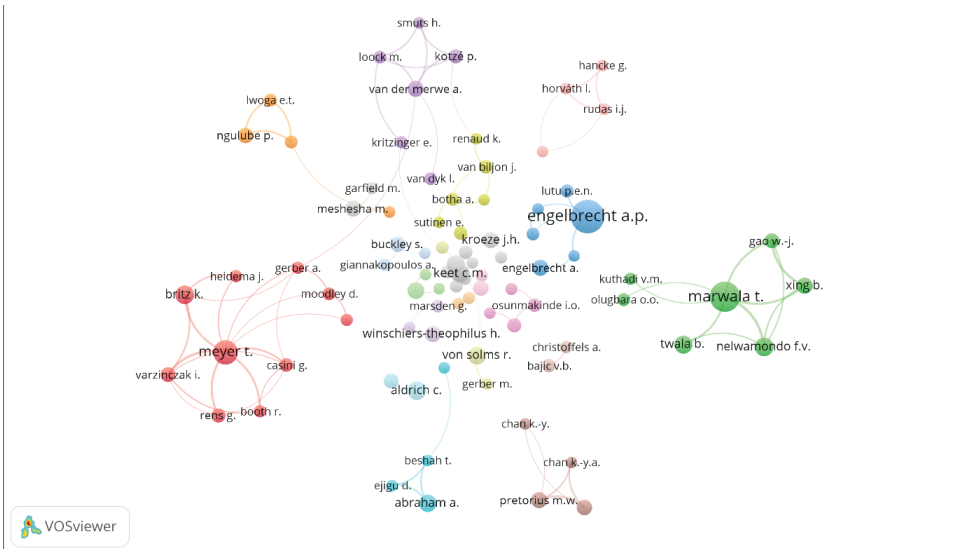


**Figure 2: Author collaboration network in KM research in Eastern and Southern Africa, 1991-2016 (Author – threshold 6 papers each)**

*Source: Research Data*

Table 2: Author collaboration in KM research in Eastern and Southern Africa, 1991-2016

| No | Author | Cluster | No of collaborating authors | No of collaboration links | No of documents | Country of affiliation |
|---|---|---|---|---|---|---|
| 1 | Meyer T. | 1 | 9 | 45 | 36 | South Africa |
| 2 | Marwala T. | 2 | 6 | 42 | 59 | South Africa |
| 3 | Nelwamondo F.V. | 2 | 4 | 26 | 19 | South Africa; USA |
| 4 | Xing B. | 2 | 3 | 25 | 14 | South Africa |
| 5 | Gao W.-J. | 2 | 3 | 23 | 11 | South Africa; China |
| 6 | Varzinczak I. | 1 | 5 | 22 | 11 | Brazil; France |
| 7 | Van Der Merwe A. | 5 | 5 | 17 | 13 | South Africa |
| 8 | Britz K. | 1 | 4 | 17 | 19 | South Africa |
| 9 | Loock M. | 5 | 4 | 16 | 8 | South Africa |
| 10 | Oerlemans L.A.G. | 8 | 3 | 16 | 12 | South Africa; Netherlands |
| 11 | Pretorius M.W. | 8 | 3 | 15 | 13 | South Africa |
| 12 | Smuts H. | 5 | 3 | 14 | 6 | South Africa |
| 13 | Kotze P. | 5 | 4 | 13 | 10 | South Africa |
| 14 | Booth R. | 1 | 3 | 13 | 7 | Thailand; Luxembourg; South Africa |
| 15 | Stilwell C. | 7 | 3 | 13 | 8 | South Africa |
| 16 | Casini G. | 1 | 5 | 12 | 9 | Luxembourg; South Africa |
| 17 | HorivaTh L. | 10 | 3 | 12 | 6 | Hungary |
| 18 | Rudas I.J. | 10 | 3 | 12 | 6 | Hungary |
| 19 | Lwoga E.T. | 7 | 2 | 12 | 8 | Tanzania |
| 20 | Ngulube P. | 7 | 2 | 12 | 12 | South Africa |
| 21 | Engelbrecht A.P. | 3 | 4 | 11 | 75 | South Africa |
| 22 | Beshah T. | 6 | 3 | 11 | 6 | Ethiopia |
| 23 | Chan K.-Y.A. | 8 | 2 | 11 | 6 | South Africa |
| 24 | Rens G. | 1 | 3 | 10 | 10 | South Africa |
| 25 | Abraham A. | 6 | 2 | 10 | 16 | Sudan; USA |

*Source: Research Data*

Similarly, the results indicate that majority (i.e. 19 authors) of the authors originate from South Africa or are affiliated with the institutions from South Africa. This may be attributed to the increased KM research output. Thus KM research is most productive in countries of affiliation by authors.

Table 3 further provides patterns of authorship of KM papers. The Table presents and compares single and multi-authored papers. The highest number of publications (1,249; 33.93%) is by two authors. This is followed by three authors (848; 23.03%), one author (757; 20.56%) while four authors contributed 333(9.04%) publications. The number of joint contributions by five or more authors was (494(13.42%). Thus, the results reveal that contributions by small number of authors comprising two, three or four authors, including single authors dominated the field of KM.

Table 3: Single vs multi-authorship patterns of KM papers, 1991-2016

| A/Year | One | Two | Three | Four | Five | Six | Seven | Eight | Nine | Ten | >Ten | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1991 | 2 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **7** |
| 1992 | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **7** |
| 1993 | 3 | 4 | 7 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | **16** |
| 1994 | 7 | 8 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **20** |
| 1995 | 6 | 7 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **17** |
| 1996 | 4 | 10 | 6 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | **24** |
| 1997 | 5 | 8 | 6 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **23** |
| 1998 | 7 | 9 | 4 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **21** |
| 1999 | 14 | 10 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **28** |
| 2000 | 12 | 6 | 5 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | **26** |
| 2001 | 8 | 10 | 7 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | **30** |
| 2002 | 18 | 17 | 5 | 1 | 4 | 3 | 1 | 0 | 0 | 0 | 1 | **50** |
| 2003 | 13 | 19 | 15 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **54** |
| 2004 | 21 | 33 | 10 | 7 | 4 | 2 | 1 | 1 | 0 | 0 | 1 | **80** |
| 2005 | 31 | 34 | 18 | 14 | 1 | 4 | 1 | 3 | 0 | 0 | 2 | **108** |
| 2006 | 27 | 38 | 30 | 6 | 6 | 0 | 1 | 2 | 1 | 0 | 1 | **112** |
| 2007 | 29 | 69 | 35 | 12 | 5 | 1 | 0 | 0 | 0 | 0 | 1 | **152** |
| 2008 | 45 | 69 | 48 | 16 | 6 | 4 | 1 | 1 | 2 | 0 | 6 | **198** |
| 2009 | 38 | 67 | 43 | 12 | 15 | 5 | 0 | 4 | 0 | 1 | 11 | **196** |
| 2010 | 53 | 87 | 50 | 24 | 14 | 3 | 1 | 2 | 3 | 0 | 1 | **238** |

| A/Year | One | Two | Three | Four | Five | Six | Seven | Eight | Nine | Ten | >Ten | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2011 | 56 | 80 | 66 | 17 | 16 | 7 | 4 | 3 | 3 | 0 | 6 | **258** |
| 2012 | 60 | 97 | 60 | 27 | 16 | 2 | 1 | 2 | 3 | 1 | 4 | **273** |
| 2013 | 71 | 121 | 84 | 36 | 16 | 7 | 9 | 3 | 2 | 1 | 10 | **360** |
| 2014 | 73 | 125 | 83 | 39 | 13 | 16 | 7 | 7 | 4 | 2 | 11 | **380** |
| 2015 | 81 | 172 | 132 | 55 | 31 | 13 | 7 | 8 | 6 | 2 | 11 | **518** |
| 2016 | 73 | 140 | 121 | 51 | 22 | 24 | 8 | 7 | 8 | 7 | 24 | **485** |
| **Total** | **757** | **1249** | **848** | **333** | **176** | **95** | **43** | **43** | **33** | **14** | **90** | **3681** |
| **Per cent** | **20.56** | **33.93** | **23.03** | **9.04** | **4.78** | **2.58** | **1.16** | **1.16** | **0.89** | **0.38** | **2.44** | **100** |

*Source: Research Data*

### 5.2.2 Country collaborations

Table 4 lists the findings by the identified countries. It indicates that South Africa led in KM research collaboration i.e. collaborated with 105 countries, 1,397 times in a total of 2,723 publications. This is followed by the United States, which collaborated with 97 countries, 823 times in 315 publications. Kenya came in fifth position after Germany with 77 as the number of collaborating countries, collaborative strength of 362, and a total of 229 publications. Figure 3 visually represents the collaboration patterns.

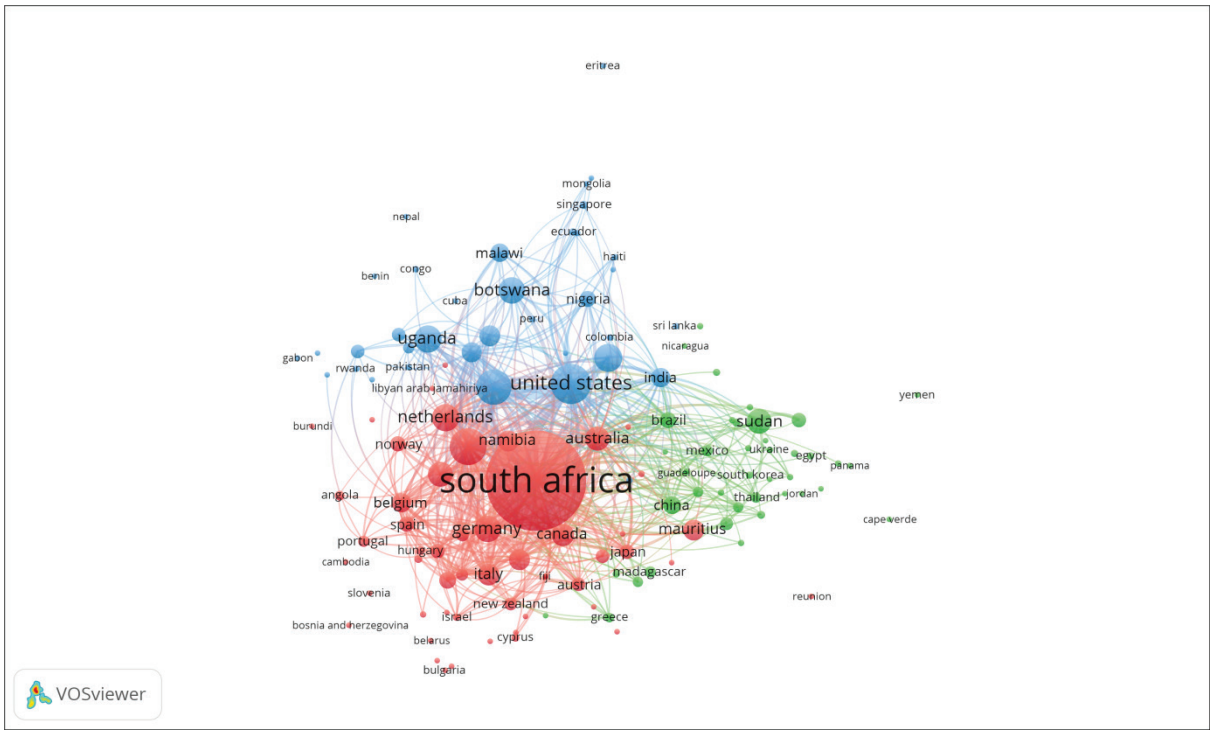


**Figure 3: Country collaboration network in KM research in Eastern and Southern Africa, 1991-2016**

*Source: Research Data*

Table 4: Top 25 countries with highest number of country collaborations in KM research in Eastern and Southern, 1991-2016

| No. | Label | Cluster | No. of collaborating countries | No. of collaboration links | No. of documents |
|---|---|---|---|---|---|
| 1 | South Africa | 1 | 105 | 1397 | 2723 |
| 2 | United States | 3 | 97 | 823 | 315 |
| 3 | United Kingdom | 1 | 89 | 731 | 257 |
| 4 | Germany | 1 | 84 | 397 | 120 |
| 5 | Kenya | 3 | 77 | 362 | 229 |
| 6 | Australia | 1 | 81 | 357 | 94 |
| 7 | Netherlands | 1 | 63 | 347 | 121 |
| 8 | Italy | 1 | 67 | 304 | 70 |
| 9 | Canada | 1 | 65 | 303 | 81 |
| 10 | France | 1 | 67 | 278 | 69 |
| 11 | Belgium | 1 | 55 | 236 | 54 |
| 12 | India | 3 | 75 | 223 | 56 |
| 13 | Brazil | 2 | 73 | 210 | 35 |

| No. | Label | Cluster | No. of collaborating countries | No. of collaboration links | No. of documents |
|---|---|---|---|---|---|
| 14 | Sweden | 3 | 57 | 208 | 61 |
| 15 | Switzerland | 1 | 54 | 192 | 41 |
| 16 | Spain | 1 | 53 | 178 | 34 |
| 17 | Tanzania | 1 | 51 | 165 | 100 |
| 18 | China | 2 | 60 | 163 | 45 |
| 19 | Japan | 1 | 54 | 163 | 29 |
| 20 | Ethiopia | 3 | 40 | 141 | 136 |
| 21 | Uganda | 3 | 41 | 138 | 121 |
| 22 | Nigeria | 3 | 59 | 132 | 36 |
| 23 | Botswana | 3 | 33 | 120 | 120 |
| 24 | Austria | 1 | 49 | 119 | 26 |
| 25 | Sudan | 2 | 43 | 118 | 101 |

*Source: Research Data*

## 6 Summary, Discussions and Conclusions of the Major Findings

The study yielded a total of 3,681 KM publications that were published between 1991 and 2016. It was observed that the number of publications is not consistent and varies from year to year. The minimum number of publications per year was seven (7) while 518 was the highest. The number of publications stagnated between 1991 and 1992, with a slow growth rate being observed from 1993 to 2000. There was a significant steady increase of the number of publications from 2001 to 2016. There was a sudden significant surge in the year 2015 accounting for 14.07 percent of the entire sample with a small reduction of the number of publication comprising 0.89 percent in 2016. This may be attributed to increased attention that KM has drawn among researchers. Scholars are increasingly researching this relatively new discipline thereby demonstrating its relevance.

In terms of collaboration, Meyer T. was the most collaborative author with 45 links. Although the author collaborated with 6 authors, she/he co-authored more papers with some of these authors than others, hence the higher collaborative links than the number of authors with whom she/he collaborated. Two-authored publications are dominant (1,249; 33.93%), followed by three-authored publications (848; 23.03%) and then single-authored publications (333; 9.04%). These findings concur with Bapna and Marsden (2002)'s observation that a vast majority of articles are co-authored. Based on their findings, Bapna and Marsden (2002) conclude that majority of authors in KM research collaborate. However, these findings contracted the findings of a study by Serenko and Bontis (2004) which indicated, in their review of research publications, that almost half of the research papers were written by a single researcher.

South Africa led in KM research collaborations. This may be attributed to the growing number of publications affiliated to the country. The country also leads other countries in Africa in terms of research performance as attested to in different ranking systems such as the Times Higher Education World University Ranking (THE), Webometrics Ranking of World Universities (WRWU) and Shanghai's Academic Ranking of World Universities (ARWU). An examination of the aforementioned ranking systems reveals that South African institutions take the top ten positions in sub-Saharan Africa, a situation that may be attributed to the intensity of research collaboration in the country as noted in Sooryamoorthy (2009). In his research on collaboration and publication in South Africa, Sooryamoorthy (2009: 419) observed that "collaboration research in South Africa has been growing steadily and the scientists are highly oriented towards collaborative rather than individualistic research". This trend seems to permeate all disciplines including KM.

We have further noted that KM researchers in E&SA collaborate both with both their local/regional and international counterparts. The country of researcher-affiliation demonstrates a wide network of authors conducting KM research in the region. Previous studies such as Sooryamoorthy (2009), Onyancha and Ocholla (2007), and Pouris and Ho (2014) have reported that African authors largely collaborate with their international counterparts, especially in biomedical research, biology, earth sciences and space sciences. South Africa seems to record more internal than external collaborations, particularly during and immediately after the apartheid era (Narvaez-Berthelemot, Russell, Arvanitis, Waast & Gaillard 2002).

## 7 Recommendations

The study has revealed collaborative efforts among authors, both at the local, regional and international level. We recommend that researchers should increase collaborations in the field of KM in a bid to advance KM research in Eastern and Southern Africa. Both internal and external collaborations should still be encouraged in a bid to increase visibility and research impact.

In order to increase the production of these publications, there is need to regularly organise local and international conferences in E&SA during which researchers can have an opportunity to present their findings, exchange ideas and

identify other researchers from the region with whom they can collaborate.

In addition, it is highly recommended that authors, researchers or publishers, should publish their findings in recognised channels so as to improve the impact of these publications. They should particularly consider using quality Open Access (OA) journals.

We recommend further research to assess, among others, the type of channels used to publish KM research and the subject content of KM research as well as identify the major producers of KM research.

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