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Towards a Uniform Terminology for Indigenous Knowledge Concepts: Informetrics Perspectives

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Abstract

The knowledge of the traditional and indigenous communities (herein referred to as indigenous knowledge) lacks a uniform label or definition as there are several labels that have been used to describe the knowledge. The purpose of this study is to explore and identify the most influential label of the indigenous knowledge so as to identify the most influential label. To achieve the aforementioned objective, the study sought to: (a) find out the most cited label; and (b) determine the citation impact of various labels through the determination of the h-index, average citations per paper and the number of authors per paper. The study focused on citations analysis and used Google Scholar as the source of relevant data. The Publish or Perish software was used to extract relevant data from Google Scholar. Results indicate that local knowledge (LK) is the most cited label, followed by indigenous knowledge (IK), traditional knowledge (TK), and traditional ecological knowledge (TEK). In terms of the citation impact, measured by average citations per paper, TEK had the highest impact, followed by rural people's knowledge (RPK) and local knowledge (LK). These mixed patterns of citedness of the literature published on indigenous knowledge implies that there is no outright winner among the labels although we can safely say that there are four core labels with which indigenous knowledge can be known. Further study, using a content analysis technique, is recommended to explore patterns that may validate or invalidate the findings of the current study, thereby leading to a more concrete conclusion on a uniform label that can be used to describe indigenous knowledge. In addition, we recommend further research to investigate the usage of the various labels by geographic regions, disciplines and other fields of knowledge to find out if differences do exist.

Keywords: Indigenous Knowledge, Local Knowledge, Traditional Knowledge, Citation Analysis, Bibliometrics, Informetrics

Introduction

According to Sandstrom (2009), the essence of research and the main reason why researchers conduct research is to produce 'new knowledge'. Once the research has been conducted, the empirical results are often published as journal articles, papers in peer-reviewed proceedings, books or technical reports, just to name a few. As Sandstrom (2009) observes, "scientific and technical literature is the

constituent manifestation of that knowledge and it can be considered an obligation for the researcher to publish their results, especially if the public sector funding is involved." The author further argues that because the published research undergoes extensive peer-review process (quality control) prior to its publication, the research can be used. Otherwise, any researcher who "choose not to use these resources may seem to be very aside of the international research community" (Sandstrom, 2009). It is assumed that researchers, who find a particular published research important and relevant to their research, would acknowledge those resources by way of citing them.

There is an assumption that researchers cite previously published papers because they find them to be relevant and important for their research. Underscoring the relationship between *importance* of any given research and its *citedness*, Sandstrom (2009) opines thus: "because authors cite earlier work in order to substantiate particular points in their own work, the citation of a scientific paper is an indication of the importance the community attaches to the research". But the same author warns that the use of bibliometric indicators [in research evaluations] requires far greater watchfulness when applied to a research group or an individual than for a general description of science at the country or university level. Citing Martin, Aragon (2013) states thus "the impact of a publication describes its *actual* influence on surrounding research activities at a given time. While this will depend partly on its importance, it may also be affected by such factors as the location of the author, and the prestige, language, and availability, of the publishing journal."

Diodato (1994) defines *importance* as the tendency of a document or author to be cited by other documents or authors. He further explains that the measurement of importance through the counting of citations is based on the assumption that more important documents or authors get cited than do the less important ones. An importance index, according to Diodato (1994), measures the relative importance of one journal among a group of journals in a given subject area. He notes that the basic evidence of importance is how often articles in the journal cite and are cited. Importance and influence are two terms that are sometimes used interchangeably in bibliometrics. Diodato (1994) sees influence as the "tendency of an author, document, or journal to be cited by another author, document, or journal" whereby the "cited item is said to have influence over the citing item", which implies that the citing item has "receptivity for the cited item". This view is held by MacRoberts and MacRobers (2010: 2) who observe that, "when it is evident in the text that an author makes use of another's work, either directly or through secondary sources, he or she has been influenced by that work." Diodato (1994) likens influence to impact, impact factor, and importance.

Diversity of Indigenous Knowledge

Indigenous knowledge has been cited as one of the most diverse of knowledge and/or knowledge systems (see Kok, 2005; Dekens, 2007). Dekens (2007) has provided a synopsis of the different *types of local knowledge* (herein interchangeably used with *indigenous knowledge*) in order to explain the diversity of IK. The types of local knowledge, according to Dekens (2007), include *local technical knowledge, environmental and agricultural knowledge,* and *socialcultural and historical knowledge*. The diversity of IK has also been expressed in terms of the numerous labels used to describe the concept or subject domain, as well as the various sometimes-different definitions (see Ngulube and Onyancha, 2011; Njiraine, Ocholla and Le Roux, 2009). *Indigenous knowledge* has evolved over time to an extent that it is now known by several labels (Ngulube and Onyancha, 2011; Njiraine, Ocholla and Le Roux, 2009). For instance, Ngulube and Onyancha (2011) identified 17 labels that are used to refer to *indigenous knowledge*. The use of different labels to refer to a concept has divided scholars. It has also been observed that despite *indigenous knowledge* coming into play in the early 1980s, most indexing and retrieval tools still do not have *indigenous knowledge* or its related terms as indexing terms in their thesauri. Attempts, however, have been made to classify indigenous knowledge and its related concepts (see Longacre, 2003; Mearns, 2006; World Bank Group, 2000). Nevertheless, the classification systems that have attempted to classify IK have not been able to bring divergent voices on IK together. The classification systems are also limited to specific and narrow applications. It is therefore difficult for information

managers and information users to effectively organise and/or retrieve information related to *indigenous knowledge*. The limitations of these classification systems can be attributed to several factors. First, Dekens (2007) has observed that the various classifications of local knowledge are only a partial indication of the complexities and diversity of different modes of knowing by communities, households, and individuals. Not only is IK diverse in the labels used to describe and define the concept, but also in its application. Second, scholars such as Agrawal (2002), Batiste (2005) and Kaya and Seleti (2006) argue that the constraints of creating knowledge organisation systems and databases capable of covering indigenous knowledge lie in their Western knowledge systems foundations, thanks to educational systems adopted by indigenous communities to the detriment of their own. The main concern expressed by the aforementioned scholars is that the Western rooted knowledge organisation systems do not embrace the contextual, dynamic, holistic and harmonious nature of indigenous knowledge such that often the used terms or information used to describe it compromises it to the extent of the loss of its uniqueness among others.

Research Problem and Purpose of the Study

The diversity of IK described above sets the tone for an investigation of the terms or labels used to describe *indigenous knowledge*. As Dekens puts it, a diversity of local knowledge exists and that most of it remains untapped. Ngulube and Onyancha (2011) have conducted a study using a publications count method and revealed that the terms *local knowledge (LK)* and *traditional knowledge (TK)* are increasingly becoming popular labels as opposed to the term *indigenous knowledge*. It was found that some labels such as marginalised people's knowledge (MPK) and defeated knowledge (DK), although they were identified as labels that are used to refer to *indigenous knowledge*, did not yield any paper in Google Scholar. Other labels that were lowly ranked in terms of the number of papers addressing the specific label include subjugated knowledge (SBK) and endogenous knowledge (EK). Whereas research output (i.e. publications count) on a specific topic may imply the popularity of such a topic, the impact, influence or importance (measured through citation analysis) is seen as another way of measuring the popularity of a label. As a result, this paper adopts a similar approach as Ngulube and Onyancha's (2011) and seeks to find out the most preferred label for *indigenous knowledge*, using citations count as an indicator, with a view to determining the terms that can be used to index as well as retrieve information on *indigenous knowledge*.

In view of the above broad purpose, the study seeks to:

- Determine the citation frequency of each label per year
- To find out the label in which the most cited papers belong
- To identify the label with the highest citation impact
- To map the trend of citations per label over time.

Methods and Materials

As mentioned above, this study adopted a citation analysis approach to investigate the most preferred label for *indigenous knowledge*. A citation is simply defined as an acknowledgement that one document receives from another (Diodato 1994; Smith 1981). Although citation analysis techniques are usually conducted to find out, among others, the most influential researchers/authors, journals, articles, institutions and countries in a given field of study/ research or discipline using different measurements such as number of citations, average citations, h-index and g-index (Diodato, 1994:33), we argue that the same approach can be used to identify the most influential label for *indigenous knowledge*. We opine that a label that receives most citations is likely to be the most influential or preferred among scholars.

Google Scholar was used in this study for purposes of comparing labels as opposed to using it as a tool for evaluating research performance of individuals, institutions, nor countries. A comparative study, such as the current one, might not be affected by the limitations that have been enumerated by various writers. Nevertheless, we laboured to minimise any errors that might have emanated from the limitations of Google Scholar by cleaning the data,

e.g. removal of non-English and irrelevant titles. We believe that citations to labels may be an indicator of a label's popularity, irrespective of the database used as a data source. We have also noted several strengths of Google Scholar which make it a relatively reliable source of data (see Meho and Yang ,nd; Onyancha and Ocholla, 2009; Mikki, 2010; Mingers and Lipitakis, 2010; Franceschet, 2010; Abrizah, Zainab, Kiran and Raj, 2012; and Aguillo, 2012).

In order to retrieve relevant data for the study, 17 labels were obtained from Ngulube and Onyancha's (2011) study as reflected in Table 1. Once the labels were obtained, they were used as search queries to search for the relevant data in Google Scholar using the Publish or Perish software, developed by Anne-Wil Harzing. The software is available at www.harzing.com/pop.htm. The software is meant to retrieve and analyse academic citations. It obtains raw citations from Google Scholar, analyses these citations to generate various citation-based statistics such as number of citations, h-index, g-index, age-weighted citation rate, average citations per paper, author, and year, as well as the number of papers. The searches, using the labels as search terms on the 'general citation search' platform, were limited to the titles of papers. The basis of using titles as the sources of data can be found in Yitzhaki (2002) who notes that:

> *The great importance of titles being highly informative is almost unanimously accepted in literature, assuming that the more informative titles are, the more effectively they serve their functions. The most common measure of title 'informative-ness' has been the number of 'significant' (i.e. non-trivial) words included in it… many information retrieval systems depend heavily on indexing by automated computerized selection of words from article titles.*

Table 1: Competing Labels for *Indigenous Knowledge*

No.	Label(s)	Abbreviation/Acronym
1	African indigenous knowledge systems	AIKS
2	Defeated knowledge(s)	DK
3	Endogenous knowledge	EK
4	Ethnobiological knowledge	EBK
5	Indigenous knowledge	IK
6	Indigenous knowledge system(s)	IKS
7	Indigenous technical knowledge	ITK
8	Local knowledge	LK
9	Marginalised people's knowledge(s)	MPK
10	Native knowledge	NK
11	Rural people's knowledge	RPK
12	Subjugated knowledge	SK
13	Subaltern knowledge	SBK
14	Traditional ecological knowledge	TEK
15	Traditional knowledge	TK
16	Traditional science	TS
17	Traditional wisdom	TW

(Source: Ngulube and Onyancha, 2011: 135)

The use of titles as sources of data has been widely adopted to conduct bibliometric or informetrics studies (e.g. Tocatlian, 1970; Bird and Knight, 1975; Buxton and Meadows, 1977; Balog, 1979; Yitzhaki, 2002; Lewison and Hartley, 2005; Ball, 2009; Onyancha and Ocholla, 2009b; and Jamali and Nikzad, 2011). The searches were conducted per year of publication to obtain the following statistics which were relevant to the current study's objectives: the number of papers, title of papers, number of citations, average number of citations per paper, h-index, and most cited papers per label during the period (Table 2).

The extracted data was then saved in Microsoft Excel worksheets. The errors (e.g. titles with incomplete bibliographic data, duplicate titles, and parts of titles that were in a different language than English) were removed in the data cleaning process. Data was then analysed using the Microsoft Excel software and UCINET for Windows. Whereas Microsoft Excel was used to compute further statistics to correspond to the objectives of the study, UCINET for Windows was used to obtain the social network of the most common words in the literature of *indigenous knowledge*. The data was largely presented in tables, year by year, so as to show the changes or trend of popularity of one label over the other(s).

Table 2: Total Number of Papers per Label, 1991-2012

	1991-1992	1993-1994	1995-1996	1997-1998	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	TOTAL
IK	94	183	240	238	363	375	457	490	535	520	489	3984
TK	23	67	57	100	164	220	375	406	419	499	420	2750
LK	49	63	102	144	207	211	297	341	405	353	358	2530
TEK	12	35	17	33	49	47	60	48	69	82	72	524
TW	3	8	5	12	17	4	18	16	15	17	14	129
TS	6	7	11	8	14	8	3	8	21	19	10	115
ITK	10	8	5	10	10	15	15	15	7	12	6	113
IKS	4	4	2	1	6	7	10	5	9	12	8	68
NK	1		5	4	4	4	4	9	9	9	5	54
EK	1	0	3	4	6	9	2	1	6	5	10	47
RPK	13	23	2	1	1	0	0	2	1	1	1	45
AIKS	0	1	0	0	0	0	5	7	8	3	6	30
SK	1	1	3	1	2	2	1	2	2	1	5	21
EBK	0	2	1	2	4	0	2	0	1	0	2	14
SBK	0	0	0	0	1	1	1	0	0	1	0	4
DK	0	0	0	0	0	0	0	0	0	0	0	0
MPK	0	0	0	0	0	0	0	0	0	0	0	0

Limitations of the Study

The limitations of this study are largely associated with the source of data and the method that was adopted in the study. In the first instance, several authors have observed that Google Scholar has several limitations (e.g. Onyancha and Ocholla, 2009a; Aguillo, 2012), especially in regard to its use in measuring individual performance of scholars or institutions in research. Otherwise, for purposes of conducting a study as the present one, it is safe to use Google Scholar citation statistics. On the other hand, citation analysis, which was adopted to conduct this study, is said to suffer from the following limitations:

- Citations do not reflect actual scientific contribution, e.g. exaggerated self-citation. This implies that the most cited document or, in the case of this study, label may not necessarily mean that it is the most preferred as citations may be exaggerated (Aksnes and Rip 2009). It is however well acknowledged that citations reflect influence of units of analysis, such as authors, institutions, papers.
- The authors take cognisance of the fact that not all of the "labels" researched are necessarily equivalent and therefore their applications in various academic domains (e.g. Library and Information Science, Economics, Anthropology, Medicine, Sociology, Philosophy, etc.) may differ. We also acknowledge that the subdomain of "*indigenous knowledge*" may have its own preferred terminology in some academic domains, and that there may be significant material differences in the volume of published research in the subdomain between parent domains. Despite these domain-based variations of applications of *indigenous knowledge*, we believe that the overall performance of each label in terms of citations may reflect the label's popularity among scholars across disciplines.

Results and Discussions

The findings of this study are presented and discussed under the following four sub-headings which are drawn from the objectives of the study:

- Number of citations per label per year between 1991 and 2012
- H-index of each label between 1991 and 2012
- Number of average citations per paper between 1991 and 2012
- Citedness of the labels between 1991 and 2012/

Number of Citations per Label per Year

Table 3 provides the trend of the number of citations of the literature on *indigenous knowledge* between 1991 and 2012. The illustration shows that there is a mixed pattern of citing the literature whereby the number of citations dropped as much as it rose over the years. Except for "LK" which registered a total of 10000 citations between 1999 and 2000, there was no label that exceeded 5000 citations in any given two-year period. In fact, even "LK" did not post a figure beyond 10000 citations in any other given year-period safe for 1999-2000. Generally, only four labels yielded a total of at least 1000 citations in at least one-year period between 1991 and 2012. These are "LK" which posted a total of 32997 citations between 1991 and 2012, followed by "IK" (27939), "TK" (18647), and "traditional ecological knowldedge" (7712). All other labels yielded less than 1000 citations during the period under investigation.

Table 3: Number of Citations per Label, 1991-2012

	1991-1992	1993-1994	1995-1996	1997-1998	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	TOTAL
LK	1001	1085	2023	1720	10104	3237	5710	3341	2672	1533	571	32997
IK	1236	2642	3661	3291	4376	3011	2901	3001	2041	1396	383	27939
TK	366	1163	676	1157	4251	2148	3255	2403	1490	1291	447	18647
TEK	196	1054	356	603	2939	328	894	489	400	348	105	7712
NK	4	0	21	58	57	17	2	508	32	9	1	709
TS	11	3	97	108	128	24	5	36	227	26	15	680
RPK	40	576	2	0	0	0	0	2	0	0	2	622
TW	14	109	3	90	40	13	32	15	16	37	15	384
EK	2	0	20	143	32	43	4	20	0	6	1	271
ITK	73	18	7	35	13	33	13	38	5	11	3	249
SBK	107	0	34	21	32	13	0	0	0	23	24	235
IKS	34	16	2	0	12	96	5	5	11	51	0	232
EBK	0	69	0	10	115	0	0	0	0	0	0	194
AIKS	0	29	0	0	0	0	51	17	34	37	1	169
SK	0	0	0	0	2	14	0	0	0	1	0	17

H-Index of Labels of Indigenous Knowledge Literature

Table 4 reveals various h-index values for each label in the period under investigation. Proposed by J.E Hirsch in 2005 (Hirsch, 2005), the h-index gives an estimate of the importance, significance, and broad impact of a scientist's cumulative research contributions. Hirsch defined the h-index thus:

> "*A scientist has an index h if h of his or her Np papers have at least h citations each and (Np – h) papers have less than or equal to h citations each.*"

It therefore follows that the h-index of any given author takes into consideration the number of papers (research output) and citations (research impact) in the measurement of the author's cumulative contributions. The same principle is herein applied to measure the significance or importance of each of the labels used to describe *indigenous knowledge*.

Out of the 17 labels investigated in this study, only four yielded a h-index value that was higher than 10, in at least one two-year period, during the period of investigation, i.e. 1991 to 2012. Generally, as it was the case with the analysis of the total number of citations per label, four labels were ranked at the top in Table 4. An examination of the yearly h-index shows that none of the labels recorded a value beyond 33; a value that was recorded by "IK" in 1999-2000. The second highest h-index, i.e. 32, belonged to "LK" and was recorded in 2005-2006. Other high h-index values for various labels were registered as follows: "LK" (31) in 2003-2004, "IK" (27) in 2003-2004, "TK" (27) in 2003-2004, and "IK" (26) in 2005-2006. A h-index score of 25 was realised as follows: "IK" in 1997-1998 and 2001-2002, "LK" in 1999-2000 and 2001-2002. Three labels, namely "IK", "TK" and "LK" competed for popularity as they scored a h-index value of 9 and above throughout the period of study.

Table 4: H-Index of each Label per Year

	1991-1992	1993-1994	1995-1996	1997-1998	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012
IK	17	23	22	25	33	25	27	26	20	18	7
LK	14	18	19	19	25	25	31	32	28	20	10
TK	9	14	11	16	23	21	27	23	18	17	9
TEK	4	10	5	91	15	7	14	12	11	10	5
TS	2	1	5	2	5	2	2	3	6	3	2
TW	1	3	1	5	4	3	3	2	3	3	2
ITK	3	3	2	4	2	4	2	3	1	2	1
NK	1		2	2	2	2	1	4	3	2	1
IKS	2	2	1	0	2	2	1	2	2	4	0
EK	1		2	3	1	3	1	1		1	1
RPK	4	6	1	0	0			1	0	0	1
AIKS		1					3	2	3	2	1
SK	1	0	2	1	2	2	0	0	0	1	2
EBK		2		2	4						
SBK					1	1	0			1	

Average Citations per Paper

Another measurement that was used to find out the most preferred label was the computation of the average number of citations per paper. The Thomson Reuters (2010) defines the average citations as the mean value, or the quotient obtained by dividing the sum total of citations in the database by the number of citing articles. Lehmann, Jackson and Lautrup (2006) point out that a "scientist's full citation record is summarised by simpler measures, such as average citations per paper, or the recently proposed Hirsch index." The latter has been explained in 4.2 above. Although the two indicators have been largely applied to authors' citation performance or influence and/or journals (Herbertz, 1995; Narin and Hamilton, 1996; Katz and Hicks, 1997; Lehmann, Jackson and Lautrup 2006), we believe that they can be applied to measure the influence of labels. The average citations per paper were obtained by dividing the total number of citations by the total number of papers for each label in each two-year period. Column 13 of Table 5 reflects the average citations per label, calculated as the total number of citations divided by the total number of papers for the entire period of investigation, i.e. 1991-2012. The table reveals that SBK registered the highest average number of citations per paper (i.e. 58.75) between 1991 and 2012, followed by TEK (14.72), EBK (13.86), RPK (13.82), NK (13.13) and LK (13.04), just to name the labels that recorded an average of over 10 citations per paper. An examination of the citation impact of each label per two-year period between 1991 and 2012 shows a mixed pattern whereby the average number of citations rose as they fell. The SK registered the highest frequency of 107.00 citations per paper in 1991-1992. It was, in fact, the only value that surpassed 100 citations per paper. Other high frequencies were recorded as follows: TEK (59.98 in 1999-2000); NK (56.44 in 2005-2006); LK (48.81 in 1999-2000); EK (35.75 in 1997-1998); EBK (34.50 in 1993-1994) and TEK (30.11 in 1993-1994).

Table 5: Average Citations per Paper, 1991-2012

	1991-1992	1993-1994	1995-1996	1997-1998	1999-2000	2001-2002	2003-2004	2005-2006	2007-2008	2009-2010	2011-2012	Overall
SBK	-	-	-	-	2,00	14,00	0,00	-	-	1,00	-	58,75
TEK	16.33	30.11	20.94	18.27	59.98	6.98	14.90	10.19	5.80	4.24	1.46	14.72
EBK	-	34.50	0.00	5.00	28.75	-	0.00	-	0.00	-	0.00	13.86
RPK	3.08	25.04	1.00	0.00	0.00	-	-	1.00	0.00	0.00	2.00	13.82
NK	4.00	-	4.20	14.50	14.25	4.25	0.50	56.44	3.56	1.00	0.20	13.13
LK	20.43	17.22	19.83	11.94	48.81	15.34	19.23	9.80	6.60	4.34	1.59	13.04
IK	13.15	14.44	15.25	13.83	12.06	8.03	6.35	6.12	3.81	2.68	0.78	7.01
TK	15.91	17.36	11.86	11.57	25.92	9.76	8.68	5.92	3.56	2.59	1.06	6.78
TS	1.83	0.43	8.82	13.50	9.14	3.00	1.67	4.50	10.81	1.37	1.50	5.91
EK	2.00	-	6.67	35.75	5.33	4.78	2.00	20.00	0.00	1.20	0.10	5.77
AIKS	-	29.00	-	-	-	-	4.64	2.43	4.25	12.33	0.17	5.63
IKS	8.50	4.00	1.00	0.00	2.00	13.71	0.50	1.00	1.22	4.25	0.00	3.41
TW	4.67	13.63	0.60	7.50	2.35	3.25	1.78	0.94	1.07	2.18	1.07	2.98
ITK	7.30	2.23	1.40	3.50	1.30	2.20	0.87	2.53	0.71	0.92	0.50	2.20
SK	107.00	0.00	11.33	2.00	16.00	6.50	-	-	-	23.00	4.80	0.81

Cited Versus Uncited Papers

The citedness (or uncitedness) of a particular unit of analysis (i.e. individual, paper, or journal) is another way of assessing the unit's influence among the peers. Although uncitedness may not necessary imply that the unit of analysis is not influential or popular, it also raises questions about the lack or seldom-citedness of the unit. We take cognisance of the fact that there are several reasons why a particular unit may not receive any citations throughout its lifetime. Glanzel (2003) argues that "analogously to a brand-new device that is not operating satisfactorily, a paper that is never cited can be considered not to give satisfactory performance of its intended function already when it was published." We also argue that if an often-cited paper is seen as being of influence or importance, then a seldom-cited or uncited paper may imply little or no influence or importance, if at all. Glanzel and Moed (2002: 173) argues that among some of the attempts that have been made to improve the impact factor or to develop additional or alternative journal citation measures include the use of the percentage share of uncited papers. Citing Schubert and Glazel (1983) and Moed et al (1999), the authors observe thus:

> *Since one single impact measure might not be sufficient to describe citation characteristics of journals, supplementary indicators have been introduced. The most simple, robust, readily interpretable and reproducible indicator of this type is the share of uncited papers or cited papers respectively* (Glanzel and Moed 2002: 176).

In view of the above, this study used the share of uncited and cited papers to gauge the popularity of the labels given to *indigenous knowledge*. Table 6 provides the number the cited (i.e. *x*) and uncited (i.e. *y*) papers. Table 6 reveals that out of the 3984 papers that were published on *IK*, 2465 (accounting for 61.9%) have been cited at least once while 1519 (i.e. 38.1%) papers have not been cited at all. This pattern was the same for the other most cited labels which, respectively, posted the following results in the order of cited (***x***) and uncited papers (***y***): *TK* (***x*** = 1655 or 60.2%; ***y*** = 1095 or 39.8%); *LK* (*x* = 1531 or 60.5%; *y* = 999 or 39.5%); and *TEK* (*x* = 350 or 66.8%; *y* = 174 or 33.2%). It was noted that some of the labels had fewer cited papers when compared to the uncited papers. These labels are: *TW* (*x* = 64 or 49.6%; y = 65 or 50.4%); *TS* (x = 55 or 47.8%; y = 60 or 52.2%); *IKS* (x = 33 or 48.5%; y = 35 or 51.5%); and *EK* (x = 18 or 38.3%; y = 29 or 61.7%). The other labels yielded more cited papers than uncited papers.

Table 6: Rank of Labels according to the Number and Percentage Share of Cited and Uncited Papers (Key: X – Cited Papers; Y – Uncited Papers)

	Paper counts				*Rank (r)*			
	Total papers		*Percentage share*		*Total papers*		*Percentage share*	
	x	y	x	y	x	y	x	y
AIKS	19	11	63.3	36.7	11	11	6	10
EBK	9	5	64.3	35.7	14	14	5	11
EK	18	29	38.3	61.7	12	9	15	1
IK	2465	1519	61.9	38.1	1	1	7	9
IKS	33	35	48.5	51.5	9	8	13	3
ITK	62	51	54.9	45.1	6	7	10	6
LK	1531	999	60.5	39.5	3	3	8	8
NK	29	25	53.7	46.3	10	10	11	5
RPK	36	9	80	20	8	12	1	15
SBK	3	1	75	25	15	15	2	14
SK	14	7	66.7	33.3	13	13	4	12
TEK	350	174	66.8	33.2	4	4	3	13
TK	1655	1095	60.2	39.8	2	2	9	7
TS	55	60	47.8	52.2	7	6	14	2
TW	64	65	49.6	50.4	5	5	12	4

Conclusion and Recommendations

First, the results presented and discussed in the previous section indicate that the competing labels, for supremacy, can be reduced from 17 to three, namely IK, LK and TK. The three labels of *LK*, *IK*, and *TK* contributed a combined two-thirds of the total number of citations produced by all labels. This pattern implies the dominance of the three labels as the most preferred to describe *indigenous knowledge*. It should however be noted that the total number of citations depicted in column 13 in table 3 includes duplicates across the labels. Second, the results revealed that there was no outright winner even among the three labels as each of the measurement techniques (average cites per paper, number of citations, H-Index, and percentage share of cited and uncited papers) produced mixed patterns of performance.

In conclusion, and to answer the question on whether or not there is a preferred label for *indigenous knowledge*, the citation-based metrics applied in this study have revealed that there is no one preferred label. Instead, there are three competing labels, namely *LK, IK* and *TK*. This occurrence, in our view, may or may not pose challenges in terms of not only information organisation but also information retrieval. In regard to information organisation, it has already been noted by Ngulube and Onyancha (2011) that none of these terms have been used as indexing terms in the major thesauri. One is therefore left to wonder about which indexing term to use to organise the literature published on and/or addressing the *indigenous knowledge*. Should we use IK, TK or LK? The same worries may be encountered when discussing matters on searching and retrieval. For instance, which descriptors or terms can be used to yield not only most and relevant documents on *indigenous knowledge* but also documents of high precision and specificity in the subject domain? The importance of specificity in information searching and retrieval is a topic that has been widely discussed in the field of library and information science (see Stapley, 2000; White, 2007, among others).

It should be noted however that there are various factors that may influence the preference of one label over another. These may include:

1. Personal, historical and regional preferences
2. Disciplinary preferences (for example, library and information science and environmental science may show preferences for different terms)
3. Sociolinguistic preferences of research subjects and researchers
4. Publishers' preferences

As a result, we propose further research to be conducted in different contexts (e.g. different scientists' preferences, disciplines, sociolinguistic preferences, publishers' indexing preferences, etc.) to ascertain whether or not the pattern of citation is similar or different to the current study's findings. We further recommend that a content analysis of full-text documents may shed more light on the usage of different labels given to the knowledge of indigenous and traditional communities.

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