

AN INFORMETRICS STUDY OF THE CITED REFERENCES IN ARCHIVAL RESEARCH IN SUB-SAHARAN AFRICA: A MEASURE OF THE ARCHIVAL RESEARCHERS' PREFERENCES?

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Abstract

The purpose of this paper was to investigate the application of informetrics to determine authors' preferences for specific sources of information when conducting their research, as well as to find out the information-related preferences of authors publishing archival research in sub-Saharan Africa. Relevant data was extracted from five electronic databases, hosted by the EBSCO publishing company, using a uniform search query that combined the name of the author's affiliate country and archives (truncated as "archiv"). The search was limited to full-text papers only. The results show that archival researchers in sub-Saharan African countries prefer (a) journals as the sources of information, with the journal for the Eastern and Southern African Region of the Board of International Council of Archivists (ESARBICA) the most cited; (b) relatively old sources – average citation age 11.87 years; (c) archives subject-specific sources; and (d) peers whose research interest is in the same subject field, namely archives and records management. We recommend that an aggressive and effective public programming of archives be conducted in sub-Saharan Africa to increase awareness of the importance of archives in research. We conclude that informetrics is one way of measuring authors' preferences for particular sources of information.*

Key words

Archival research, citation analysis, informetrics, researchers' preferences

Introduction

Research includes every facet of knowledge acquisition. The Online *Dictionary of Library and Information Science* (Reitz 2013) describes research as a "systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions". Archival resources form part of such resources too. In social sciences, researchers make use of archives to "ask new questions of old data, provide a comparison over time, or between geographic areas, verify or challenge existing findings, or draw together evidence from disparate sources" (Corti 2004). Duff and Cherry (2008) also point out that archives are regarded as primary sources and they play an important role in

- increasing historical knowledge;
- preserving collective memory;
- connecting people to family histories;
- holding governments responsible; and
- promoting corporate responsibility.

A primary resource provides primary accounts of events, original documents and contemporary descriptions of notable trends in society, therefore providing unique authority or interest to a

research topic. Examples of such sources include letters, literary manuscripts, personal memoirs, minutes of meetings, personal and official correspondence, newspapers and books and monographs, political and government records (Yale 2008). McCoy (2009), too, explains that archives provide "tangible links to elements of history", consequently giving the researcher the opportunity to interpret or evaluate evidence in its original form. This is not always possible when researchers use secondary sources such as books and journal articles. However, Roper and Millar (1999) offer a different opinion, arguing that academics/researchers value archives in a different way compared to archivists. The reason for this is that academics tend to focus largely on content and how it can address the objectives of the investigation, with less emphasis on context and provenance of the archives.

In many instances it would seem that archival records are mostly useful for historians and genealogists, however, this is not so. Kolodny, Zoino-Jeanetti and Previte (2009:126) elaborate thus:

The use of primary source materials (archives) in accordance with the development of an historical perspective is a valuable activity ... taking an historical perspective can support understanding of the content, goals and objectives of various fields. A historical perspective enables (researchers) to position a discipline's knowledge within a continuum of ideas, encouraging them to grapple with concepts using a perspective that transcends their immediate situations; and allows them to engage in interpretation and critical thinking.

Here are a few examples of studies that have made use of archives to explain different phenomena:

- *Fisheries*- Archival collections of fish, invertebrates and associated documentation such as catch statistics and stock control, enable researchers in this field to investigate mixed stock fisheries, food web dynamics and population trends (Rivers & Arden 1998).
- *Climate change*- Archival records are used to understand the biological impact of climate change. Present conditions are compared with records from the past with the aim of conserving ecosystems for the future (Primack & Abraham 2012).
- *Birding (Bird watching)* - Referral to archives allows experts in this area to determine migration trends of birds (Vitale & Schlesinger 2011).
- *Anthropology*- Anthropologists involved in post-colonial studies refer to colonial archives to get a historical perspective of their subjects (Stoler 2002).

Yakel (2004:62) contends that the use of primary sources can also significantly contribute to the development of critical thinking skills. In this instance she refers to the use of primary sources at tertiary level, which has improved students' "critical thinking skills, writing skills and weighing of evidence," which are all key to research, teaching and learning. Moreover, this phenomenon has also been experienced at the primary (K-12) level of education in the USA. According to Malkmus (2008), the aim of including archives or primary sources in the school curriculum is to develop critical thinkers at a younger age. Similarly, Tally and Goldenberg (2005) contend that students of whatever level of education who have had the opportunity to make meaning from primary sources perform better in other subjects as well. The reason given is that "these intellectual habits with primary sources and data are at the heart of how critical thinking is defined in every area of the sciences and humanities and now the information-rich workplace" (Tally & Goldenberg 2005). Such skills are a crucial part of research and development, which is fundamental to progress in the knowledge and information society.

Though archives are regarded as key to research and an essential part of society, these records are not always widely used by researchers and the public. Carotenuto and Luongo (2005) recorded their experiences in Kenya, stating that although the Kenya National Archives are well

placed near the City Centre, many people, including academics and students of the nearby University of Nairobi do not use the resources or the facility. They attribute this problem to limited resources for outreach and publicity. Nesmith (2010) explains that archivists do not always widely publicise their holdings and services and, as a result, these resources are not extensively used. In a world challenged with information overload and author integrity, archives should be considered as reliable resources for research due to the processes followed to acquire and preserve them. Nesmith (2010) argues that many times in the quest for information, archives do not feature as the first choice of reference. Consequently, few people make use of these archival materials. It would seem that more needs to be done to convince people, in this instance researchers, that archives as primary sources can be an important part of their research.

Investigating and promoting the use of archival resources became prominent in the 1980s (Blais & Enns 1991; Ceeney 2008). Scholars, such as Dearstyne (1987), argue that "archivists have given relatively little attention to the issue of who uses their resources and what difference that use makes ... archivists need to analyse the use of holdings in order to more clearly define their professional mission". This call was echoed again recently in the *Principles of Access* compiled by the International Council of Archives (ICA 2012), emphasising the need for archives to be user-centric rather than material-centric. This would involve a more critical look into who uses archival resources and for what purpose. In response to this need, among others, archival researchers such as Murambiwa and Ngulube (2011) suggest creating an index that could help archival institutions to monitor the use of their resources. This would enable such institutions to provide more in-depth data rather than the regular day-to-day statistics collected from reading rooms. Likewise, Cox (1992) argued in the 1990s that a systematic inquiry into who uses the archives would provide valuable information that could lead to effective services, improve relationships between researchers and archivists and contribute to archival education. In an era where institutions, especially public entities, need to justify their existence, such information could provide the necessary proof that archives make a difference in society. Thereafter, this could most probably contribute towards the necessary support required to sustain archival institutions.

Joyce (1984) advises archivists to take note of the library profession's efforts with regard to user studies, which started as far back as the 1920s; that is, studying users, determining trends, improving customer service and marketing library services. In this instance, archivists are advised to do critical research to get a better understanding of their holdings, user trends and improve the research use of their holdings. In Joyce's (1984) words, "archivists best promote use of their holdings by directly linking research applications of collections to the needs of the users of whatever interest". Though an old quote, its premise remains valid. Archivists still need to find means to investigate the use of archives more meaningfully (Murambiwa & Ngulube 2011). An informetric approach could be one of the means of determining trends of use of archival resources.

Informetrics and its application in measuring the use of information sources

Informetrics, defined as methodologies that examine "patterns that show up not only in publications but also in many aspects of life, as long as the patterns deal with information" (Diodato 1994:ix) is widely used to evaluate scholarly communication patterns. Informetric measures can be divided into descriptive and evaluative measures, commonly referred to as production (publications) count and citation analysis, respectively. Whereas the former is concerned with the study of publications or research output in different countries, the amount produced during different periods, or the amount produced in different subdivisions of the field (Hertzfel 1987; Sengupta 1992), the latter is used to measure the influence of authors, documents,

institutions, and even countries as well as the utilisation of information sources (Smith 1981). This paper focuses on the latter informetric measurement. A citation is simply defined as an "acknowledgement that one document receives from another" (Smith 1981:83). As mentioned, citation-based studies, often carried out using citation analysis, may focus not only on the documents but also the authors, sources in which the documents are contained (i.e. journals, books, magazines, databases, web pages, etc), the organisations or countries in which the documents are produced and the purpose of the citations (Diodato 1994:33). A citation, therefore, represents a relationship between the cited and citing entity (Smith 1981). Citing Garfield, Smith (1981:84) and Bornmann and Daniel (2006:51) observe that there are several purposes of citation analysis, for example:

- Paying homage to pioneers;
- Giving credit for related work (homage to peers);
- Identifying methodology, equipment, etc;
- Providing background reading;
- Correcting one's own work;
- Correcting the work of others;
- Criticising previous work;
- Substantiating claims;
- Alerting to forthcoming work;
- Providing leads to poorly disseminated, poorly indexed, or uncited work;
- Authenticating data and classes of fact – physical contacts, etc.;
- Identifying original publications in which an idea or concept was discussed;
- Identifying original publications or other work describing an eponymic concept or term;
- Disclaiming work or ideas of others (negative claims); and
- Disputing priority claims of others (negative homage).

This leads us to ask what citations really measure, or what is the use of citations? This question has continued to puzzle many authors of citation-based studies such as Bornmann and Daniel (2006) and Cozzens (1989). In her endeavour to answer this question, Cozzens (1989:437) asks: "do they [citations] measure quality, importance, impact, influence, utility, visibility, all of the above or something else?" An analysis of the above mentioned reasons reveals that citations imply that the citing author has used the cited source; in other words, there has been utility of the information source. It should be borne in mind, however, that there are several other ways of measuring the utility of information sources, such as keeping library statistics and more particularly circulation statistics. Citation analysis is, therefore, one of the ways of assessing the usage of information sources and not the only indicator. To underscore the importance of citations as the measurement indicators of the usage of information sources, Smith (1981:85) observes that citations are "signposts left behind after information has been utilized and as such provide data by which one may build pictures of user behavior without ever confronting the user himself". Cronin (1981), too, notes that citations are frozen footprints in the landscape of scholarly achievement. In turn, Brill (1990:428) opines that "one method of ascertaining which publications scholars use, and are likely to use in the future, is to study references in the literature of a field". Although scholars such as Brill (1990), Cronin (1981) and Smith (1981) agree that the citation of a document implies use of that document by the citing author, they nevertheless point out that the assumption is not entirely correct. It is not entirely true that (1) the author refers to all, or at least the most important, documents used in the preparation of his or her work; and (2) all documents listed were indeed used. Smith (1981:87) argues that "certain documents are underrated because not all items used were cited, and other documents are overrated because not all items cited were used". That notwithstanding, cited references have been used as sources of

data on the utility of information (see Marton 1981; Brill 1990; Glanzel & Schoepflin 1999; Peritz & Bar-Ilan 2002; Kim 2004; Amat & Yegros 2009; Wainer, De Oliveira & Anido 2011; and Lin & Huang 2012). These studies deal with different objectives but use the same source of data, namely, the cited references.

Purpose of the study

The aim of this paper is two-fold, namely, to promote the usage of informetrics approaches as the means of assessing the usage of information sources; and to examine the information sources that archival researchers or scholars use in their research for the following reasons:

- i. to determine the type of sources that are most preferred by archival researchers;
- ii. to determine the most preferred publications and authors;
- iii. to find out the currency and citation age of the information sources preferred by archival researchers;
- iv. to identify the journals that archival researchers consider as the core sources of their information; and
- v. to find out which archival topics are preferred by archival researchers.

Methods and materials

While recognising that "usage data has emerged as a promising complement to existing methods of assessment" of scholarly communication items, Bollen, Rodrigues and Van de Sompel (2007:1) observe that the "formal groundwork to reliably and validly apply usage-based metrics of scholarly impact is lacking". As several authors (e.g. Bornmann & Daniel 2006; Smith 1981; Cronin 1981; Bollen, Rodrigues and Van de Sompel 2007: 1) have noted, utility of documents can be measured using citation analysis. This study adopted informetrics as a research method, and more specifically, citation analysis to find out the utility patterns of documents that were cited in documents publishing archival research. Whereas the terms *citations* and *references* are often used synonymously, their definitions in scholarly communication are different. A simple illustration of their difference can be found in the following explanation:

When writing a research paper, you must always acknowledge any works or ideas of others that have influenced your experiment, conclusions, or interpretation of the data. This is done by including **a citation** in the body of the manuscript and its corresponding **literature reference** in the literature cited section of the paper (University of Wisconsin at La Crosse 2008).

It follows, therefore, that a citation of any given document is provided within the text while its bibliographic details are offered in the **list of references**. The latter is sometimes known as the list of cited sources. The current study focused on the list of references as they provide detailed information about the cited sources. Among the data collected from the references (cited sources) of the literature published on *archives* or *archival research* were the author(s), year of publication, title and journal.

In order to fulfil the objectives of the study, data was extracted from five electronic databases, namely, Library, Information Science and Technology Abstracts (LISTA); Academic Search Premier; MasterFile Premier; Library & Information Science Source; and Library Literature & Information Science. All the databases are hosted by EBSCO publishing service. The decision to combine several databases was based on the need to cover as many archival documents as possible in this study.

A Boolean operator AND was used to search for the archival research articles. The search query combined the name of the country and the search term *archive* (truncated as "archiv*") as follows: SU "archiv*" and AF "name of country" where SU stands for subject and AF for affiliation. In other words, the search for documents that focused on "archives" was conducted within the Subject Field of the databases while the "country" search was conducted within the author's affiliation field. A search for the subject term "archive" within the subject field was meant to retrieve records specific to the subject under investigation, thereby yielding relevant documents only. The limitation of the search to countries within the author's affiliation field was meant to yield only the papers that had been published by at least one author (in cases of multiple-authorship) who was affiliated to an institution in a sub-Saharan African country. In order to apply the search across all the countries in sub-Saharan Africa, the Boolean operator OR was used to combine various searches that were specific for each country. The names of a total of 52 countries in sub-Saharan Africa were used to extract the relevant data from the five databases using the same search platform. The data extraction was limited to only full-text papers, given that the paper's focus was on the cited references. A total of 179 papers, dealing with archives research in sub-Saharan Africa, were obtained; and upon revising the search to obtain full-text papers only, a total of 71 full-text papers were downloaded onto a computer storage device for analysis.

The extracted data was then saved as text files (i.e. in *.txt format) and thereafter cleaned using the same software. The data that was extracted, in order to correspond to the objectives of the study, included the following:

- i. Titles of cited sources (i.e. channels that published archival research) so as to find out the type of sources that are most preferred by archival researchers.
- ii. Names of authors of the cited papers so as to determine the most cited authors.
- iii. The year of publication of cited papers, to find out the currency and citation age of the information sources preferred by archival researchers.
- iv. The number of citations that each of the cited journals have generated over time so as to identify the journals that archival researchers consider as the core sources of their information.
- v. The titles of each cited reference source, to find out the archival topics preferred by archival researchers.

Limitations of the study

The following limitations were observed during this study:

- a. Some of the archival papers consisted of "endnotes" and not bibliographic references, which were the subject of investigation in the current study. Given that some of the footnotes provided all bibliographic details of the cited sources, they were included in the analysis.
- b. Full bibliographic details were missing from some papers.
- c. There were cases where the information about the type of the information source, cited in the references, was not immediately discernible.

Results and discussion

This section presents and discusses the findings under the following subheadings:

- Trend of indexing full-text archival papers in sub-Saharan Africa;
- Most cited types of sources of information for archival research in sub-Saharan Africa;
- Citation age of references cited in the archival literature in sub-Saharan Africa;
- Most cited titles of archival research in sub-Saharan Africa;

- Most cited sources of information for archival research in sub-Saharan Africa;
- Most common title words in the cited references of archival literature in sub-Saharan Africa; and
- The authors most often cited by archival researchers in sub-Saharan Africa.

Trend of indexing full-text archival papers in sub-Saharan Africa

The trend of indexing archival research in sub-Saharan Africa in the selected databases is illustrated in figure 1. The illustration reveals that the first full-text paper on archives in sub-Saharan Africa was indexed in the EBSCO hosted databases in 1994. It further reflects a decrease and stagnation in indexing of publications for a period of five years between 1995 and 2001, a period which had no publication at all. In 2002 only three full-text papers were indexed. The number of indexed full-text papers fluctuated between 2003 and 2011 as reflected in the illustration; they all had a minimum of three, with a peak of 14 in 2011. However, there is a sharp decline in 2012 where only two papers were indexed. Though the actual reasons of the decline in the number of indexed full-text papers were not within the scope of the investigation, one may consider the possible impact of the indexing time lag and the other indexing policies of the company as contributing factors. Another area that may require investigation in regard to the non-indexing of full-text papers between 1995 and 2001 is the availability of the correct versions of the papers during that period.

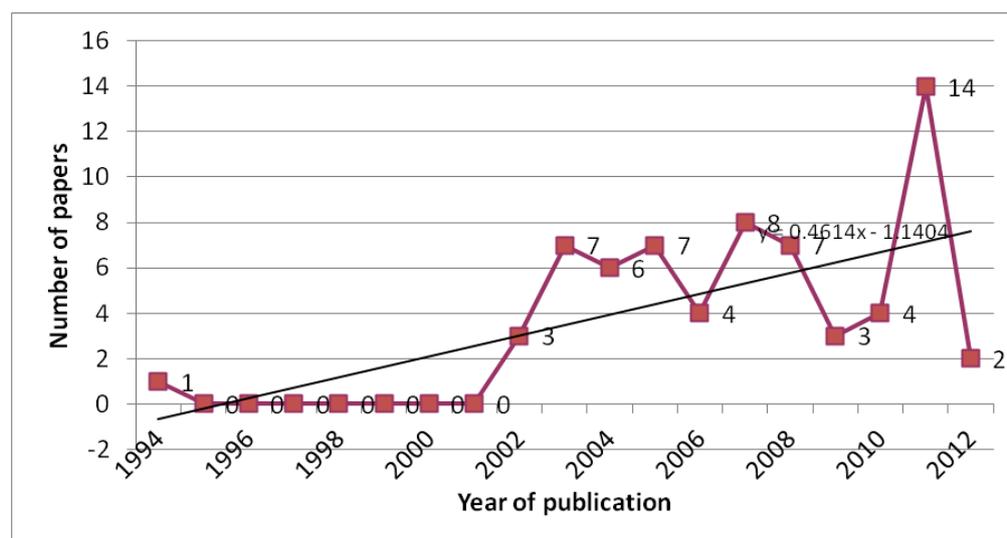


Figure 1: Trend of publication of archival research in sub-Saharan Africa

Most cited types of sources of information for archival research in sub-Saharan Africa

There are different types of sources in which researchers can publish their works. The sources can be categorised in two groups, namely, primary and secondary sources. Primary sources include journal articles, monographs, reports, patents, thesis, letters, photographs and poems. The secondary sources consist of biographies, histories, monographs, review articles, textbooks, indexes and bibliographies, which are used to locate primary sources. This study found that out of a total of 1726 references, 1666 could be categorised into various types of sources within the two categories named above, thereby accounting for 96.52%. There were 50 types of sources that archival researchers in sub-Sahara Africa consulted in conducting their research. Out of these, the most preferred type of source as shown in table 1 was journals, which contributed 547 references in the archival literature. This implies that one-third of the references were sourced

from journals. Other source types that were preferred by authors include books (497), websites (114), e-resources (94) and reports (65). It was worth noting that e-resources featured among the top five sources. E-resources included PDF and html documents. In a similar study conducted by Wainer, De Oliveira and Anido (2011), it was found that conference proceedings were the most commonly consulted by computer science researchers, followed by journals and books. Wainer, De Oliveira and Anido's (2011) findings are, therefore, not concurrent with the current study's findings, perhaps due to the citation differences in different disciplines. Another type of source that archival researchers in sub-Saharan Africa consulted, which is worth mentioning, is newspapers and/or newsletters. These sources are becoming increasingly popular among researchers, especially in the medical and health fields or disciplines (Lewison 2002). In this study newspapers were largely used for news reports on historical events and/or disasters associated with archival institutions and/ libraries. Archival documents were placed number 6 in table 1 and contributed a mere 3.48% of the total number of references.

Table 1: Types of sources most commonly consulted by archival researchers in sub-Saharan Africa (N = 1726)

	TYPE OF SOURCE	No	%
1	JOURNAL	547	31.69
2	BOOK	497	28.79
3	WEBSITE	114	6.60
4	E-RESOURCES	94	5.45
5	REPORTS	65	3.77
6	ARCHIVAL DOCUMENT	60	3.48
7	CONFERENCE PAPER	54	3.13
8	NEWSPAPER/NEWSLETTER ARTICLE	32	1.85
9	CONFERENCE PROCEEDINGS	29	1.68
10	DISSERTATION	29	1.68
11	THESIS	19	1.10
12	CONGRESS PAPER	17	0.98
13	ACT	16	0.93
14	HANDBOOK	13	0.75

Citation age of references cited in the archival literature in sub-Saharan Africa

The main purpose for conducting an analysis of the age of the references was to determine whether archival researchers prefer old or relatively current sources of information to conduct their research. The age of the references cited in the archival literature in sub-Saharan Africa was determined by examining (1) the date of publication of the referenced sources and (2) computing the citation age. The citation age is commonly used to measure synchronous obsolescence (Diodato 1994) where obsolescence refers to the decrease in use of a document or group of documents as the documents become older. The citation age between the paper and one of the references that it cited was obtained by computing the publication lag between cited reference and citing document.

Figure 2 provides a graphical representation of the number of cited references per year of publication. The oldest reference cited in the archival literature produced by scholars in sub-Saharan Africa between 1994 and 2012 was published in 1791. There was one reference each published in 1700 to 1800 and 1801 and 1900. This number increased to two in 1901 and 1910. The largest number of cited references in the archival literature (i.e. 700 – accounting for 43.6% of the total number of references) was published between 2001 and 2010. Five hundred fifty one

references were published between 1991 and 2000 while 167 references were published in 1981 to 1990.

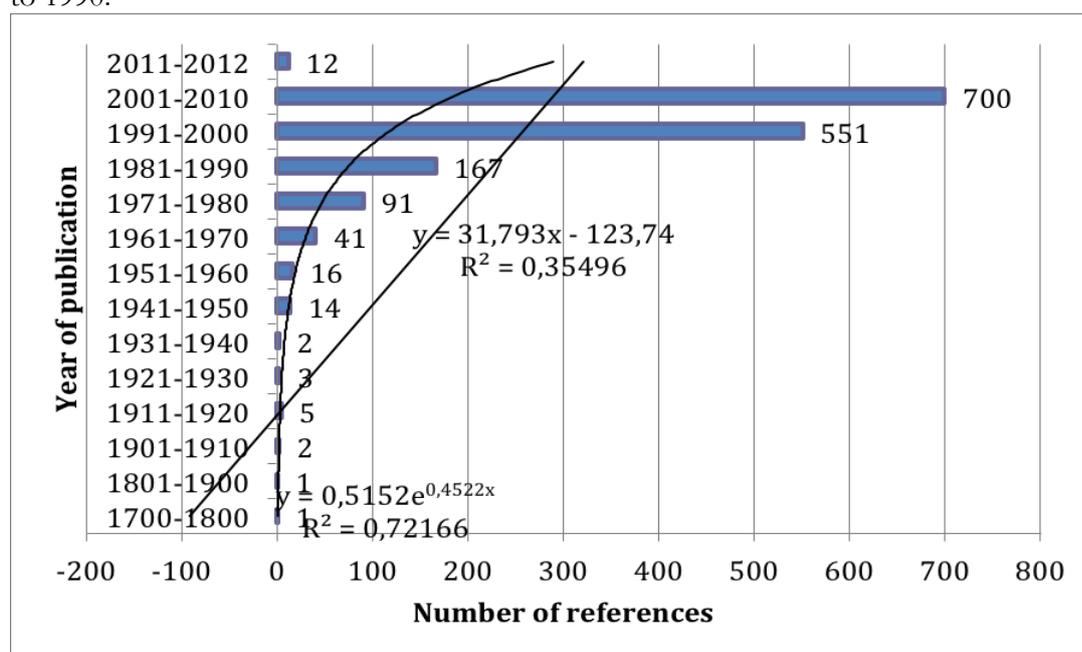


Figure 2: Number of references per year

Figure 3, which provides the number of citation age of the cited references in archival literature, reveals that although there was one paper published in 1994 by authors in sub-Saharan Africa, there were no references listed in the paper. As mentioned in 5.1, there were no full-text papers, on archival research in sub-Saharan Africa, indexed in the database between 1995 and 2001, inclusive. Hence, Table 2 provides the statistical data of the archival papers published by authors in sub-Saharan Africa in terms of the year of publication of the papers (column 1), the number of archival papers (column 2), the number of references in the archival papers (column 3), the mean citation age (column 4), the median citation age (column 5), the mode citation age (column 6) and the median year of publication of the references (column 7), as well as the mode year of publication of the references (column 8).

Table 2: Mean, median and mode citation age

Year of publication	No. of papers	No. of references	Citation Age			Year of publication of references	
			Mean	Median	Mode	Median	Mode
2002	3	58	10,63	5	3	1997	1999
2003	6	89	10,31	4	1	1999	2002
2004	6	150	11,39	7	2	1997	2002
2005	7	178	16,57	10	3	1995	2002
2006	4	188	9,22	7	1	1999	2005
2007	7	164	10,32	8	2	1999	2005
2008	7	234	12,45	7,5	2	2000,5	2006
2009	3	44	7,91	5,5	0	2003,5	2009
2010	4	113	12,14	8	0	2002	2010
2011	14	312	12,09	8	1	2003	2010
2012	2	74	13,73	12	9	2000	2003
Total/Overall	63	1604	11,87	8	2	2000	2003

Table 2 reveals that, overall, the mean citation age of the references was 11.87 years, with the highest being recorded in 2012 (i.e. 13.73). The lowest citation age (7.91) was recorded in 2009. It was noted that, overall, the median was 8 with the highest and lowest integers being 12 and 4, respectively. The most frequent or common integer in terms of the citation age was 2, implying that most cited references were 2 years older than the citing papers, with the exception of the references of the three papers published in 2012. The majority of those cited references were 9 years older than the citing papers.

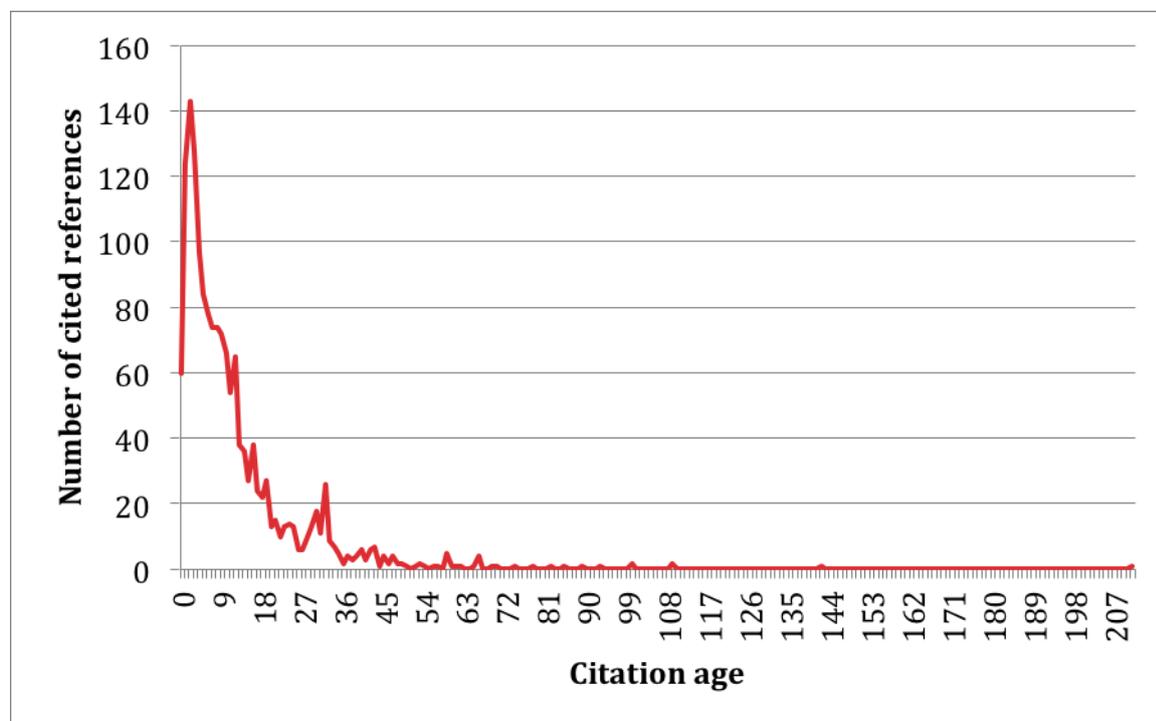


Figure 3: Citation age of references in the archival literature in sub-Saharan Africa

In terms of the distribution pattern of the ungrouped citation ages, it was noted that the citation ages ranged from 0 to 211 years as reflected in figure 3. The illustration shows that the majority of the cited references (934 or 58.2%) were 9 years and below older than the citing papers. There were six cited references that were 100 years and more older than the citing papers. The oldest reference whose title was *Thomas Jefferson Papers Series 1. General Correspondence. 1651-1827: Thomas Jefferson to Ebenezer Hazard* was cited in 2002 by P Ngulube. The reference was that of an archival record housed at the Library of Congress. It was observed that a sizable number of cited references (i.e. 60, accounting for 3.7%) bore the same publication year as the citing papers, hence the nil citation age shown in figure 3.

Most cited sources of information for archival research in sub-Saharan Africa

Sources are channels of scholarly communication. Authors tend to prefer referring to and at times publishing in certain sources for various reasons. In the case of publishing, preference is guided by the authors' need for extensive prestige and visibility, among other factors. In order to determine the most preferred sources from which authors extracted information for their research, the study examined the number of times a specific source was cited.

Table 3: Most cited sources

SOURCE/JOURNAL/BOOK TITLE	Number of references
ESARBICA Journal	54
Library Management	15
Records Management Journal	14
Archivaria	13
Repeat Photography: Methods and Applications in Natural Sciences	12
African journal of library, archives and information science	11
Journal of the Society of Archivists	11
S A Archives Journal	11
South African journal of Libraries and Information Science	11
The Oxford History of the British Empire	11
American Archivist	9
Keeping Archives	9
Journal of Applied Psychology	8
The Imperial Game	8
ECARBICA 7 Seventh Biennial Conference and Seminar of the East and Central Africa Regional Branch of the International Council on Archives, Harare	6
Information Development	6
Journal of Southern African Studies	6
Preservation: issues and planning	6
Proceedings of the Pan-African conference on the preservation and conservation of library and archival materials, held in Nairobi	6
Sport in History	6
The Cultural Bond: Sport, Empire, Society	6
Botswana Daily News	5
IFLA Journal	5
LIBRI	5
Mousaion	5
Refiguring the Archive	5
The American Archivist	5

Table 3 shows that the *ESARBICA Journal* was the most cited and, therefore, assumed to be the most preferred source of information for archival scholars in sub-Saharan Africa (see table 3). The journal was cited 54 times, followed by *Library Management*, which received 15 citations, and *Records Management Journal*, which was cited 14 times. Other journals that featured among the top 10 were: *Archivaria* (13); *African Journal of Library, Archives and Information Science* (11); *Journal of the Society of Archivists* (11); *S A Archives Journal* (11); and *South African journal of Libraries and Information Science* (11). There were also other types of sources that prominently featured among the most cited sources. These sources were in book format (e.g. edited books and encyclopaedias) and included *Repeat Photography: Methods and Applications in Natural Sciences*, which was cited 12 times in the archival literature; *The Oxford History of the British Empire* (an encyclopaedia cited 11 times); *The Imperial Game* – a book that generated 8 citations; *Preservation: issues and planning*; and *The Cultural Bond: Sport, Empire, Society*, which were books that posted 6 and 5 citations, respectively.

Table 4: Most common title words

TITLE WORD	FREQUENCY	%	TITLE WORD	FREQUENCY	%
ARCHIVES	257	14.89	MATERIALS	37	2.14
AFRICA	217	12.57	EDUCATION	34	1.97
RECORDS	161	9.33	PRETORIA	34	1.97
PRESERVATION	147	8.52	HERITAGE	33	1.91
SOUTH	140	8.11	WORLD	33	1.91
MANAGEMENT	137	7.94	MANAGING	32	1.85
INFORMATION	130	7.53	PRACTICE	31	1.80
LIBRARY	106	6.14	COLLECTIONS	29	1.68
NATIONAL	100	5.79	ESARBICA	29	1.68
LIBRARIES	90	5.21	NUCLEAR	29	1.68
AFRICAN	87	5.04	PRINCIPLES	29	1.68
DIGITAL	85	4.92	ACT	28	1.62
ARCHIVAL	74	4.29	CONSERVATION	27	1.56
PUBLIC	59	3.42	KNOWLEDGE	27	1.56
HISTORY	58	3.36	COMMITMENT	25	1.45
DISASTER	54	3.13	CONTROL	25	1.45
SOUTHERN	51	2.95	SERVICE	25	1.45
UNIVERSITY	48	2.78	AGE	24	1.39
RESEARCH	46	2.67	PLANNING	24	1.39
ACCESS	45	2.61	PROJECT	24	1.39
REPORT	44	2.55	RESOURCES	23	1.33
ELECTRONIC	43	2.49	ARCHIVE	22	1.27
BOTSWANA	42	2.43	AUDIOVISUAL	22	1.27
INTERNATIONAL	40	2.32	CHALLENGES	22	1.27
DEVELOPMENT	39	2.26	ORGANISATIONAL	22	1.27

Most common title words in the cited references of archival literature in sub-Saharan Africa

There are different ways of determining the most researched topics. The most commonly applied method is to examine the number of publications indexed under subject terms as reflected in various databases. The subject terms are normally supplied by the indexing service (Web of Science citation indexes, EBSCO-Host databases, Scopus, etc). The other method is to examine the author-supplied keywords, which normally reflect the author's own perception of his/her topic of research. Finally, the title words can also be used to find the researched topics. It has been observed that titles are very important components of any scientific or scholarly article as they form part of the access points in search and retrieval processes (e.g. Luhn, Feinberg, Buxton, Manten and Tocatlian, all as cited in Yitzhaki 2001:759). According to Yitzhaki (2001:759), many information retrieval systems "depend heavily on indexing by automated, computerized selection of words from article titles". Well-designed titles, therefore, can be information-rich to the extent that they can be sources of indexing terms for the documents. Titles can, therefore, be sources for the topics covered in the documents, thereby reflecting the research focus areas or topics.

This study analysed titles to discover the most preferred topics of archival science researchers in sub-Saharan Africa. Table 4 provides 50 most frequent keywords found in the titles of the cited works. *Archives* and *Africa* appeared in more than 200 titles, each thereby accounting for over a combined 25% of the total number of cited references, or 1726. Other keywords that featured among the top 50 most common words were: records (161), preservation (147), South (140), management (137), information (130), library (106) and national (100).

Authors most cited by archival researchers in sub-Saharan Africa

Researchers, in any particular field or discipline, tend to influence the direction research takes or can take in that field or discipline. Perhaps, it is with such hindsight that Thomson Reuters developed a resource known as Highly Cited Research, which profiles the people behind the most influential research in various disciplines. On its website for Highly Cited Research, Thomson Reuters (2013) states that a "citation is a direct measure of influence on the literature of a subject, and it is also a strong indicator of scientific contribution, since it is derived from a pattern of interaction among millions of published articles". Influential researchers are thus identified through the assessment of their citation impact. The higher the citation impact, the more influential a researcher is thought to be. However, we believe that any author's influence is directly linked with the preferences of the citing authors, who find the cited authors' works have relevance for their own.

Table 5: Most cited authors

No	Author	Number of references	Percentage
1	Ngulube P	41	2.38
2	Mnjama NM	20	1.16
3	Derrida J	18	1.04
4	Harris V	13	0.75
5	Wamukoya J	12	0.70
6	Mazikana PC	10	0.58
7	Cook T	8	0.46
8	Merrett C	8	0.46
9	Nauright J	8	0.46
10	Feather J	8	0.46
11	Nyssen J	8	0.46

In this study, the most cited authors as reflected in table 5 included the following authors who were cited at least 10 times each in the archival literature on sub-Saharan Africa: Ngulube P (41 citations), Mnjama NM (20), Derrida J (18), Harris V (13), Wamukoya J (12), and Mazikana PC (10). Although these authors topped the list, it was noted that they appeared in 6.61% of the total number of cited references. The majority of the authors, numbering 1182, were cited only once each in the list of cited references. Those who were cited twice numbered 156, while three-times-cited authors numbered 51. There was a total of 11 authors who were cited 5 times each, and 5 authors who were cited 6, 7, and 8 times each, respectively. Only one author was each cited more than 10 times. These are the top 6 authors in table 5.

Conclusions and recommendations

This paper's title poses a rhetorical question on whether or not the cited references in archival research in sub-Saharan Africa could be a measure of archival researchers' preferences. The study considered the following areas in order to investigate the preferences of the researchers: most

cited types of sources; citation age of references; most cited titles; most cited sources; most researched topics; and the most cited authors.

In terms of the most cited types of sources, which was considered an indicator of the most preferred types of sources, it was found that the archival researchers in sub-Saharan Africa preferred journal articles as sources of information. This seems to be a common practice in scholarly communication where journals have become the main sources of information for research; most probably because journals are carriers of the most current information as well as largely publishing empirical research findings. Some studies have made similar observations in different disciplines (e.g. Peritz & Bar-Ilan 2002; Schubert 2004) while others (e.g. Wainer, De Oliveira & Anido 2011) found that conference proceedings were the most preferred in the field of computer science. Consistent with some scholars' assertion that archival sources are rarely consulted, it emerged in this study that there were very few archival sources in the cited references. As a matter of fact the sources accounted for only 3% of the total number of references.

Given this scenario, we recommend an aggressive and effective public programming of archives in sub-Saharan Africa. This could take the form of first examining the holdings of the archives to ascertain what archives are available, identifying user needs and informing users of available resources and services that could profit their research endeavours. Ngulube (2013) goes a step further, advising archives to consider repackaging information in such a way that will ease information retrieval. Quick and easy access to information is a key factor in deciding what sources will be consulted for a research project. Chute (2000) contends that the marketing and promotion of archival services is crucial, or else their contents will not be used for research and other purposes. Therefore, the authors are of the opinion that archives should find ways to promote their holdings to researchers in various institutions. Raising awareness could be achieved by communicating with researchers in various institutions and agencies and institutions directly by email or post. An added approach could involve archivists attending different conferences to exhibit or present research papers that inform researchers how archives can benefit their research. Moreover, Chute (2000) explains that learning never ends, archivists can benefit from referring to the experiences of other archives' outreach and promotion experiences.

We also challenge archival educators as well as the staff working in the archives in not only sub-Saharan Africa but in the whole world to investigate the factors that may be impeding the effective use of archives. The investigation should also focus on the extent to which such factors as cost of access, visibility of the archives, nature of access (i.e. open versus closed access), and time required to access and consult sources at the archives.

The study also found that the archival researchers in sub-Saharan Africa cite relatively old sources. The average citation age of the references was about 12 years, with the most current references being published in the same year as the citing articles, and the longest chronological age being over 200 years. The oldest cited reference's actual citation age was 211 years. Nevertheless, it emerged that between 2009 and 2010, the majority of the cited references were published in the same year as the citing papers. The average citation age witnessed in this study is not unique, as other studies have also recorded similar findings or patterns (see Marton 1981; Glanzel & Schoepflin 1999; Lin & Huang 2012). In their comparative study of reference literature in the sciences and social sciences, Glanzel and Schoepflin (1999) noted that there was no big difference between the two broad areas in terms of the reference age. The field of Library and Information Science (LIS) recorded an average reference age of 9.1. Other fields such as Solid State Physics, Mathematics, Psychology and Psychiatry, Business and Economics produced a reference age of between 10 and 13, while History and Philosophy of Science and Social

Sciences recorded the highest reference age value of 38.8 (Glanzel & Schoepflin 1999:41). The trend and patterns of referencing across the fields seems to be similar when it comes to the age of source references that are consulted for research. However, when compared to the citation age in LIS research (the field to which archives belong), it can be said that archival researchers cite older sources. It should however be noted that where extensive use of archives is made in a publication, the inevitable consequence is that mean citation age goes up significantly. This ought not be viewed as indicating that the work is out of date.

In terms of the most preferred research topics, the study found that papers in the discipline of archives featured prominently among the most cited references. This pattern is reflected in the analysis of the title words that were used to find the most preferred topics of research. In that respect the study found that "archives", "records", "preservation" and "management" were the most common words within the titles of the cited sources. Despite this finding, it was noted that multidisciplinary works were also preferred as sources of information for archival research in sub-Saharan Africa. The multidisciplinary research by archival researchers is likely to be boosted through research collaboration through which several research problems can be addressed from different perspectives. This is particularly so in records management, which is increasingly becoming a multidisciplinary subject/field (King, Hare & McLeod 1996). It is believed that, through collaboration, each researcher in the collaborating team consults different sources, thereby increasing not only the number of references, but offering different perspectives on the topic of research.

Regarding the most cited authors, it was revealed that the most preferred authors were from sub-Saharan Africa. In fact, the top six of the most cited authors in table 6, originate from African countries. These are renowned scholars in the field of archives and records management on the continent. Perhaps the majority of those who cited them were their students. Self-citations may have also contributed to the high number of citations for some of the individuals. Irrespective of the self-citations, the scholars still remain influential in the discipline.

One other variable that was considered to investigate the preferences of the archival researchers in sub-Saharan Africa was the sources of information for their research. The *ESARBICA journal* emerged as the most preferred. This journal is among a few journals that publish archives and records management in sub-Saharan Africa. Another subject-specific journal published in sub-Saharan Africa that was heavily consulted by archival researchers was the South African Archives Journal (later renamed the Journal of the South African Society of Archivists). The journal is published by the South African Society of Archivists in South Africa (SASA). The journal is easily and cheaply accessible to researchers, a fact that may explain its preference amongst archival researchers in sub-Saharan Africa. Other journals, especially those published in foreign countries, are not easily accessible due to the high cost of subscription. Perhaps there is need to publish new journals on the specific subject of archives and records management in sub-Saharan African countries for wider dissemination of the increasing number of research outputs emanating from authors affiliated with institutions in the region. The hosting of subject-specific conferences in sub-Saharan Africa (e.g. SASA and ESARBICA) has resulted in an increased number of papers originating from African scholars and, hence, our belief that sub-Saharan African authors or researchers require additional indigenous journals through which they can share their research findings.

In conclusion, it appears that informetrics can be used to measure the preferences of researchers in terms of the authors, journals and published works. However, it is important to note that citations do not necessarily reflect preferences as there are various motivations for citing a source as outlined in section 2 above, as well as in other published literature such as Kim (2004).

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