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Citation analysis of most prolific authors in the field of Library and Information Science in Nigeria

Clement okeji
cc.okeji@coou.edu.ng

Ejiobi Gabriel Bosah Mr
The library Division, Nigerian Institute for Oil Palm Research, Benin City, Edo State, Nigeria, gabrielbosah2010@yahoo.ca

Eberechukwu Monica Eze Ph.D
Department of Library and Information Science, Enugu State University of Science and Technology, Enugu, Nigeria, ezemonica33@yahoo.com

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Citation analysis of most prolific authors in the field of Library and Information Science in Nigeria

Abstract

The aim of the study is to carry out a citation analysis of ten most prolific academic scholars in the field of Library and Information Science (LIS) in Nigeria and also determine their authorship pattern. Google scholar database was used in searching for articles published from 2000 to May, 2018. Ten academic researchers in the field of LIS in Nigeria were studied. Results from the analysis show that, Tella, Adeyinka with 72 articles had a total of 1,740 citations and is the most cited author among the ten most prolific authors in the field of Library and Information Science in Nigeria, followed by Adomi, E. Esharenana with 904 citations from 47 articles, and Nwagwu, E. Williams with 684 citations from 70 articles. The authorship patterns of the publications revealed that majority of the articles were co-authored papers. Further analysis showed that the degree of collaboration among the researchers was high. The correlation of the most cited articles with most cited journals revealed the Library Philosophy & Practice as the most cited journal. The study calls for authorities in institutions and editors of local journals to find solutions to the inclusion of local journals in international indexing and abstraction databases to present a realistic picture of scholarly publications.

Keywords: Citation analysis, LIS, Google scholar, academic researchers, Nigeria.

Introduction

Higher educational institutions like colleges or universities are evaluated on the basis of different criteria. The most important criterion is research criterion (Dhamdhare, 2018). Library and information science professionals have several techniques to identify which information resources that researchers consult in a given field. Librarians have the responsibility of providing these information resources to researchers in LIS and any other field. A good way for librarians to do this is by identifying the resources that researchers use often in their scholarly communication process through citation analysis and then acquiring these resources. For example, citation analysis, questionnaires and similar surveys, analysis of publication

patterns, and interviews are some of the techniques often adopted to achieve this purpose. Among these, citation analysis, which is an examination of the published works, such as articles and books that cite a particular author or article appears to be the most appropriate.

Citation analysis is the study of the citation process in scholarly research. The analysis of these notes, bibliographic entries, and other citations can be used to determine the timeliness of cited sources (Ogunronbi, 1988; Nkiko and Adetoro, 2007); authorship patterns in a field (Omekwu and Atinmo, 1998); frequently cited sources (Okiy, 2003), and also citations to electronic resources (Sam and Tackie, 2007). Citation analysis has been found to be a good way to determine the information resources that researchers use in a field, the volume of research in the area, and the patterns of citation and authorship (Gooden, 2001). The results of citation analysis can guide researchers, librarians, and other professionals on how to support research through acquisition of the core journals and the most prolific authors in LIS.

Citation analysis derives from the assumption that articles citing the same references also have much of their contents in common. This relationship between an article's contents and its references is the cornerstone of citation analysis and is of great interest to scholars. Meho (2007) notes that citation analysis is "a branch of information science in which researchers study the way articles in a scholarly field are accessed and referenced by others." He points out that it involves studying the frequency of citation to a researcher or journal, and which influential scholars and important works receive more citations than others.

The literature shows that not much has been done on citation analysis in the field of LIS in Nigeria to determine how libraries could better support research through their collections. Therefore, this study is set to investigate citation analysis of ten prolific authors in the field of Library and Information Science in Nigeria. Specifically, the paper intends to:

1. determine the most cited author in the field of LIS in Nigeria;
2. determine the authorship pattern among the authors;
3. determine the degree of collaboration among the authors;
4. develop a rank list of the most cited article for each individual author;
5. determine the yearly distribution of articles published by the ten prolific authors in LIS in Nigeria; and
6. determine the most cited journal in LIS.

Literature review

Google scholar database

In recent years, the Web of Science has been joined by three other major services for citation analysis, Scopus, Google Scholar, and, most recently, Microsoft Academic. The fact that Google Scholar and Microsoft Academic are free-to-access services is an undoubtedly important step in the right direction (Stuart, 2018). Of the two major free-to-access services, Google Scholar is the longest established and continues to have greater coverage than Microsoft Academic (Harzing and Alakangas, 2017). Google Scholar provides citation counts for articles found within Google Scholar. Depending on the discipline and cited article, it may find more cited references than Web of Science or Scopus because overall, Google Scholar is indexing more journals and more publication types than other databases.

Some authors consider that the creation of Google Scholar in 2004 and then Google Scholar Citations and Google Scholar Metrics have caused a revolution in the research evaluation field as it places within every researcher's reach the tools that allow bibliometric measuring (Delgado Lopez-Cozar, et al., 2012; Martin-Martin et al., 2014). The development of Google Scholar Metrics, launched on April 2012 with the goal of providing a ranking of scientific publications indexed on Google Scholar (journals, proceedings, repositories), provided that they had published at least 100 papers and received at least one citation in the last five years, has been a crucial step towards knowing the impact of authors' works. Once authors create their profile and link their publications, Google Scholar populates the individual's profile with citation indices and metrics (Coates, 2013). Galloway and Pease (2013) considered that Google Scholar Citations are one of the most mature and promising altmetrics tools to track readership and influence. The authors described Google Scholar Citations as a service that allow authors to track their publications and influence using Google Scholar Metrics. This free tool is extremely useful, user friendly and well regarded.

Importance of citation analysis

Citation analysis infers that references to a particular journal reflect scholarly impact of that article on the author of the citing work (Ezema and Asogwa, 2014). Another assumption is that the accumulated citations to a given author's work in some sense reflect the impact of that author on scholarship and research. According to Maier

(2015) “citation is when one paper explicitly refers to another paper, and in that paper full reference of the cited paper is given in the bibliography.”(p.1)

Generally, the combination of both in-text citation and the bibliographic entry constitute what is commonly known as citation. Citations are the most explicit form of an intellectual debt that is generally made between two papers (Stuart, 2018). Citations are important for the following reasons (Dhamdhare, 2018):

1. Citations are how authors give proper credit to the work and ideas of others.
2. People also count citations of a paper as an indication of how important or influential the paper has been.
3. To avoid plagiarism, it is compulsory to give credit to the original author by citing his/her sources in references
4. Citation is extremely useful to anyone who wants to find out more about the ideas and where they came from.
5. Citing sources shows the amount of research done by a researcher which strengthens his work by lending outside support to his ideas.

Citation data are frequently used for research evaluation purposes (Leydesdorff , et al., 2016). The timeliness of information resources used by researchers has also been determined through citation studies. For example, Ogunronbi (1988) in examining the citations in the *Ilorin Journal of Education* published annually by the University of Ilorin in Nigeria, analyzed 80 articles drawn from five issues of the journal, which yielded 965 citations. The findings show that publications that are up to ten or fifteen years old dominated the citations. Materials published between 1960 and 1979 accounted for 78.4 percent of the citations. Similarly, Ezema (2012) conducted a citation analysis on theses on Nigerian languages and availability of cited sources in Nigerian university libraries and found that materials published between 1900 and 1960 contributed 6.4 percent of the total citations. The highest number of citations in that study were materials published in 1981 (more than thirty years old). Citation analysis has also been employed to identify core journals and influential scholars in a particular field. For example, Ezema (2012) identified twenty-three most frequently cited journals, with *Linguistic Inquiry journal* ranking first. Ezema found 74 authors with 50 citations and above as the most frequently cited authors, with Noam Chomsky ranking first.

Citation shows how many times an article has been used by other articles. Citations are applied to measure the importance of information contained in an article (Fooladi et al., 2013). “The more often a paper become cited the greater its influence on the

field” is a basic assumption of citation analysis (Martínez, et al., 2013). Bornmann (2016) presented a statistical approach using regression models which not only allows a comparison of the citation impact of papers from selected institutions, but also a comparison of the citation impact of the papers of these institutions with all other papers published in a particular time frame.

Authorship patterns

The study by Ezema and Asogwa, (2014) on citation analysis and authorship patterns of two linguistics journals, found that single authorship dominate linguistics research. More than 70 percent of the citations are to single-authored works. The study also revealed that single-authored works have the highest citations with 63.2 percent, followed by works of two authors with 26.4 percent. Citations to works by more than three authors are the least with 2.0 percent. In terms of degree of research collaboration, the study found that the highest were recorded between 1961 and 1970 with 0.45, followed by 1970 to 1980, while the least were recorded in pre-1900 publications. The mean degree of collaboration in linguistics research is 0.37.

Similarly, Pradhan, Panda, and Chandrakar, (2011) examined the trends, authorship pattern, and extent of collaborative research in Indian chemistry literature. The authors sampled 53,977 articles downloaded from the Science Citation Index Expanded (SCI Expanded) database from the Web of Science indexing service from 2000 to 2009. The average number of authors per article was 3.55. In the study, the degree of collaboration (C) in ten years (2000–2009) was 0.03, but the degree of collaboration year by year was almost the same in all years, with a mean value of 0.97. The authors found that the number of multi-authored articles was higher than those with single authorship. The study indicates that the researchers in chemistry were more interested in team research than in single research. Kumar and Kumar, (2011) analyzed 8,093 citations documented as references in the *Journal of Oilseed Research* (JOR) published from 1993 to 2004. The paper analyzed authorship patterns of citations and calculated a number called the collaboration coefficient indicating the extent to which authors worked together on articles. Findings reveal that the collaboration coefficient was very high in all years, ranging from 0.76 to 0.84. Kumar and Kumar also found that the higher the value of the collaboration coefficient, the less the number of single-authored papers.

Some other citation studies have been conducted to examine authorship patterns in that field of study. For example, the study by Barik and Jena (2013) on “Bibliometric Analysis of Journal of Knowledge Management Practice, 2008-2012” and found that

single author articles are dominant in the journal, which consist of about 50% of the whole contributions of the journal. It is followed by two and three author articles. Satpathy, Maharana and Das (2014) in their study “Open source journals of library and information science: a bibliometric study” analyzed a total number of 373 papers published in the top ten LIS open source journals during 2011. They found that *Library Philosophy and Practice (LPP)* journal published the highest number of papers (201: 53.89 percent). Regarding authorship pattern of papers, the scholars found that out of 373 contributions, 151 (40.48 percent) were contributed by single authors.

Methodology

The method adopted for this study was the use of citation analysis; that is, analysis of cited reference works in the source journals. Google scholar was searched from May - July, 2018, for articles published by ten academic researchers in the field of LIS in Nigeria. The study covered works published from 2000 - May, 2018. Only articles and proceedings that are indexed in international indexing and abstracting databases were included, book chapters and other publications were excluded. In total, 385 articles and proceedings published by ten prolific authors with 4, 918 citations were analyzed.

Results and discussion

Most cited LIS authors in Nigeria.

Table 1: Most cited LIS authors in Nigeria.

s/n	Names	No of articles	citations	Rank
1	Tella, Adayinka	72	1,740	1st
2	Adomi, E. Esharenana	47	904	2nd
3	Nwagwu, E. Williams	70	684	3rd
4	Baro, E. E.	39	462	4th
5	Okiy, B. Rose	24	408	5th
6	Ezema, J. Ifeanyi	30	216	6th
7	Popoola, O. Sunday	30	199	7th
8	Anasi, Stella	23	115	8th

9	Ifijeh, I. Goodluck	36	106	9th
10	Nwezeh, M.T. Chinwe	14	84	10th
	Total	385	4,918	

Citation analysis involves counting the number of times an article is cited by other works to measure the impact of a publication or author. Results in Table 1 shows that, Tella, Adeyinka with 72 articles had a total of 1,740 citations and ranked 1st among the ten most prolific authors in the field of Library and Information Science in Nigeria; followed by Adomi, E. Esharenana with 904 citations from 47 articles, and Nwagwu, E. Williams with 684 citations from 70 articles. Others are: Baro, E Emmanuel with 462 citations from 39 articles, Okiy, B. Rose with 408 citations from 24 articles, and Ezema, J. Ifeanyi with 216 citations from 30 articles. This shows how only few LIS academics (professors, lecturers, and academic librarians) are visible and productive in the field of Library and Information Science in Nigeria. The reason may be that majority of the LIS academics in Nigeria publish their papers with local journals that are not visible globally. Since most of the local journals are neither indexed nor abstracted by international indexing and abstracting agencies or listed in any online databases, the global visibility and accessibility are usually poor even when there are quality papers in them. The study calls for policy makers in research, academic institutions and editors to strive to have local journals indexed in international databases. Citations analysis no doubt will help librarians and researchers know and track materials from prolific writers in the field of library and information science.

Authorship pattern of publications

Table 2: Authorship pattern of publications

s/n	Names	No of articles	Single author	2 authors	3 authors	4 and above	Degree of collaboration
1	Baro, E. E.	39	3	14	22	-	0.92
2	Popoola, O. Sunday	30	6	16	5	3	0.80
3	Ifijeh, I. Goodluck	36	13	13	2	8	0.64
4	Ezema, J. Ifeanyi	30	11	15	4	-	0.63

5	Tella, Adeyinka	72	16	33	17	6	0.62
6	Anasi, Stella	23	9	10	4	-	0.61
7	Nwagwu, E. Williams	70	30	34	3	3	0.57
8	Adomi, E. Esharenana	47	20	19	8	-	0.57
9	Okiy, B. Rose	24	20	2	2	-	0.17
10	Nwezeh, M.T. Chinwe	14	12	1	1	-	0.14
	Total	385	140	157	68	20	0.64

The authorship pattern of the publications was examined with respect to whether they were co-authored or not. Level of collaboration among colleagues is a prominent area of inquiry in bibliometric studies, which indicates the trends in publication patterns of single and joint authorship. Results in Table 2 shows that, out of the 385 articles, 140 (36.4%) are single authored papers, while, 245 (63.6%) are co-authored papers. This shows that majority (63.6%) of the papers are co-authored papers. This finding disagrees with previous studies by Khaparde (2011); Jena, Swain and Sahon (2012) that authorship pattern mostly favored the single authored papers.

Degree of collaboration

To calculate the degree of collaboration among the 10 authors, the following formula was used

$$\text{The degree of collaboration } C = \frac{Nm}{Nm + Ns}$$

Where C = Degree of collaboration in a discipline

Nm = Number of multiple-authored papers in a discipline

Ns = Number of single-authored papers in a discipline

$$\text{Therefore, } C = \frac{245}{245+140} = 0.64$$

The results in Table 2 show that the degree of collaboration among the researchers is high with 0.64. From individual level, Baro, E. E. is the highest collaborator with 0.92 as the degree of collaboration calculated, followed by Popoola, O. Sunday with 0.80 and Ifijeh, I. Goodluck with 0.64 degree of collaboration calculated. The least collaborator is Nwezeh, M.T. Chinwe with 0.14 degree of collaboration calculated. Galyani-Moghaddam, Jafari, and Sattarzadeh (2017) reported that impact of geographical factors in collaboration seems that physical proximity is an important factor in collaboration.

The most frequently cited article for the 10 authors

Table 3: The most frequently cited article for the 10 authors

s/ n	Name	Article	Citation	Journal
1	Baro, E. Emmanuel	Information literacy among undergraduate students in Niger Delta University	43	The Electronic Library
2	Nwagwu, E. Williams	The Internet as a source of reproductive health information among adolescent girls in an urban city in Nigeria	79	BMC Public Health
3	Ezema, J. Ifeanyi	Building open access institutional repositories for global visibility of Nigerian scholarly publication	47	Library Review
4	Adomi, E. Esharenana	Application of ICTs in Nigerian secondary schools	112	Library Philosophy & Practice
5	Popoola, O. Sunday	Teaching Effectiveness, Availability, Accessibility, and Use of Library and Information Resources Among Teaching Staff of Schools of Nursing in Osun and Oyo State, Nigeria	36	Library Philosophy & Practice

6	Tella, Adeyinka	Work motivation, job satisfaction, and organizational commitment of library personnel in academic and research libraries in Oyo State, Nigeria.	525	Library Philosophy & Practice
7	Ifijeh, I. Goodluck	Impact of the Internet on final year students' research: A case study of Covenant University, Ota, Nigeria	21	Library Philosophy & Practice
8	Okiy, B. Rose	A survey of cybercafes in Delta State, Nigeria	80	The Electronic Journal
9	Anasi, Stella	Curbing youth restiveness in Nigeria: The role of information and libraries	38	Library Philosophy & Practice
10	N wezeh, M.T. Chinwe	The impact of Internet use on teaching, learning and research activities in Nigerian universities: A case study of Obafemi Awolowo University.	22	The Electronic Journal

Table 3 shows results of the most frequently cited article for each of the 10 authors in LIS in Nigeria. Selecting out the most frequently cited articles for the prolific authors will make researchers and librarians know the core papers and go for them. Generally, bibliometric indicators have been widely employed. The indicators include the total number of papers, total number of citations, citations per paper, and the number of “significant papers”, defined as the number of papers with > y citations and the number of citations to each of the q most-cited papers, etc (Hirsch, 2005).

Correlation between most cited articles with most cited journal

Table 4: Correlation of the most cited articles with most cited journal

Journal	No of citations	Percentage	Rank
Library Philosophy & Practice	732	73%	1 st
The Electronic Library	45	14.4	2 nd
BMC Public Health	79	7.9	3 rd
Library Review	47	4.7	4 th

Total	1,003	100%	
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The correlation of the citations of the most cited articles with most cited journal revealed that Library Philosophy & Practice ranked 1st with 73% (732) of the citations, followed by The Electronic Library ranked 2nd with 14.4% of the citations. The difference of the number of citations between Library Philosophy & Practice and other journals might be as a result of the fact that Library Philosophy & Practice is an open access journal. This finding supports the study by Malakoff, (2003) which revealed that free online papers are likely to reach more readers and therefore attract more citations. Similarly, the study by Hitchcock, et. al. (2003) found that across all disciplines the distribution of number of citations indicates that articles in OA have higher citation counts. These distributions also suggest that the greatest impact of OA is with the most-cited articles. Bosah, Okeji and Baro, (2017) also reported that academic librarians who choose OA journals to publish their papers want a wide readership of their papers and to attract citation of their work. Lack of visibility caused that some senior scholars in some African universities may not have a significant citation impact (Rotich and Musakali, 2013).

Conclusion

Results from the analysis show that, Tella, Adeyinka with 72 articles had a total of 1,740 citations and is the most cited author among the ten most prolific authors in the field of Library and Information Science in Nigeria, followed by Adomi, E. Esharenana with 904 citations from 47 articles, and Nwagwu, E. Williams with 684 citations from 70 articles. The results of this kind of citation analysis can guide researchers, librarians, and other professionals on how to support research through acquisition of library materials from the core journals and by prolific authors.

The authorship patterns of the publications revealed that majority of the articles are co-authored papers. Further analysis showed that the degree of collaboration among the researchers is high. The correlation of the citations of the most cited articles with most cited journal revealed that Library Philosophy & Practice ranked 1st with 73% of the citations, followed by The Electronic Library ranked 2nd with 14.4% of the citations. It is obvious that majority of publications of LIS academics are not receiving citations because the publications are not visible. One major reason for this trend is that most LIS academics in Nigeria publish their papers with local journals

that are not visible globally. Since most of the local journals are neither indexed nor abstracted by international indexing and abstracting agencies or listed in any online databases, the global visibility and accessibility are usually poor even when the papers are of quality papers.

For this reason, authorities in institutions and journal editors are encouraged to find some solutions for the inclusion of local journals in international indexing and abstracting databases to present a realistic picture of scholarly publications by Nigerian authors.

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