



Research Article

The implications of COVID 19 on the publication of library and information science literature in Africa: A bibliometric study

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ABSTRACT

In almost a blink of an eye COVID 19 pandemic has surprised the world with devastating effects witnessed across the globe. There was urgent need to establish whether COVID 19 has taken hold of the publishing industry based on the unprecedented pandemic situation in the modern world. The study employed desk review alongside citation and bibliographic analysis to carry out inquiry into the publications in Library and Information Science as a case covering the period 2017 to 2020 and looking at the top 10 publishing countries in Africa. There was need to ascertain the hypothesis that COVID 19 pandemic could have affected the publication trends of literature with consideration of the trajectories before and at present. Findings suggest that research output increased during COVID 19 period with Nigeria and South Africa taking the lead in publications respectively while South Africa had the highest impact factor. Uganda, and Algeria remained extremely low with disparity between countries in terms of the number of publications wider as evidenced by the higher standard deviation of 100.9.

Keywords: COVID 19; Publications; Africa; Research; Trends; Information Science

1. INTRODUCTION AND BACKGROUND

Africa is one of the continents with so many developing countries. Like other continents, it has over the recent decades experienced a continuous publication growth (Diego et al., 2021). However, COVID 19 pandemic could change the rules of the game including how people conduct business, research and publish. There was urgent need to establish whether COVID 19 has taken hold of the publishing industry based on the unprecedented pandemic situation in the modern world. The study looked at a case of the publications in Library and Information Science covering the period 2017 to 2020. Generations of citations can be used as indicators of historical trajectories in scholarly literature (Leydesdorff & Bornmann, 2021). There is need to ascertain the hypothesis that COVID 19 pandemic could have affected the publication trends of literature with consideration of the trajectories before and at present.

Analysis of scholarly production through bibliometric facilitates interpretation of the structures of and trends in particular disciplines. (Montero-Diaz. et al. 2018). This analysis

can contribute to identification of the characteristics of a research field thereby revealing future research topics. The analysis can also be implemented at different levels to suit the nature of the actors under investigation; for instance, at the national (countries), individual (authors), or institutional (universities and research centers) level. (Yuh-Shan, & James, 2016)

Journal citation measures are one of the most widely used bibliometric tools. They are used in information retrieval, scientific information, library science and research evaluation. They are also applied at different levels of aggregation. The main source of journal citation measures is the annually appearing Journal Citation Report (JCR). (Ravichandran, Sivaprasad & Manoharan, 2014).

2. LITERATURE REVIEW

Before 2018, Baghestanian & Popov, (2018) revealed that submitted manuscripts have increased in length, the number of authors per paper has risen, and more time is spent on revising papers before acceptance. Okuzaki et al., (2019) observed that publications trends may be affected when authors become unsatisfied with the duration of peer-review, although the reviewers and editors must ensure the quality assurance of publications (Okuzaki et al., 2019)

Bibliometric indicators undoubtedly have some merit in assessing the publication trends and research impact of modern societies (Skoie, 1999). There are many reasons why researchers conduct descriptive metric studies of a particular academic research field (Ali, Malik and Raza 2018). One of such reasons is to understand the identity of a scientific discipline, on both prospective and retrospective lines. It further helps to discover the entire intellectual core of a scientific field instead of focusing on its specific work (Qui & Chen, 2009).

Kumar, (2014) presents a bibliometric analysis of the journal titled “Library Herald” for the period between 2011 to 2014. The analysis covered the number of articles, authorship pattern, subject wise distribution of articles, average number of references per article, forms of document cited, year wise distribution of cited journals etc. The result revealed that out of 114 articles, single author contributed 65 (57.01%) articles while the rest 49 (42.98%) articles were contributed by joint authors. There is general incline in the publication trends based on the literature. Although Diego et al., (2021) asserted that there has been continuous growth of scholarly literature, it was necessary to examine the publication trend of the Library and Information Science as a discipline as a case study. There is a general consensus that COVID 19 pandemic has changed the way people conduct research and publish.

3. METHODOLOGY

The study employed desk review alongside citation and bibliographic analysis to carry out inquiry about the implications of COVID 19 on the Publication of Library and Information Science Literature in Africa. The period of publication analysis is from 2017 to 2020 so as to compare the publication and citation trend for the year 2018, 2019 against the year 2020 when COVID 19 pandemic interventions like the lockdown on the global economy was

more apparent. The paper employs the descriptive research design in order to describe the phenomenon using some key descriptive statistics and trend analysis.

We focused on the Sample of 10 top publishing countries in the order of highest rank to the lowest on the perimeters under published documents, Citable documents, Citations, Self-Citations, Citations per Document and H index. The data are obtained from Scimigo which is powered by Scopus to provide bibliometric and citation information.

Analytically, the trajectory rate from 2017 to 2020 was plotted against the number of publications and the H-index that could indicate the trend. Key descriptive statistics such as mean, median, maximum values, and standard deviations were extracted to describe the phenomena.

4. PRESENTATION AND DISCUSSION OF FINDINGS

The researchers have underscored the publication trends in Africa using Scimago citation analysis supported by Scopus to determine the top 10 countries ranked highest with publications in Africa. In this section, we present results for descriptive statistics and trend analysis

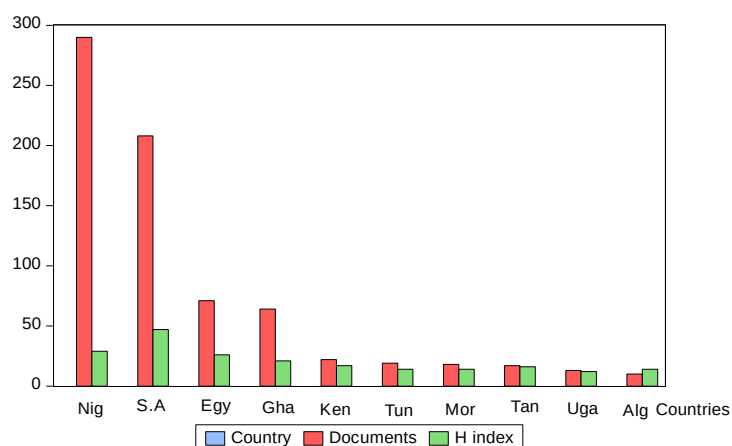


Fig. 1. Bar graph for the number of publications for ten countries in the year 2020

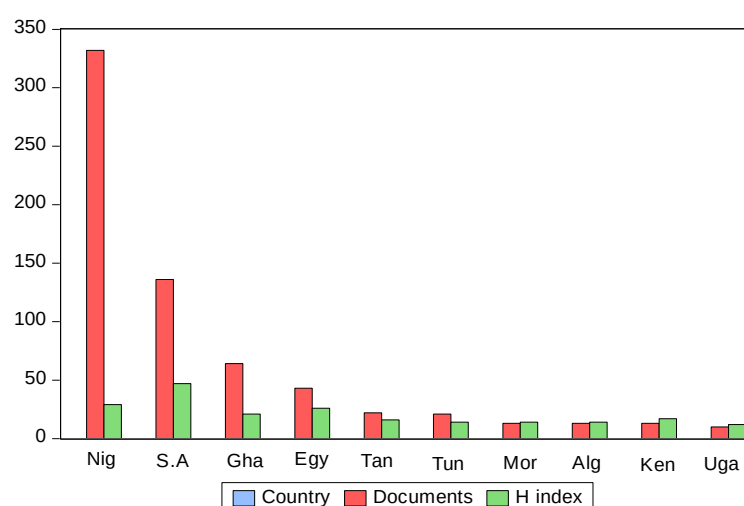
Source: Author's contribution using data from Scimigo

Figure 1 shows the number of publications and the H-index for the top ten countries in the year 2020 when COVID 19 was declared a global pandemic. Nigeria had the highest number of publication (290) and Algeria had the minimum number of publications. Surprisingly, South Africa has the highest H-index score despite having a lower number of publications as compared to Nigeria. However, the disparity between the first category of Nigeria, South Africa, Egypt, and Ghana and the rest of the countries (Kenya, Tunisia, Morocco, Tanzania, Uganda, and Algeria) seem to be wide. This is evidenced by the high standard deviation of 96.97 (Table 1). The mean number of publications in 2020 for the ten countries was 73.2. However, since the number of publications for Nigeria and South Africa are extremely higher than the rest of the countries, the arithmetic mean is not accurate and the median value of 20.5 is a more accurate descriptive statistic for the number of publications for the above countries.

Table 1. Descriptive Statistics for Number of publications and H-index 2020

	Documents	H-Index
Mean	73.2	21.0
Median	20.5	16.5
Maximum	290	47
Minimum	10	12
Standard Deviation	96.97	10.7

Source: Author's computations based on data from Scimigo

**Fig. 2.** Bar graph for the number of publications for ten countries in the year 2019

Source: Author's illustration based on data from Scimigo using e-views

As compared to 2020, in 2019 the highest number of publications was 332 (from Nigeria) as compared to 290 (from Nigeria). However, on average, the mean number of publications in 2020 during COVID 19 time (73.2) was higher than the mean number of publications in 2019 when there was no COVID 19. The median number of publication was 21 as compared to 20.5 in 2020. However, as seen from table 2, the H- index of 47 (for South Africa) was the highest. Publications from other countries (Kenya, Tunisia, Morocco, Tanzania, Uganda, and Algeria) still remain extremely low. The disparity between countries in terms of the number of publication was wider as evidenced by the higher standard deviation of 100.9 (table 2)

Table 2. Descriptive Statistics for Number of publications and H-index 2019

	Documents	H-Index
Mean	66.7	21
Median	21	16
Maximum	332	47
Minimum	10	12
Standard Deviation	100.9	10.7

Source: Author's computations based on data from Scimigo

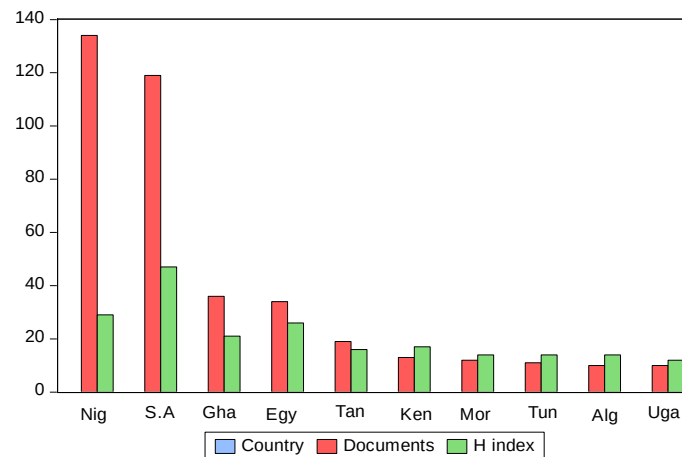


Fig. 3. Bar graph for the number of publications for ten countries in the year 2018

Source: Author's illustration based on data from Scimigo using e-views

As seen in figure 3 and table 3, in 2018, Nigeria (134) still tops in the number of publications followed by South Africa had the highest H-index. The mean number of publication was 39.8 and the mean H-index score was 21. The median number of publications was 16 and the median H-index score was 16.5. Compared to the year 2020 when there was COVID 19, the highest number of publications declined from 290 to 134, the mean number of publications for the ten countries declined from 73.2 to 39.8, and the median number of publications declined from 20.5 to 16. However, there was less disparity among the countries' number of publications as standard deviation declined from 96.97 in 2020 to 46.8 in 2018.

Table 3. Descriptive Statistics for Number of publications and H-index 2018

	Document	H-Index
Mean	39.8	21
Median	16	16.5
Maximum	134	47
Minimum	10	12
Standard deviation	46.8	10.7

Source: Author's computations based on data from Scimigo

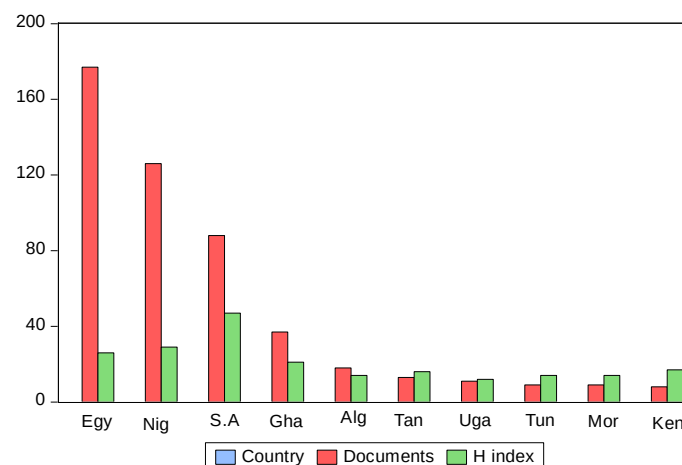


Fig. 4. Bar graph for the number of publications for ten countries in the year 2017

Source: Author's illustration based on data from Scimigo using e-views

In 2017, Egypt registered the highest number of publications (177), followed by Nigeria and South Africa (Figure 4). The highest number of publications for the ten countries declined from 290 in 2020 when there was COVID 19 to 177 in 2017. The mean and median number of publications also declined from 73.2 and 20.5 to 49.6 and 15.5 respectively as seen in table 4. The H-index score of South Africa remains the highest throughout the period from 2017 to 2020. The mean H – index of 21 for all the countries remain unchanged throughout the period from 2017 to 2020 when there was COVID.

Table 4. Descriptive Statistics for Number of publications and H-index 2017

	Documents	H-Index
Mean	49.6	21
Median	15.5	16.5
Maximum	177	47
Minimum	8	12
Standard deviation	60.14	10.7

Source: Author's computations based on data from Scimigo

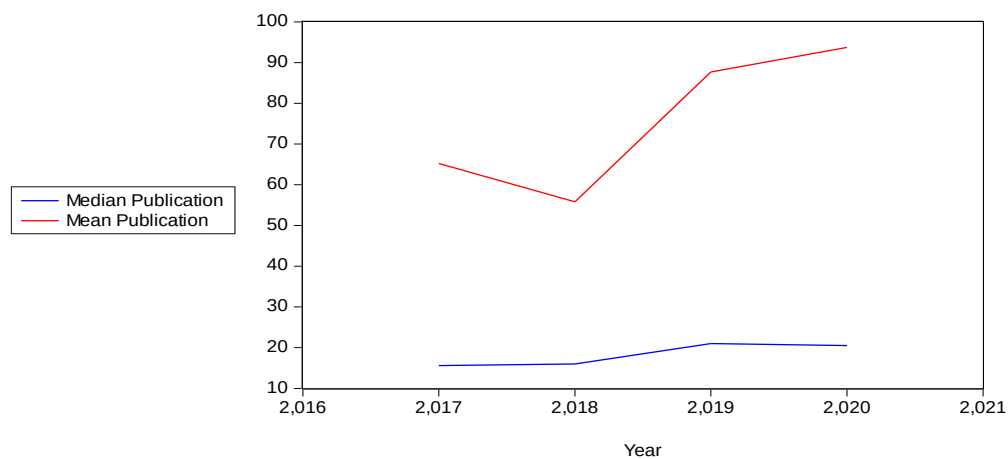


Fig. 5. Trend in mean and median number of publications for the top ten countries

Source: Author's illustration based on data from Scimigo using e-views

Figure 5 shows the trends in the mean and median number of publications from 2016 to 2020. The mean number of publications for the ten countries declined between 2017 and 2018 and after that, there was a remarkable increase from 2018 to 2020. The median value, however, does not show any noticeable trend from 2017 to 2020. However, as noted earlier, the median value provides a more accurate descriptive statistic because the distribution is affected by the presence of extreme values (the distribution is skewed).

5. CONCLUSION

Results from descriptive statistics indicated by mean value of the number of publications from 2017, 2018, and 2019, when there was no COVID 19 and 2020 when there was COVID 19 suggest that the number of publications indeed increased on average in 2020 when there was COVID 19. The median number of publications in the year 2020 also increased as compared to the median value in 2017 and 2018 when there was no COVID. Maximum number of publications also exhibit an upward trend from pre COVID 19 period to the COVID 19 period. For instance, the maximum number of publications in 2017 was 199 and

the maximum number of publications in 2020 was 290. However, no noticeable trend has been seen in the H-index for both pre COVID 19 and COVID 19 period. Based on this preliminary assessment of descriptive statistics, the paper concludes that research output increased during COVID 19 period with Nigeria and South Africa taking the lead in publications respectively while South Africa had the highest impact factor. Uganda, and Algeria remained extremely low with disparity between countries in terms of the number of publications wider as evidenced by the higher standard deviation of 100.9. The increase could be attributed to the lockdown that gave more time to academics and researchers while most of the people were home and for the science research could be impacted by the need for innovative solution to tackle COVID 19 Pandemic and its negative impact on society. The low productivity among the top 10 countries in Africa was seen from those still considered developing countries, therefore the low publications could be associated to limited resources to conduct research and publication.

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