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Scholarly publishing in sub-Saharan Africa in the twenty-first century: Challenges and opportunities

Article in *First Monday* · October 2007

DOI: 10.5210/fm.v12i10.1966 · Source: DBLP

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Scholarly publishing in sub-Saharan Africa in the twenty-first century: challenges and opportunities.

By

Ezra Ondari-Okemwa

Abstract

A free flow of ideas and information is vital to the process of scientific inquiry, and in turn to the ability to address economic, environmental and social development issues both in the sub-Saharan Africa region and globally. Most of the challenges facing scholarly publishing in sub-Saharan Africa are global and do not respect national boundaries. Scholarly publishing enables research findings of scholars to cross international boundaries to provide strong, positive connections between individual scholars, institutions and nations. Such exchanges contribute to the expansion of the global knowledge base to which the sub-Saharan Africa region is linked. Participation in the global arena through scholarly communication may enable the sub-Saharan Africa region to have access to knowledge and information it needs to succeed in the global economy that is being digitized rapidly. Scholarly publishing is as a result of research and innovation which may improve the quality of knowledge and information produced by scholars in the sub-Saharan Africa region. This paper explores the challenges and opportunities of scholarly publishing in sub-Saharan Africa in the twenty-first century. The paper also proposes ways of capitalising on the vast opportunities of enhancing knowledge production and dissemination in sub-Saharan Africa through scholarly publishing in the twenty-first century. An analysis of publication records of sub-Saharan Africa between 1997 and 2007 in the Thompson Scientific was conducted. There are many challenges confronting scholarly publishing in sub-Saharan Africa. The challenges include technological, socio-political, economic and environmental. The 21st century brings with it opportunities that may enhance sub-Saharan Africa's visibility of scholarly publishing.

1.0 Introduction

Sub-Saharan Africa has a low scholarly publishing rate when compared to other regions, both developed and developing (Hassan, 2001). Scientific research, which in most cases results in scholarly publishing, also lags behind in sub-Saharan Africa (World Bank, 2005). Put together, this may be interpreted to mean a declining global competitiveness of sub-Saharan African science as a whole, hence a structural problem in the regional system of innovation. Economic growth in the modern era has been grounded on the exploitation of scientific knowledge (Dasgupta and David, 1994). Scholarly publishing is considered the norm for disseminating and validating research results and is also crucial for career advancement in most academic fields. Data on scholarly publication by country or region provide an indication of the knowledge production and research capacity of that country or region. A low scholarly publication rate in sub-Saharan Africa suggests a problem of knowledge diffusion for the region and possibly low knowledge generation.

2.0 Scholarly Publishing

Scholarly publishing is mostly associated with scholars that teach and/or conduct research in institutions of higher learning and other institutions of research. Castells (2004) looks at the university as being critical for the generation of knowledge, technological innovation and the development of human resources. Scholarly publishing normally refers to published research output of the higher education sub-sector as well as that of government and science councils (De Beer, 2005). Some corporations in the private sector are also involved in research and publication. Maher (2006) argues that when a research university decides to hire or promote a faculty member, the university has to make sure it is hiring or promoting a very good scholar and a person who will do a very good job in both research and the instruction of students. Maher further argues that those evaluations of a good scholar are not easily separable from the evaluations of the quality of the scholarship in journals, given that it is the scholarship that the particular faculty member puts into journals that will give the best measure of how that faculty member is contributing. The four main parties usually involved in scholarly publishing are scholars, editors, publishers and subscribers. Large academic and/or research institutions are the major subscribers of scholarly publications.

In the 21st century, scholarly publishing should be expected to serve the purpose of disseminating knowledge besides the traditional purposes of communicating results of research and enabling scholars to keep abreast of the latest developments in their disciplines or sub-disciplines. Scholars seeking promotions are also evaluated on the strength of the number of scholarly articles they have published and the reputation of the journals in which they publish their research findings. Journal rankings may also be used by university authorities to gauge the progress and impact of faculty members. World university rankings also take into account the number of articles published by faculty members of each university ranked.

Scholarly publishing is an important manifestation of knowledge generation and diffusion (De Beer, 2005). The United Nations Institute of Statistics, Bulletin on Science and Technology Statistics (UIS, 2005) indicate that the whole of Africa represents 1.4% of the world scholarly publications in 2000. However, scholarly publishing in sub-Saharan Africa is faced with challenges in the 21st Century. Scholarly publishing does not have a long history in sub-Saharan Africa and the larger African continent. Journals have been largely acknowledged by scholars as the most effective means of disseminating scholarly research findings. Even though journals have been around for the last three centuries, the history of scholarly publishing and journals in sub-Saharan goes back only to the second half of the twentieth century. The twenty-first century also brings with it technological, political, social-economic challenges that scholarly publishing in sub-Saharan Africa must contend with. Challenges aside, the twenty-first century is also expected to present numerous opportunities to the scholarly publishing fraternity in the sub-Saharan Africa region. Information and communication technologies are poised to make digital access to scholarly resources more easily accessible. Digital publishing, preservation of

information and fast access to scholarly resources are all being made possible by new developments in information and communication technologies.

It is indicated that the share of sub-Saharan Africa has decreased from the mid-1980s to a level below 1%. Several other development indicators (World Development Report, World Competitiveness Yearbook, and technology Achievement index) do not paint a rosy picture of social economic and technological development in sub-Saharan Africa. Castells (1998) describes the economic, political and social decline in sub-Saharan Africa during the rise of information/global economy. Castells attributes the exclusion of sub-Saharan Africa from the information/global economy to three major factors:

- Unreliable institutional environment;
- Lack of production and communication infrastructure; and
- Erroneous economic policies.

Castells (1998) further describes Africa's "technological apartheid" as due to low computer and Internet penetration and due to lack of a fundamental precursor to computerised networks, namely electricity. He also talks of how the Internet:

Is the technological tool and organizational form that distributes information power, knowledge generation, and networking capacity in all realms of activity. Thus, developing countries are caught in a tangled web. On the one hand, being disconnected, or superficially connected, to the Internet is tantamount to marginalization in the global networked system. Development without the Internet would be equivalent of industrialization without electricity in the industrial era (Castells, 2001:269).

The Internet has been credited not only for distributing information power and generation of knowledge, but also for storing large amounts of information and knowledge. However, this is only possible where there is ubiquitous computing, embedded networking and pervasive Internet. In sub-Saharan Africa, the presence of the Internet is still extremely low.

2.1 Sub-Saharan Africa

A brief background of the region referred to as sub-Saharan Africa is in order. Sub-Saharan Africa refers to the countries of the African continent south of the Sahara desert. Geographically, the demarcation line is the southern edge of the Sahara desert. Some countries such as Chad, Mali, Sudan, Niger and Mauritania belong both to the Saharan desert region and sub-Saharan Africa region.



Figure 1: A map showing the boundaries of sub-Saharan Africa – South of the Sahara Desert.

Sub-Saharan Africa is made up of 48 independent nations, 42 of which are located on the mainland and six are island nations (see table 1 below). The island nations include Madagascar, Seychelles, Comoros, Cape Verde and Sao Tome and Principe. In some quarters, Mauritius is generally not considered a sub-Saharan island nation as the ethnic make up of the country is predominantly East Indian, Chinese and French. However, it is always counted as one of the sub-Saharan African countries.

Central Africa	East Africa	Southern Africa	West Africa	Island Nations
<ul style="list-style-type: none"> ▪ Burundi ▪ Cent Africa Rep. ▪ Dem Rep of Congo ▪ Rep of Congo ▪ Rwanda 	<ul style="list-style-type: none"> ▪ Djibouti ▪ Eritrea ▪ Ethiopia ▪ Kenya ▪ Somalia ▪ Sudan ▪ Tanzania ▪ Uganda 	<ul style="list-style-type: none"> ▪ Angola ▪ Botswana ▪ Lesotho ▪ Malawi ▪ Mozambique ▪ Namibia ▪ South Africa ▪ Swaziland ▪ Zambia ▪ Zimbabwe 	<ul style="list-style-type: none"> ▪ Benin ▪ Burkina Faso ▪ Cameroon ▪ Chad ▪ Côte d'Ivoire ▪ Equatorial Guinea ▪ Gabon ▪ The Gambia ▪ Ghana ▪ Guinea ▪ Guinea Bissau ▪ Liberia ▪ Mali ▪ Niger ▪ Nigeria ▪ Senegal ▪ Sierra Leone ▪ Togo 	<ul style="list-style-type: none"> ▪ Cape Verde ▪ Comoros ▪ Madagascar ▪ Mauritius ▪ Sao Tome and Principe ▪ Seychelles

Table 1: Nations of sub-Saharan Africa

The sub-Saharan region has an estimated population of about 800 million. Some countries in the region are very large with large populations. Nigeria for example has a population approximated to be 140 million. Some other countries are small with

populations not exceeding 500,000. Cape Verde has an estimated population of 420,979. Djibouti has an estimated population of 486,530. Sub-Saharan Africa is classified as the poorest region of the world. Development agencies describe the region as collectively suffering from the legacies of native corruption, interethnic conflicts, overall ignorance of the indigenous populations, violence and perpetual political strife. Life expectancy in sub-Saharan Africa is probably the lowest in the world. The region is well endowed with natural resources but still lags behind in economic development. Literacy rates are low, medical care low and technological development lags behind other regions of the world.

3.0 Purpose of the study

This study examined scholarly publications produced by scholars in sub-Saharan Africa between 1997 and 2007. The author saw the study period as being the most productive decade of scholarly publishing in sub-Saharan Africa. This is the decade when sub-Saharan Africa records the highest number of scholarly publications. Another reason for selecting the period 1997-2007 was that part of the decade falls in the 21st century. The study may also serve as an indication of sub-Saharan Africa's contribution to world production and generation of knowledge by way of scholarly publishing between 1997 and 2007. The study discusses scholarly publishing by examining scholarly publications in sub-Saharan Africa and outlining various challenges that the region faces in scholarly publishing. In view of this, the study was conducted to determine:

- the role that scholarly publishing may play in generating and sharing knowledge in sub-Saharan Africa;
- the challenges of scholarly publishing in sub-Saharan Africa;
- causes of the challenges of the challenges of scholarly publishing in sub-Saharan Africa in the 21st century; and
- ways of capitalizing on the vast opportunities of enhancing knowledge production and dissemination in sub-Saharan Africa through scholarly publishing in the 21st century.

4.0 Methodology

The information on scholarly publishing in sub-Saharan Africa between 1997 and 2007 was extracted from the Science Citation Index (SCI), the Social Sciences Citation Index (SSCI) and the Arts and Humanities Citation Index (A&HCI). Publications authored by citizens of sub-Saharan Africa residing elsewhere were excluded. Information on scholarly publishing in countries from other regions of the world was extracted from the same sources for only 2006. The year 2006 was selected because it was the most productive year of scientific publications in most of the sub-Saharan African countries. Countries from other regions that were randomly selected for comparison purposes included Israel, Russia, South Korea, China, India and Japan from Asia. Canada, Mexico

and the USA were selected from North America and Brazil was selected from South America. England, Germany, Russia and France were selected from Europe.

Three approaches were used to determine the number of scholarly publications in sub-Saharan Africa between 1997 and 2007 as follows:

1. All records of scholarly publications of every country in sub-Saharan Africa between 1997 were retrieved. The search was conducted by using “AD= *name of country*.” AD in the Science Citation Index denotes institutional address given by the author of the scholarly publication. Another alternative of determining scholarly publications of a specific country was that of using “CU= *name of country*.” CU denotes a country and this gives the number of publications recorded in a specific country within a specific period of time. In this case, the period of publication records for all sub-Saharan Africa countries was 1997 to 2007. Some countries were found to have insignificant numbers of scholarly publications between 1997 and 2007. Twenty-eight countries with 235 records were selected for analysis (cf. Table 2 below). Two hundred and thirty-five was considered a reasonable number of records. Other countries had very insignificant records of publications for the period 1997-2007.
2. An advance search using “AD=*country name*” was conducted to obtain scholarly publications of only those countries which had at least 235 records or more between 1997 and 2007. An analysis of the identified records using ISI’s “*Analyze*” feature was conducted for every country selected for having 235 or more records of scholarly publications between 1997 and 2007 as shown in table 2 below.
3. The records were then downloaded and saved as *.txt* computer files and analyzed in order to determine scholarly publications of every country that was selected.

4.1 Results and Discussion

It is clear that sub-Saharan Africa lags behind in scholarly publishing and it is likely to lag behind in the 21st century. There can be no comparison scholarly publications produced in the whole of sub-Saharan Africa in ten years and those produced in the USA in a single year. Consequently, there is no comparison of knowledge production between the whole of sub-Saharan Africa and the USA which had upward of 100,000 records of scholarly publications in 2006 alone, or the United Kingdom which had 97,904 scholarly publications in the same year. For the period stretching between 1997 and 2007, South Africa leads which leads in scholarly publication records in sub-Saharan Africa had 51,738 records. This is about half the scholarly publications produced in the USA in 2006 alone. Nigeria and Kenya have 9,540 and 6,661 records respectively for the period 1997 to 2007. The democratic Republic of Congo has 235 scholarly publications for the period between 1997 and 2007, and the rest of the countries in the sub-Saharan region have very

few scholarly publications recorded by ISI in the same period. It is important to note that these records of scholarly publications from sub-Saharan Africa may not be absolute and can only serve as an indication of scholarly publishing records of sub-Saharan Africa for the study period. Some scholarly publications from sub-Saharan Africa are published in journals not indexed by ISI. These results show that obviously, there are several challenges confronting scholarly publishing and therefore knowledge production in sub-Saharan Africa. What are these challenges?

Country	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	TOTAL
South Africa	4568	4613	4759	4609	4732	5049	4974	5395	5657	6305	1077	51738
Nigeria	877	838	864	884	746	854	855	926	1223	1269	204	9540
Kenya	582	579	617	578	597	666	694	662	684	843	159	6661
Tanzania	266	221	230	253	235	271	316	322	370	473	80	3037
Ethiopia	239	207	261	244	216	275	300	312	302	333	58	2747
Cameroon	188	193	187	209	216	263	292	332	344	425	69	2718
Zimbabwe	258	263	258	263	256	269	251	216	242	234	44	2554
Uganda	136	167	191	191	203	188	244	310	304	382	119	2435
Ghana	173	158	190	198	194	208	206	239	261	305	53	2185
Senegal	168	205	224	202	182	176	239	209	247	224	40	2116
Eritrea	112	159	146	142	147	155	146	153	148	156	35	1499
Benin	112	118	117	134	110	135	126	156	168	216	38	1430
Botswana	96	105	114	129	128	156	135	143	148	186	29	1369
Malawi	101	87	107	132	124	132	132	143	148	167	30	1303
Sudan	92	123	119	90	81	110	112	126	135	135	25	1148
Burkina Faso	68	90	82	78	95	108	135	138	127	175	31	1127
Zambia	99	97	83	78	99	89	98	86	121	152	29	1031
The Gambia	81	54	67	69	82	77	82	86	78	113	14	803
Mali	53	56	34	47	53	65	70	82	88	140	12	700
Gabon	53	64	64	52	64	63	69	69	81	97	11	687
Niger	78	69	53	50	51	62	61	45	86	85	15	655
Madagascar	14	21	14	19	21	33	115	91	123	150	27	628
Namibia	38	56	47	33	64	53	61	56	95	88	8	599
Mauritius	27	41	40	42	51	61	40	51	57	69	11	490
Mozambique	28	36	44	38	46	36	42	57	63	81	17	488
Togo	28	46	54	62	37	32	45	53	48	59	8	472
Swaziland	60	21	17	24	43	29	30	37	26	30	5	322
DR Congo	46	22	21	29	11	13	21	17	28	18	9	235

Table 2: Countries with 235 records plus between 1997 and 2007¹

In turn, a search was conducted to compare the number of scholarly publications between sub-Saharan Africa as a region and certain selected countries. Scholarly publications of one year (2006) were analyzed from the selected countries of other regions of the world. The countries were selected from various regions – developed and developing and the results were as shown in table 3 below.

¹ 2007: Publication records in the Thompson Scientific as of May 2007.

Country	Region	Year	Scholarly Publications
USA	N. America	2006	>100,000
England	Europe	2006	97,904
Germany	Europe	2006	94,899
Japan	Asia	2006	89507
Canada	N. America	2006	59,271
South Korea	Asia	2006	31,268
India	Asia	2006	30,744
Russia	Eurasia	2006	23,558
Brazil	S. America	2006	21,450
Israel	Asia	2006	15,564
Mexico	N. America	2006	10,948

5.0 Challenges of Scholarly publishing in sub-Saharan Africa

All along, scholarly publishing in sub-Saharan Africa has faced a number of challenges. It is early in the 21st century and the challenges that have always confronted scholarly publishing and knowledge production in sub-Saharan Africa do not seem like they will go away in the near future. Very broadly, technology, socio-political factors, environmental and economic factors and changing trends lead in imposing challenges on scholarly publishing and knowledge production in the sub-Saharan Africa region.

5.1 Economic-related Challenges

Majority of the challenges facing scholarly publishing in sub-Saharan Africa emanate from economic factors. Many scholars in sub-Saharan Africa work in institutions which are not well financially endowed. In such institutions, research facilities are inadequate and outdated by international standards. Libraries of institutions of higher learning and other research institutes are poorly funded and they keep on experiencing greater budgetary cuts every year. A well stocked library is an important tool for scholarly publishing. In the industrialized nations, a network of libraries account for up to 80% of the total purchases of scholarly books (Altbach, 1978). In sub-Saharan Africa, there are no well organized networks of libraries which may jointly purchase scholarly books. Because of poor funding and continuous budget cuts, the libraries in the region cannot afford to subscribe journals.

Lor and Britz (2005) argue that the nature of knowledge is that it has to be created cumulatively, meaning that knowledge is required to create new knowledge. For the case of scholars in sub-Saharan Africa, it is a lot easier to access explicit knowledge to be able to create new knowledge by way of scholarly publishing. Explicit knowledge, unlike tacit knowledge can be obtained from scholarly books, journals and via the Internet. Even the very basic journal titles required for teaching and course work are hardly available. Several new journal titles come out every year. Rather than subscribe to new journal titles, libraries affiliated to institutions of higher education and other research institutions in sub-Saharan Africa find it easier to cancel journal titles without replacing them with

new titles. New book titles are published every year as well. However, such books are too costly for libraries. Book shelves of most academic libraries in sub-Saharan Africa are dotted with very old and insufficient copies of books which cannot help scholars from the region to make any meaningful scientific and scholarly progress.

Scientists depend on laboratories to conduct experiments from which they get results which they publish as findings in scholarly journals. However, laboratories in institutions of higher education and other research institutions in sub-Saharan Africa lack up-to-date research facilities for conducting research. Laboratories also are subjected to budget cuts every year. Lack of well equipped laboratories can contribute to regression of scholarly publishing in science disciplines. In a study conducted by Waast (2002), it is reported that some countries in sub-Saharan Africa, such as Nigeria, have regressed in many fields of science. In other countries in sub-Saharan Africa, whole areas of expertise have virtually disappeared, such as agricultural sciences in Kenya and Côte d'Ivoire.

Scholarly journals, books and the Internet may be looked upon as sources holding explicit knowledge. Lack of scholarly journals, books, well equipped science laboratories and lack of access to the Internet makes it hard for holders of tacit knowledge in sub-Saharan Africa to make scientific and scholarly progress by building on the contributions shared by other knowledge holders elsewhere. The Internet connectivity is particularly very poor in much of the sub-Saharan region. Institutions in which scholars are employed find it hard to maintain the Internet connectivity. Either the Internet connectivity is too costly for the institutions to maintain, or electric power supply is poor and unreliable. Very few institutions of higher learning in the sub-Saharan region enable scholars to have free and unlimited access to the Internet.

5.1.1 Lack of incentives

The major centres of knowledge creation and scholarly communication in Africa are universities (Teferra, 2004). However, most universities in sub-Saharan Africa and the larger Africa have many problems that constrain their knowledge productivity and scholarly publishing. Research funding is almost non-existent; many universities in the region have seen enrolment of students escalating while emoluments of faculty members and researchers have remained stagnant over a long period of time. Scholars publish for several reasons and one of the major reasons is that of earning promotions and tenure. However, good incentives can also persuade scholars to publish in scholarly journals. Institutions of higher learning in sub-Saharan Africa, which are the major employers of scholars in the region, do not give any incentives to scholars who publish their findings in scholarly journals.

South Africa's Department of Education provides some incentives to scholars who publish in journals which the department has accredited for purposes of subsidy. There are currently 253 South African journals recognized by South Africa's Department of Education as meeting the minimum requirements for state subsidy under the policy of rewarding academics who publish in these outlets (Tijssen, 2007). The South African

Department also recognises several other journals published elsewhere for the purpose of subsidy. In South Africa's Policy and Procedures for Measurement of Research Output of Public Higher Education Institutions,

(see <http://education.pwv.gov.za/content/document/307.pdf>:6) produced by the Department of education under recognized research output, journals are expected to fulfil a number of minimum requirements as criteria so as to be eligible for inclusion in the list of approved journals. Among the requirements are:

- The purpose of the journal must be to disseminate research results;
- The content must support high level learning, teaching and research in the relevant subject area;
- The journal must have an editorial board that includes members beyond a single institution; and
- The journal must be reflective of expertise in the relevant subject area.

Most of the journals recognised by the Department of Education are indexed by the ISI in its citation indexes (the Science Citation Index, the Social Science Citation Index and the Arts and Humanities Index).

Good remuneration and other monetary rewards for scholars are incentives, but there are other incentives which can create an enabling environment for scholarly publishing. For example, maintaining the best infrastructure that institutions of higher learning should have and maintaining the prestige and comfort associated with higher education can be an important incentive for scholars in sub-Saharan Africa. Such incentives can enable scholars in sub-Saharan Africa not only to desire to publish, but also to add to the body of knowledge. Sabbatical leave, which is meant to ensure that scholars have time and attention for research and interaction with their counterparts from other regions of the world is not easily facilitated in the institutions of learning based in sub-Saharan Africa. The reason for the absence of all these incentives is lack of adequate finances. It is important for scholars from sub-Saharan Africa to enjoy sabbatical leave so that they have time to conduct research and interact with peers from other regions of the world.

5.1.2 Non-attendance of Academic Conferences

Numerous academic conferences are organized around the globe every year. Attending such conferences is crucial for scholars working for institutions of higher learning and other research institutions in sub-Saharan Africa. Some of the conferences are organized locally or within the region, but many scholars from sub-Saharan Africa cannot attend, either because they cannot afford, or their employers cannot afford to sponsor them. In conferences, scholars have an opportunity to present their research findings for peer critique, especially by counterparts from other regions of the world. Such research findings may finally be published either as conference proceedings or as articles in scholarly journals. Scholars in sub-Saharan Africa find it too costly to sponsor themselves to such conferences and their institutions do not usually give any support. Even conferences organized locally or within the region are out of reach for most scholars in sub-Saharan Africa. Institutions of higher learning in sub-Saharan Africa should do everything possible to enable scholars to attend conferences organized locally, regionally and internationally. Attendance of such conferences may also enable scholars

from sub-Saharan Africa to get to know the current paradigms of research in their various areas of research interests.

5.1.3 Brain Drain

Because of the poor working conditions in the institutions of higher learning in sub-Saharan Africa, the region has experienced a mass exodus of scholars whose scholarly publications have addresses of foreign countries. Scholars educated and trained by governments in the sub-Saharan region have been migrating to North America, Europe, and Australia, New Zealand, the Arabic oil-rich countries, and lately to Japan. It is ironic that the sub-Saharan countries can develop but cannot preserve local intellectual capital (Ondari-Okemwa, 2004). Reasons for brain-drain from sub-Saharan Africa include low and eroding wages and salaries, unsatisfactory living conditions, social unrest, political conflicts and wars and declining quality of educational systems. Other reasons which make scholars from sub-Saharan Africa to migrate include lack of research and other facilities, inadequacy of research funds and lack of professional equipment and tools. Scholars whose origin is sub-Saharan Africa but who reside in foreign countries may not be counted on to contribute to scholarly publishing in the region. Brain drain of scholars and other highly qualified professionals from sub-Saharan Africa will continue into the 21st century for so long as conditions in the region do not improve.

In “Pan-Africanism and the intellectuals: rise and decline and revival,” Mazrui (2005) argues that as the origins of modern black intellectual traditions and those of Pan-Africanism intertwined, African ‘intellectuals and educated minds’ have the capacity to conceive and construct an alternative social paradigm. Mazrui is a prominent Kenyan scholar who lives and works in the USA. Zeleza (2005) argues that the academic African Diaspora plays and can play a role in African knowledge production. His argument is based on the premise that in general, the contemporary Diaspora, in particular its intelligentsia (just like the historical Diaspora through the Pan-African movement), has the potential for productive and progressive engagement with Africa.

Governments in sub-Saharan Africa have the ability to address most if not all of these unfavourable conditions which make scholars to migrate to other regions. Remunerations for academics in sub-Saharan Africa can be improved even though they may not match those of academics in the developed countries of the West. Many sub-Saharan African countries are well endowed with natural resources, which if well managed can generate tremendous revenues, which can be used to improve remunerations of indigenous scholars and other highly qualified professionals. Such revenues can also be used to equip libraries and laboratories, which scholars use for research and generation of new knowledge. Countries like Nigeria, South Africa, the Democratic Republic of Congo, Sierra Leone and Botswana are extremely well endowed with natural resources.

5.1.4 Language challenges

Language is the vehicle for scholarly communication. (Jaygbay,1998). In sub-Saharan Africa, the official languages of scholarly communication are English, French and

Portuguese, all of which are foreign and therefore not thoroughly mastered by majority of the scholars in the region. Language of scholarly communication may not look like a major problem, but Jaygbay thinks it excludes half of the African population from participating in most official public discussions. In sub-Saharan Africa, nearly all the countries use English and French as their official language of communication. Only Angola and Mozambique use Portuguese. Most scholars in the region adopt English, French and Portuguese as their second languages. The scholars are expected to communicate foreign languages that most of them did not grow up speaking. Some scholars from the sub-Saharan Africa learn to speak foreign languages at university. It is said that books, radio, television and newspapers influence a language. As children, most scholars in sub-Saharan Africa grow up without access to books, radio, television and newspapers. The scholars therefore never get to master the languages in which they have to publish. Considerations like grammar may lead to rejection of manuscripts from sub-Saharan Africa (Pearce, 2003). Such manuscripts may contribute to scholarship but if they are rejected on account of language, nobody gets to know their contents. It may take a patient journal editor to realise that manuscripts from scholars in sub-Saharan Africa may have a few language problems, but that should not mean that scholars from the region may not contribute to scholarship in different disciplines.

For so long as scholarly communication will be in foreign languages, scholars from sub-Saharan Africa will be disadvantaged and majority of their works will not be published in prestigious scholarly journals. Some widely indigenous languages in sub-Saharan Africa should be considered for scholarly communication by sub-Saharan African scholars. Kiswahili is a widely spoken language in East, Central and some parts of southern Africa. However, even scholarly works on the Kiswahili language are published in other languages. Afrikaans was widely spoken in South Africa, but from 1994 when the country held its first multi-party elections, the language has been fizzling out. The language was promoted by white South Africans and people of other races in the country saw it as a language of the oppression used by the former oppressors. Up to this day, some scholars in South Africa and Namibia publish in Afrikaans, but only in journals based in South Africa.

5.2 Technological challenges

Electronic journals have now become important avenues for knowledge transfer and scholarly communication. Scholarly publishing in sub-Saharan Africa could benefit from electronic publishing but the countries in the region lack the technological capability to support electronic knowledge transfer and scholarly publishing. Information and communication technologies in sub-Saharan Africa are still underdeveloped and may not be relied on to support access to electronic journals and electronic publishing. The technological challenges in sub-Saharan Africa are similar across the African region. Ahwireng-Obeing (2000) thinks that Africa is a “technological wilderness”, peripheral to the knowledge revolution, the convulsive impact of which is only felt in the continent.

Because of technological challenges, the Internet connectivity in sub-Saharan Africa is poor and non-existent in some parts of the region. Many universities in the sub-Saharan

region cannot afford continuous Internet connectivity. The Internet connectivity requires reliable telecommunications infrastructure. The state of telecommunications in sub-Saharan Africa is less than reliable. Many fixed telephone lines are owned by government corporations which are not necessarily efficient. The World Bank has financed quite a number of information technology projects in sub-Saharan and across Africa over the years, but still the state of information and communication technologies in the region is not very impressive.

Knowledge production and consumption in institutions of higher learning and other research institutions in sub-Saharan Africa will remain low even in the 21st century if there will not be improvement in information and communication technologies. Tobin (1996) suggests that in a knowledge-based economy, an information technology network should be built with components such as knowledge depository, directory of learning sources and groupware. It would be unrealistic to imagine that scholars in sub-Saharan Africa will in the 21st century have access to reliable knowledge depositories, directories of learning sources and groupware from which they may draw knowledge. Scholars or any other producers of knowledge require to draw from an existing pool of knowledge to produce new knowledge.

The Internet should be made available in institutions of higher learning and other research institutions in sub-Saharan Africa so that scholars can use it for collaboration and communication. Scholars within the region can make use of the Internet to collaborate among themselves and with scholars in other regions of the world. Laszlo (2006) contends that “e-mail allows one to reach out across the oceans, with no hindrance from the differing time zones – a superiority over phone or fax.” Laszlo further argues that the e-mail is such a nice and easy way of exchanging information that it is a harbinger of scientific collaborations. With the e-mail scholars may not need to get together to exchange ideas.

It takes collaborative effort to produce knowledge. Scholars in the developed regions who may buy the idea of collaborating and/or co-publishing with their peers from sub-Saharan Africa should do so bearing in mind the challenges that scholarly publishing faces in the region. It should be clear that scholars in sub-Saharan Africa and the larger Africa do not have access to information resources, taken for granted in many countries of the developed regions. It should also be understood that the information technology which makes communication and collaboration easy lacks in sub-Saharan Africa. If scholars in the developed regions think that nothing worthy scholarship may come out of sub-Saharan Africa, then the appeals to collaborate and co-publish may be like preaching to the wilderness.

5.2.1 Electronic Journals

A number of journals are now electronically available. Such journals accept manuscripts electronically as well as get the manuscripts peer-reviewed electronically. This may sound like it is now easier for scholars from sub-Saharan Africa to submit their manuscripts electronically, read other scholars' manuscripts electronically and even act

as peer reviewers. However, many scholars in sub-Saharan Africa do not have access to personal computers, e-mail and the Internet, and may not be able to submit their manuscripts, nor read them or act as peer reviewers electronically. This may mean that scholars from sub-Saharan Africa who are highly qualified and capable of making contributions to knowledge production are excluded because of technology deprivation. Arunachalam (2003) thinks that the ICTs, rather than bridging the digital divide, will widen the knowledge divide or the disparities in people's capacities to do research and their ability to use the technologies to their advantage.

5.3 Environmental challenges

A number of environmental challenges confront scholarly publishing and knowledge production in sub-Saharan Africa. Knowledge production requires an environment that favours free flow of information, limited censorship and free exchange of and sharing of ideas. Nonaka and Takeuchi (1995) cite Gibson (1986) as hypothesizing that knowledge lies in the environment itself, contrary to the traditional epistemological view that knowledge only exists inside the human brain. Interactions with the environment and free exchange of ideas with knowledge carriers promote creation of knowledge. In sub-Saharan Africa, there are many environmental inhibitors which are responsible for constraining the free flow of information and promotion of knowledge production.

It is nearly a decade into the 21st century, but scholars in majority of the sub-Saharan Africa countries still operate in environments where freedom of expression is limited. Freedom of expression in most sub-Saharan countries is so much scuttled that one may as well say it is absent to a large extent. Scholars, especially in the Humanities and Social Sciences restrain themselves from publishing what they think may not be viewed favourably by those in power. Publishing anything critical of those in authority may be a reason for denial of promotion for those scholars who work in government-owned institutions of higher learning. Denial of promotion is the best that can happen to a scholar who publishes anything critical of those in authority. Such individuals can be fired and/or be arraigned before the courts of law, convicted and sent to jail for being found guilty of crimes bordering on treason.

Scholars are compromised and made to produce publications which do not contribute to knowledge or scholarship. In the 1980s, prominent scholars in Kenya were funded to research on and publish about a populist political slogan of the then President of Kenya, Mr Daniel arap Moi, called the "*Nyayo* philosophy of love, peace and unity." Scholars who were involved in the project were not only promoted, but pampered with lots of money. There was nothing philosophical or scholarly in the slogan, but a lot of taxpayers' money was paid to the scholars who availed themselves for the project. This was despite the fact that there plenty of topical issues which could merit scholarship. Issues like corruption in government, rigging of elections, nepotism, environmental degradation and tribal clashes could all merit scholarly publishing but were too sensitive. These are issues which form part of what Jaygbag (1998) calls a "new wave of socio-economic transformation due to both internal and external pressures which are yet to be fully captured and uncompromisingly put on record by African scholars."

Most scholars in sub-Saharan Africa are affiliated to or employed by universities. The universities in the region do not enjoy autonomy and freedom of expression is either very limited or non-existent. Chief executive officers and other high ranking officers in the universities are government appointees who are mostly appointed based on political considerations. Because of the political environment in which universities in sub-Saharan Africa operate, scholarly publications which are critical of the government of the day are highly censored and discouraged.

Chakava, a prominent publisher in Kenya summarizes the kind of environment in which a public university in Kenya and elsewhere in sub-Saharan Africa operates:

The university as an institution has been largely politicized and a majority of university professors are absorbed into the state system. Creativity is stifled through the curtailment of literary seminars, journals, and writers' workshops, and a general lack of facilities or incentives to promote and reward academic excellence. There is lack of an intellectual culture and debate on important issues of the day. (Chakava, 1996).

5.4 Invisibility of scholarly publications emanating from research conducted in sub-Saharan Africa.

Scholarly publications emanating from sub-Saharan Africa and the entire African continent lacks visibility. Such publications may appear in prestigious journals based in the North, but they are hardly noticed by scholars in the North. Not many scholars in the North cite such publications, leading to the publications getting buried in an obscure corner of the world output of knowledge. The same is also true of scholarly journals published in sub-Saharan Africa. Very few articles published by scholars from sub-Saharan Africa may become citation classics or even find a place in the list of key papers on the emerging research fronts. It should be noted that scholars based in sub-Saharan Africa are the best place to conduct research and produce scholarly publications on the region. The scholars based in sub-Saharan Africa may be lacking financial resources and the modern information technology, but they best understand topical dynamic socio-political and economic issues which need to be captured and recorded by way of scholarly publishing.

Scholars from other regions may not have any research interest in sub-Saharan Africa, and therefore not inclined to view scholarly publications from sub-Saharan Africa as being of any significance in their research interests. A few scholars from other regions of the world have conducted research in different disciplines based on sub-Saharan Africa. Such scholars tend to frequently cite publications by scholars from the region. However, such scholars are few and may not go far in making scholarly publications from sub-Saharan Africa very visible in the world output of scholarly publications in the 21st century.

5.5 Conclusion

Scholarly publishing is a fundamental aspect of research dissemination and knowledge sharing process. Authors of scholarly publications come from diverse backgrounds of scholarly traditions and writing dispositions. It is the aspiration of every scholar to publish in top peer refereed scholarly journals, normally of international standing. Many scholars from sub-Saharan Africa never get to publish their articles in top refereed international journals, leading to invisibility of scholarly publishing in sub-Saharan Africa. Publishable research findings on and about sub-Saharan Africa need to be contextualized and only scholars from the region are more familiar with the different histories, cultures and peoples of the region. The 21st century is seen as a century that ushers in the *knowledge society*. Production and use of knowledge are expected to be heightened. Sub-Saharan Africa does not as yet, have the capacity to produce and/or use great quantities of knowledge. Knowledge is produced by several ways and scholarly publishing is one of the ways.

The 21st century is here and scholarly publishing in sub-Saharan Africa is faced by numerous challenges. Some of the conspicuous challenges facing scholarly publishing in sub-Saharan Africa include technological, socio-political, economic and an environment that does not favour scholarly publishing. The 21st century brings with it opportunities for scholarly publishing in sub-Saharan Africa. Information technology may make it possible for scholars from sub-Saharan Africa to more easily access scholarly publications and publish electronically. Information technology also makes it possible for the sub-Saharan African scholars to serve as peer reviewers electronically. However, information technology is still very underdeveloped in the region, and most scholars do not have access to the Internet, which makes scholarly communication easy.

Considering that knowledge production takes collaborative efforts, scholars from sub-Saharan Africa should consider a collaborative approach to publishing. They can co-publish with scholars from other regions and co-publish with colleagues from within the region. Academic libraries affiliated to institutions of higher learning and other research institutions where most scholars work should consider acquiring books and journals collaboratively so as to cut down on costs. Inter-library loans arrangements can avail more information materials to scholars who are affiliated to the institutions of higher learning and other research institutions in sub-Saharan Africa.

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