Challenges of broadening access to scholarly e-resources in Africa – The JSTOR example

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Abstract

Since the early 1990's, several initiatives to increase the availability of scholarly information in Africa have resulted in a significant increase in the number of African institutions accessing these resources. Among the initiatives are: INASP's PERii program, eIFL.net, AJOL, JSTOR, schemes funded by commercial publishers and the UN, namely HINARI, AGORA and OARE, and so on. JSTOR's engagement in Africa consists of two main activities: (1) *gratis* provision of the JSTOR archive to non-profit and research organizations (since 2006), and (2) developing a digital library of primary source materials from and about Africa (since 2004). JSTOR's availability has resulted in an exponential increase in the number of African institutions' participation and usage from only a handful before 2006 to currently more than 650 institutions across the continent. Partnerships in building a digital library about Africa resulted in the development of three primary source collections: *African Plants* (now *JSTOR Plant Science*), *Struggles for Freedom in Southern Africa*, and *African Cultural Heritage Sites and Landscapes*. The increase in the number of participating JSTOR institutions and in usage is concentrated in particular countries and geographical regions. Observations from JSTOR's usage data reveal that availability of e-resources does not necessarily translate into significant usage of the collections. This correlates to a recent study (2010) commissioned by the Association of Commonwealth Universities to evaluate the availability and access to e-resources at four universities in East and Southern Africa. The study found that the top 20-ISI ranked journals are available at a level approaching many European universities, but the overall usage of the resources remains low. Among the factors to be addressed in order to increase usage are: awareness and better training in the use of e-resources; nurturing a research culture within institutions so that they become consumers and producers of new knowledge; continued investments in the access and affordability of the internet and electricity; and finally, increased availability of reliable and low cost computers. JSTOR's outreach program in Africa, while modest in size and scope, is aimed at addressing the awareness, training, and capacity building issues. Donors, users, and institutions should unite to address all of these challenges.

Introduction and Background

African libraries at higher learning and research institutions have undergone significant transformation since the advent of the internet. The structural adjustment programs introduced by the Breton Wood institutions that emphasized cost sharing in higher education and reduced spending by governments on education resulted in the near collapse of African libraries since most could no longer afford to subscribe to journals due to reduced

grant funding and subsequent cost cutting measures at these institutions.[1] In the 1990s it became apparent that drastic interventions were needed to reverse the deteriorating situation whereby most African academic and research institutions were virtually getting cut off from current research and scholarly communication. Several initiatives to increase the availability of scholarly research in Africa emerged, mostly driven by donors and non-governmental / non-profit institutions. These efforts have resulted in a significant increase in the number of African institutions accessing these resources. Among the initiatives are: INASP's PERii program, eIFL.net, AJOL, JSTOR, schemes funded by commercial publishers and the UN, namely HINARI, AGORA and OARE. In this paper, we shall focus on JSTOR's Africa Access Initiative (AAI), but a general overview of JSTOR and the organization to which it belongs is appropriate to put the paper into context.

JSTOR is a part of ITHAKA,[2] a not-for-profit organization dedicated to helping the academic community take full advantage of rapidly advancing information and networking technologies. We serve scholars, researchers and students by providing the content, tools, and services needed to preserve the scholarly record and to advance research and teaching in sustainable ways. ITHAKA's services include ITHAKA S+R, the strategic and research arm of ITHAKA; JSTOR,[3] a research platform that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive of over 1,400 academic journals and other content (over 37 million pages of scholarly research); and Portico, a service to preserve scholarly literature published in electronic form – more than 14,000 electronic journals and books – and ensures that these materials remain accessible to future scholars, researchers, and students. The archive comprises more than 50 disciplines including the humanities, social sciences, and sciences, as well as monographs and other materials valuable for academic work. The main resources offered by JSTOR are the main JSTOR archive,[4] JSTOR Plant Science,[5] and Aluka.[6] Since the beginning of 2011, JSTOR also offers current journal content in about 200 titles under the Current Scholarship Program.[7]

JSTOR Plant Science is an online environment that brings together content, tools, and people interested in plant science. It provides access to foundational content vital to plant science – plant type specimens, taxonomic structures, scientific literature, and related materials, making them widely accessible to the plant science community as well as to researchers in other fields and to the public. Over 190 institutions in over 60 countries collaborate on the plants project. The database currently has over 1 million objects and is expected to grow to over 2.2 million by 2013.

The Aluka collections consist of primary source materials of scholarly value from and about Africa. Aluka resource types are organized around three initial content areas, namely,

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[1] Kingsley Banya and Juliet Elu, "The World Bank and Financing Higher Education in Sub-Saharan Africa," *Higher Education*, 42:1 (2001): 1-34; Damtew Teferra and Philip Altbach, "African Higher Education: Challenges for the 21st Century," 47:1 (2004): 21-50; M. O. Afolayan (Ed.), *Higher Education in postcolonial Africa: paradigms of development, decline and dilemmas* (Trenton, 2007).

[2] www.ithaka.org

[3] www.jstor.org

[4] www.jstor.org

[5] www.plants.jstor.org

[6] www.aluka.org

[7] http://about.jstor.org/participate-jstor/libraries/current-scholarship-program

African Plants, *African Cultural Heritage Sites and Landscapes*, and *Struggles for Freedom in Southern Africa.* The resource types range from high resolution images of plant type specimens, 3D models of selected sites such as rock hewn churches in Lalibela, Ethiopia, rock art images, ancient Islamic manuscripts from Timbuktu, Mali, documentation of the anti-apartheid movements in southern Africa and oral histories. Since 2004 over 100 institutions and organizations – both governmental and non-governmental – have collaborated in the Aluka initiative, contributing content, support and expertise.[8] In exchange, ITHAKA has supported a range of preservation and capacity needs of our partners in Africa, installing a number of digital labs and providing training and expertise to solidify these collaborations.

In its goal of broadening scholarship through the participation of scholars and researchers across the world by helping to alleviate access barriers, especially for developing regions of the world, JSTOR initiated the Africa Access Initiative (AAI) and the Developing Nations Access Initiative (DNAI). The AAI and DNAI commenced in 2006 and 2008 respectively. Since June 2006, JSTOR has made all of its collections of archived scholarly journals available at no cost to educational, research, government, and non-profit institutions across Africa. Under the DNAI 40 countries outside Africa are also eligible for free access or access at much reduced rates. Building capacity and fostering positive collaborations amongst a broad network of African educational and library institutions has been an essential component of ITHAKA's activities since 2005. ITHAKA has sought to build a virtual community of users by offering a variety of outreach and training opportunities in strategic and targeted locations, seeking to maximize our impact and effectiveness with limited resources and staff. As of May 2011 there were over 650 African institutions in 43 countries that access JSTOR. Worldwide, there are over 7000 participating institutions in 159 countries.

In addition to the Aluka primary source collections, JSTOR has a substantial offering of journal literature in African Studies. JSTOR currently offers 42 African Studies journals, many of which are core to the discipline. These journals are largely produced in the United States and the United Kingdom, and are mostly in English. Our collection development strategy in developing African Studies further has been to focus on more international publications in terms of language and place of publication. In particular, JSTOR has invited several significant, historical journals produced in Africa. Soon, such journals as the *Journal of the Nigerian Historical Society*, the *Journal of Ethiopian Studies*, *Botswana Notes and Records*, and *Annales Aequatoria* will appear in JSTOR alongside core journals like the *Journal of African History*. Including these important journals produced in Africa is a critical step towards expanding and deepening African scholarship both within and outside of the African continent, and it is an important element in capacity building. Some of these journals played a seminal role in the establishment of African Studies as a discipline, and important African intellectuals and activists contributed to their volumes. They form a rich component of Africa's modern intellectual tradition. Opening the possibility for increased visibility through their participation in JSTOR will contribute to their long-term sustainability through

[8] For a list of partners who participated in the Aluka initiative, please visit: http://www.aluka.org/page/about/partners/list.jsp

their preservation, increased usage and will hopefully encourage new contributions from international scholars, especially Africans.

This paper highlights how African publishers and academic institutions are collaborating with ITHAKA to increase knowledge generation and dissemination, particularly of knowledge and research from and about Africa. The following section of this paper is devoted to sharing the significant progress ITHAKA has made in providing African institutions access to JSTOR. Specifically, we share detailed examples of participation, access and usage of JSTOR's online collections by African institutions over the course of the last decade (1999 – 2010). Finally we analyze usage trends of Africa based users and compare those trends with data of user behavior in other regions of the world.

Capacity building in digital content development and use of e-resources

Several reports have shown that those who contribute most to the world's body of knowledge in terms of volume and quality of publications are also the greatest consumers of the products in terms of access and transformation to innovation and development. The latest world reports confirming this include the *UNESCO Science Report, 2010: the current status of science around the world*[9] and the 2011 Royal Society report on *Knowledge, Networks and Nations: Global Scientific Collaboration in the 21st Century*.[10] Africa contributes only 0.7% to published world research and scholarship, a figure that by all standards is very small. ITHAKA, being cognizant of these facts, emphasizes the importance of building user and contributor communities for its resources in all parts of the world. Through digitization projects and the gratis provision of JSTOR resources in Africa, ITHAKA has built a considerable community of content contributors and users.

Considering these trends and the impact of local capacity building and input have on knowledge production, JSTOR has maintained collaborations with African institutions to build African studies resources as a high priority. Partner institutions carry out the digitization, following agreed upon standards. JSTOR facilitates acquisition of funds for setting up digital labs and also provides training in digitization in order to achieve efficiency and high standards of output. The products are then shared on the JSTOR platform and made available to a larger community of scholars and researchers around the world. Participating institutions benefit by having a digital lab and developing digitization skills at the technical and management levels. JSTOR experimented with a second model where institutions and individuals contribute already digitized material but found it to be technically and administratively demanding and ultimately not scalable.

Studies show that availability of e-resources in Africa does not necessarily translate into their use.[11]JSTOR organizes training workshops at selected institutions in Africa to offer

[9]Kevin C. Urama et al, *UNESCO Science Report, 2010: the current status of science around the world* (2010): 279-321 (http://unesdoc.unesco.org/images/0018/001899/189958e.pdf) (accessed 24 May 2011).
[10]The Royal Society, *Knowledge, networks and nations: Global scientific collaboration in the 21st century* (2011). http://royalsociety.org/uploadedFiles/Royal_Society_Content/Influencing_Policy/Reports/2011-03-28-Knowledge-networks-nations.pdf (accessed 24 May 2011)
[11]Jonathan Harle, "Digital resources for research: a review of access and use in African universities (June 2009); "Growing knowledge: access to research in east and southern African universities" (October 2010).

face to face sessions of training, discussion and feedback. These trainings are organized in collaboration with host institutions in the selected countries. They are intensive half day trainings targeting mostly librarians, lecturers, researchers and postgraduate students. Workshop participants are encouraged to share acquired skills and techniques by organizing similar trainings at their own institutions. Since 2007, over 1,000 participants in 13 countries dispersed from South Africa to Tunisia in the north and from Kenya in the east to Senegal in the west, have benefited from such training workshops. These training workshops provide an overview of JSTOR resources and also practical hands on training in using JSTOR resources. Routines such as navigating JSTOR resource sites, formulating good search terms and queries, saving, printing, sharing and so on, are practiced and discussed. My JSTOR on the JSTOR website provides tools that allow tagging, saving and sharing searches and in the case of JSTOR Plants also allows users to provide feedback. These innovative tools for manipulating digital data and enhancing scholarly communication provide new opportunities for research, discovery and innovation in teaching, learning and sharing. In addition to face to face on site trainings, JSTOR also offers training materials in the form of online text, CD ROMS and videos as well as printed materials. Regular webinars are also open to participation by all. These webinars are held at JSTOR's cost and therefore African participants only need to register and JSTOR provides communication linkage at the appointed time. Institutions can also request for webinars and online trainings to be organized specifically for their members. These trainings help to improve participants' information literacy and increased usage of electronic resources.

JSTOR participation and usage in Africa

Before the introduction of AAI in July 2006, only, 112 institutions in Africa participated in JSTOR. Most of these institutions were based in South Africa and Egypt. As mentioned earlier, the numbers have since increased steadily to 650 by May 2011 (Fig. 1), and so has usage (Fig. 2). The increase in usage is however very uneven across countries and regions. South Africa has the highest usage of JSTOR and this is also matched by having the highest number of JSTOR participants at101 institutions as of May 2011. Africa has about 600 universities. Of these, about 67% are JSTOR participants. Given this figure, there is more room to improve participation. It is expected that the increase in the number of participating institutions will start to level off at some point in the future. The participation trend in Africa over the years is similar to that for developed countries where institutions pay license fees (Fig. 3), but the volumes are widely divergent. Compared to other developing nations, Africa has a larger participation rate, and this may be due to the longer duration of the AAI in contrast to the DNAI. In emerging economies such as the BRIC nations (Brazil, Russia, India and China), JSTOR participation and particularly usage is rapidly growing. This level of usage could be explained by the increased investments in infrastructure. Despite the relatively high participation, usage in Africa is comparatively much lower. In contrast to the BRIC

http://www.acu.ac.uk/member_services/professional_networks/libraries_network/growing_knowledge (accessed 24 May 2011)

nations, investment in the infrastructure necessary to support effective transformation in Africa still presents a challenge.

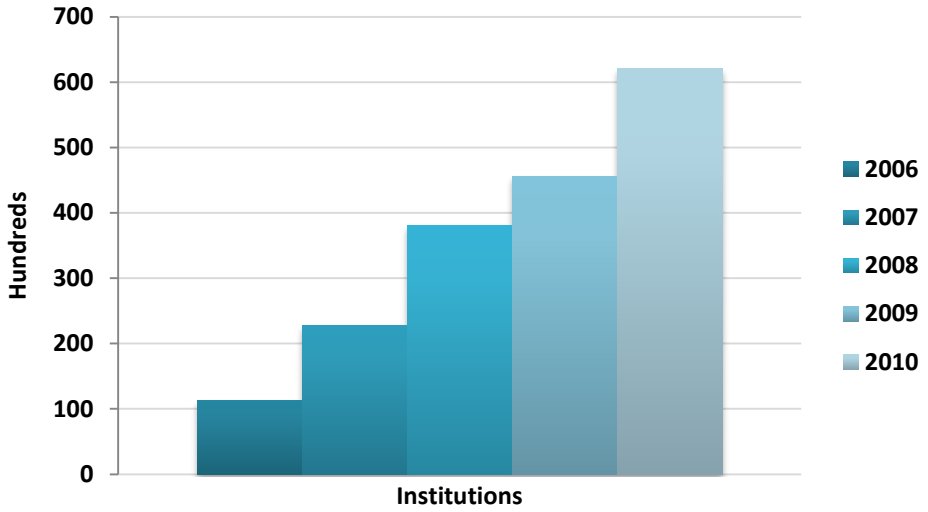

Fig. 1. JSTOR participation in Africa, 2006-2010.

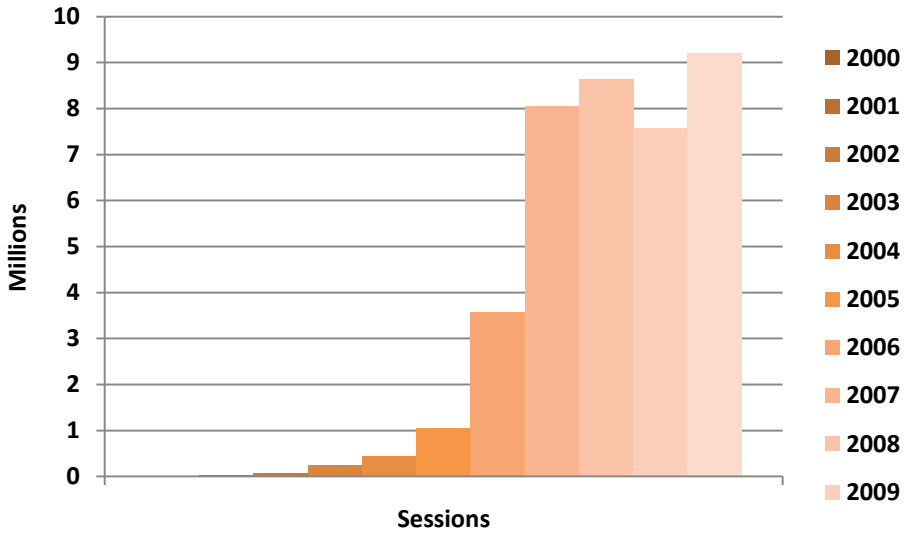

Fig. 2. JSTOR usage in Africa, 2000-2010.

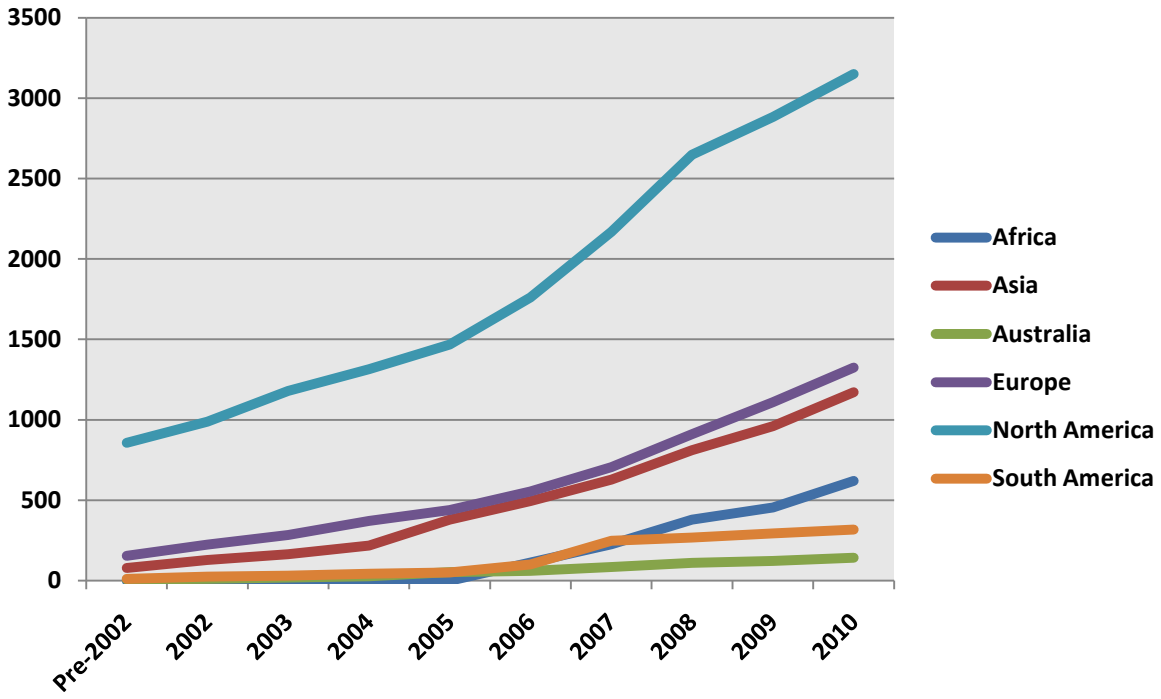

Fig. 3. JSTOR participation by region, over time.

Availability and affordability of broadband internet are two important non-human factors greatly influencing the usage of digital resources in Africa.[12] Regional and country trends indicate that countries that have laid out a good network of broadband infrastructure record greater usage than those that have not. Other factors that contribute to prolific usage are the number and level of tertiary institutions in a country as well as the level of research taking place in the respective countries.[13] The level of research output could be measured by the number of publications and patents emanating from a given country, and these have been roughly estimated in recent Royal Society and UNESCO reports. South Africa spends about 0.9 of its GDP on research and this reflects well in the fact that it is the leading research and innovation hub in Africa with some of the best tertiary institutions. Others that trail behind but which have shown remarkable improvement in the number of publications in the last decade are Nigeria, Kenya, Cameroon, Tanzania, Ethiopia and Uganda respectively (Fig. 4).[14]

[12] Harle, (loc. cit., 2009)
[13] Royal Society, loc. cit.
[14] Urama et al, loc. cit., 286.

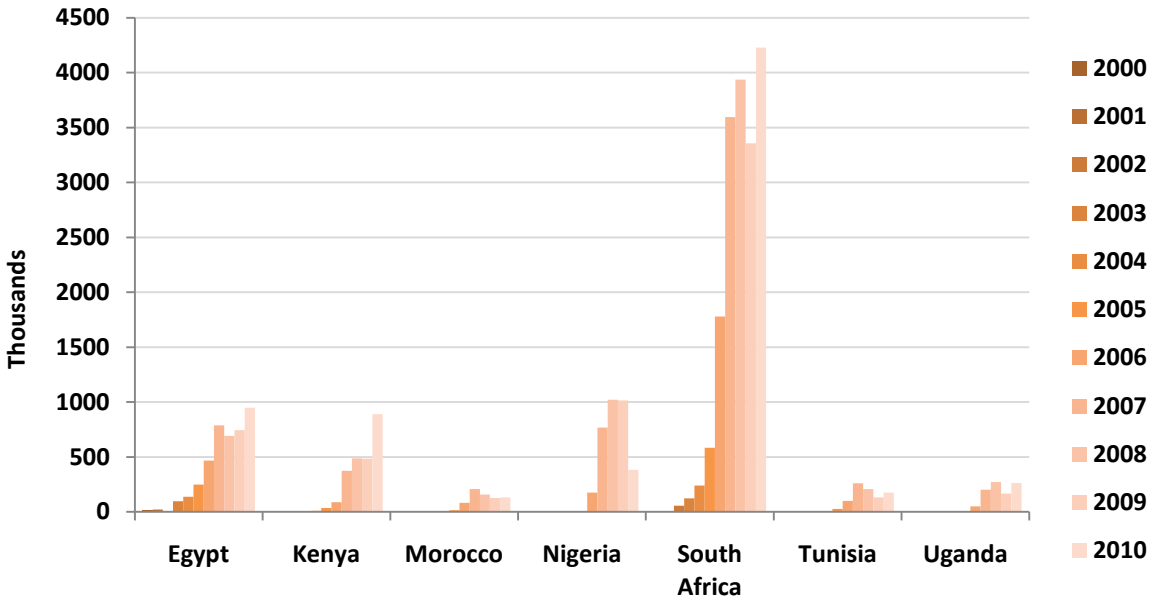

Fig. 4. Usage in top 7 African countries, 2000-2010.

JSTOR Mobile,[15] still in beta development, is an additional tool that enables access to JSTOR resources through smart phones. Currently, JSTOR Mobile can be used to browse and search the archive. After searching and finding citations on their phones, users can email the citations to themselves and then access the full text on a computer linked to a participating institution. Considering that the use of mobile phones is increasing exponentially on the African continent, subsequent development of the JSTOR Mobile interface may have a significant impact on improving access and usage of JSTOR resources in Africa.

Discussion

The level of internet infrastructure development in terms of bandwidth, cost of internet access, computer availability, reliable electricity, computer and information literacy are among the most important factors that influence usage trends in Africa. These factors can be grouped into human and non-human factors. The human factors involve the skills necessary to competently use computers and ICT's (information literacy). With regard to information literacy, the ability to use databases, navigate websites in general, conduct effective searches, saving and tagging, printing documents, and exporting citations are some of the most important skills that enable users to make optimal use of online scholarly resources. From our experience, we have recorded increased usage of JSTOR after successfully implementing a training workshop at a given institution. This underscores the importance of awareness and training for institutions in particular regions of the world to help develop optimal use of these digital resources. Face to face training and tutorials powerfully reinforce awareness and connection to JSTOR and its programs amongst librarians, faculty and students.

[15] http://about.jstor.org/support-training/help/jstor-mobile-beta

Removing the subscription cost barrier is only the first step in a range of activities seeking to broaden access to online research and scholarship. JSTOR views outreach and training as critical elements of enhanced access and usage, and therefore targets its outreach and training efforts to librarians, teaching staff, postgraduate students, administrators and researchers. Participation and access data from JSTOR all show a significant increase since the introduction of gratis access on the continent. There are other peer reviewed journals that are either Open Access[16] or provide fee waivers, e.g. Research 4 Life[17] but their uptake has not been rapid enough to compare with usage in developed countries.[18] Other programs that also invest in outreach and training activities include, INASP and Research 4 Life, including other organizations that contract ITOCA.[19] Removing infrastructure access barriers on the continent by increasing the broadband network and reducing the cost of bandwidth should be priority policy issues for funders, governments, and other multi-lateral development institutions. The potential for effective transformation in scholarly communication and its impact on overall social and economic development should encourage more investment and research on these infrastructural challenges.

Usage and production of academic resources are synergistic processes. Africans should not only be encouraged to be avid users of digital resources, they should also become content creators and contributors. This kind of participation and input is also a critical component of increased usage. As mentioned earlier, the countries and institutions that make the most use of resources are also the greatest producers of new knowledge and vice versa. JSTOR's initiatives of incubating pilot digitization projects with select partners contributes toward positioning Africa as a producer of information and knowledge that can enrich global research and scholarship. ITHAKA's activities in the scholarly arena present an opportunity for transformative change in scholarly production and communication in Africa.

[16] Directory of Open Access Journals (http://www.doaj.org/)
[17] Research 4 Life (http://www.research4life.org/)
[18] Gracian Chimwaza, ITOCA, pers. comm., 2011
[19] Information Training and Outreach Centre for Africa (http://www.itoca.org/)