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Towards cohesive consortia organisation and smart partnerships: Enabling sustainable access and effective utilisation of agricultural e-resources in academic and research libraries in Zimbabwe

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Abstract:

The pervasive electronic culture in the web 2.0 (Library 2.0) digital environment has significantly changed the face of library collaboration. New e-resources and open access projects promise new and improved access to agricultural information resources and new opportunities for partnership with stakeholders. The paper focuses on library linkages and collaborative initiatives of university, college and research libraries in Zimbabwe in their endeavour to enable sustainable and effective utilization of global agricultural electronic information resources. Food security, through sustainable agricultural development is hinged upon protracted, seamless access and effectual utilisation of global information resources. The writer seeks to explore any inter-organizational synergies and collaboration among academic and research libraries, e-resource publishers, research and development institutions, and other stakeholders, locally, regionally and internationally. The diverse, complex and demanding range of activities associated with access, management and utilization of global agricultural e-resources coupled with the new Web 2.0 (Library 2.0) paradigms which usher in new, more robust but sophisticated and challenging systems and applications amount to 'grandiose challenges' that in turn call for 'grandiose initiatives' particularly in 'transitional' and agrarian economies. The writer epitomizes the collaborative developments as having been guided by a vision of agricultural electronic information resources becoming a seamless whole, managed and utilized to improve agricultural education and research, increase sharing of knowledge, help institutions build their agriculture information dissemination capacity, improve infrastructure and skills capacity, and extend the value of digital agricultural repositories and open access across the library fraternity in

the country and regionally which in turn ensures sustainable agricultural development and ultimately food security. This calls for a paradigm shift in approaches to library co-operation and collaboration from the traditional "inter-library lending" relationships to more cohesive library consortia organization characterised by vibrant linkages, smart partnerships and effective support groups. The writer also attempts to make recommendations for ideal partnerships.

Keywords: library consortia, e-resources, digital libraries, collaboration, agricultural development, food security, INASP, eIFL, TEEAL, AGORA

1. Introduction

Access to usable and relevant information resources has always been the crux of sustainable agricultural research and development. In order to build capacity, effectively support education and research in agriculture and to realize the vision of an ideal information society, there has traditionally been collaboration among academic and research libraries that offer programmes in agriculture and allied disciplines. The pervasive digital environment and electronic culture particularly in light of the web 2.0 paradigms has changed the face of library cooperation and networking with the proliferation of global electronic information resources, associated systems and applications taking these collaborative networks to a higher level. The Oregon State University anthropology glossary defines an information society as "a society integrated by complex communication networks that rapidly develop and exchange information" [1].

New e-resources and open access projects promise new access to agricultural information resources and new opportunities for partnership with stakeholders thereby reducing the digital divide between the developed and developing information societies. However the diverse, complex and demanding range of activities associated with access, management and utilization of agricultural electronic information resources in the digital environment and Web 2.0 generation amount to 'grandiose challenges' that in turn call for 'grandiose innovation' particularly in 'transitional countries'. The paper focuses on library networking, sharing and collaborative initiatives of university, college and research libraries in Zimbabwe in their endeavour to enable sustainable access and effective utilization of global agricultural electronic information resources. It is hoped that the Zimbabwean experience may also be relevant elsewhere in Africa and other emerging economies thus serving as a limelight for stakeholder partnerships in reducing the digital divide, facilitating accessibility to agricultural electronic information resources thereby promoting agricultural research and development – a condition necessary for sustainable food security.

2. Objectives

1.To explore the agricultural e-resource initiatives at library association and consortia level
2.To identify the linkages and changing patterns in library cooperation and networking in the electronic environment in the context of agricultural e-resources
3.To identify the benefits, challenges and opportunities for agricultural information stakeholder partnerships
4.To draw conclusions and recommend some principles of ideal partnerships

3. Methodology

The author has actively participated in most of the initiatives discussed in the paper thereby gaining first hand information about the various projects covered in the discourse. Interviews have been carried out with various academic and research librarians including representatives of involved stakeholders. Secondary sources of data like project reports, online communities and social networking tools have also been widely consulted.

4. Consortia organisation

Like most transitional countries, Zimbabwe's academic and research library fraternity has responded to the digital library and agricultural e-resource challenges through predominantly consortia, collaborative and partnership initiatives as opposed to individual library endeavours. The wikipedia defines a consortium as "an association of two or more organizations with the objective of participating in a common activity or pooling their resources for achieving a common goal" [2] and it is put into better perspective in the definition found in the Hudson Community Valley College glossary: "a group formed to share in the finances and/or administration of a project to collectively accomplish what no one member could accomplish alone." [3] These initiatives have resulted major transformation in the academic and research libraries in Zimbabwe.

The most successful e-resource projects have been implemented under the auspices of The Zimbabwe University Libraries Consortium (ZULC) with other development partner organisations. The Zimbabwe University Libraries Consortium is a grouping of member libraries of universities in Zimbabwe. ZULC was formed in 2001, with a mandate to bring together university libraries to achieve some common objectives for the total benefit of members in the group. Currently there are twelve (12) member universities (9 of which are state-run), the major ones being University of Zimbabwe (UZ) and National University of Science and Technology (NUST), both state universities. Electronic Information Resources for Libraries (eIFL) supported ZULC's formation and has since been supporting those projects that are consistent with its mission. Considering that Zimbabwe is an agrarian-based economy, these universities run agriculture oriented programmes of one form or the other.

Initially ZULC was formed to facilitate mutual cooperation and understanding, provide a forum to share information and experiences, establish union catalogues and to facilitate inter-library loans. Developments in ICTs and electronic information resources transformed the function and thrust of ZULC as members started seeking avenues to access and effectively utilise global electronic information resources. These endeavours culminated into more solid member alliances and partnerships with other consortia, non-governmental organisations, research and development agencies both locally and internationally, for example the afore-mentioned eIFL and the International Network for the Availability of Scientific Publications (INASP).

Due to the success of ZULC and through its incentives, an affiliate consortium was also borne. This is the Zimbabwe College and Research Libraries Consortium (CARLC). This is a grouping of government college and research libraries whose mission is to 'act as the chief catalyst in the overall development of member libraries through leadership, support, motivation, research and advocacy including championing access to electronic information resources and technologies.' As an affiliate of ZULC, CARLC has benefited largely from ZULC initiated projects although it has also spearheaded some of its own.

5. Developments

5.1 Collaborative Projects/Initiatives

5.1.1 eIFL.net: Electronic Information for Libraries

eIFL.net is an NGO that enables access to knowledge in developing countries by supporting the building of library consortium ; negotiating licenses for access to electronic journals; advocating and building capacity in fair and balanced copyright legislation; training in the building of open access repositories of research content produced by African institutions; and advocating for the use of free & open source software. eIFL has been very instrumental in the strengthening of the Zimbabwe University Libraries Consortium (ZULC) and been able to forge a partnership with Zimbabwean academic and research libraries through this consortium culminating into viable electronic information resource projects.

eIFL, through its Open Access initiative sponsored a ZULC conference on Open Access and Creating a Knowledge Society in 2006. The conference brought together academics, civil society, the public and private sector, and other interested people to discuss important and topical themes and/or issues of Open Access, Intellectual Property Rights and the Information Society. This conference spurred a number of e-resource and digital library innovations in ZULC member libraries. Through ZULC, eIFL continues to support the Zimbabwean academic and research library fraternity in any ways it sees fit for example through training workshops and sponsoring delegates to relevant conferences and events that enable access to knowledge.

Greenstone Southern Africa Project

The Greenstone Southern Africa Pilot Project came about at a very opportune time. It is a collaborative effort between eIFL (Electronic Information for Libraries) and ZULC. The project seeks to promote and popularise Greenstone Digital Library Management Software among academic and research libraries in Southern Africa. Greenstone is an open access, multi-lingual software used to build, manage and distribute digital collections. It is produced by the New Zealand Digital Library Project at the University of Waikato, developed and distributed in cooperation with UNESCO and the Human Info NGO. It runs on all versions of Windows, and Unix/Linux, and Mac OS-X. Institutions can run it on a main web server, where it interoperates with standard web server software like Apache.

The Greenstone project came at an opportune time in that ZULC had implemented a number of e-resources and digital library initiatives and software to effectively manage digital collections really complemented these efforts. NUST was chosen as the national centre to coordinate the Greenstone Southern Africa Pilot Project in Zimbabwe. [4] In 2007, a training workshop with participants from ZULC and CARLC members including one from Swaziland was run at NUST. The objective was to enable participants to build and manage digital repositories and to promote open access to these repositories. The participants would also help form a support network for the Greenstone Project, popularise and promote digital libraries in Zimbabwe and the region including familiarisation with other digital library management systems and tools. Other subsequent training and follow-up programmes were run whenever individual institutions requested such assistance.

Recently eIFL has called for proposals on practical activities that will result in enhanced IT skills of staff in constituent institutions of eIFL.net consortium members.

Examples of such activities include hands-on training workshops exploring new software or new ways of maximising the use of software currently in use, presentations by invited experts on key skills or tools that would enhance the work of systems librarians, setting up virtual training spaces where librarians can practice and develop their IT skills, collective drafting of useful documentation and materials with a focus on skills. Such endeavours will definitely go a long way in enabling sustainable access and effective utilisation of e-resources in libraries particularly in light of the web 2.0 and library 2.0 paradigm that is ushering in new tools and applications that promote social networks and online user communities.

5.1.2 INASP: International Network for the availability of Scientific Publications

Programme for the Enhancement of Research Information (PERI)

The Programme for the Enhancement of Research Information (PERI), run under the auspices of the Network for the Availability of Scientific Publications (INASP), a UK-based charity that champions sustainable access to scientific publications is a quintessence of strategic and smart partnership. INASP, through the Programme for the Enhancement of Research Information partnered ZULC so as to achieve its core objectives of facilitating the acquisition of international and local information and knowledge; improve access to local research through the improved preparation, production and management of local journals; provide awareness or training in the use, evaluation and management of electronic information and communication technologies (ICTs); support problem-solving of regional and local information access and dissemination challenges.

INASP cooperates with Publishers for sustainable access to research materials where ZULC and CARLC members identify suitable e-resources and INASP negotiates for sustainable licences and access routes. Strengthening of national research publications is another component of PERI. This is done through online publishing and national journal support, national and international workshops, study tours and online publishing scholarships. Thirdly there is the component of national networking, consortia building and supporting research and development. This helps forge stronger local mechanisms for information resource sharing and support including providing answers to challenges identified in the field.

Finally a very important component is the enhancement of skills required in effectively using electronic information resources and tools. In-country workshops and local facilitators are used to cascade the information and resources required to obtain requisite skills. The training workshops run by INASP include 'Accessing information in developing countries.' The workshop addresses the opportunities offered by electronic information resources and the changing role of academic and research libraries in the electronic era. Subject content areas for this training include e-resources range and access, the main strengths and weaknesses of the different types of e-resources, what different packages, licenses and agreements are needed to access electronic resources, what are the access options available in developing countries and this access might evolve in future.

Electronic Journals and Electronic Resources Library Management training programme seeks to introduce the full range of e-resources available online, demonstrate their use and to provide hands-on experience on using and accessing the range of electronic resources and to highlight hardware and software implementation issues associated with these, and to

develop ideas, strategies and policies for electronic resource and journal management within an academic or research library environment. The Monitoring and evaluation of e-resources use workshop covers the collection and use of quantitative and qualitative data, using information available from INASP, publishers, and participants' own data collection. It attempts to to enable participants to access and interpret usage data from publishers' and INASP's databases so as to aid in the e-resources renewal process. As mentioned before, INASP training workshops are 'travelling workshops' where participants in one workshop become facilitators in training other participants and so on. This brings in the issue of training of trainers. A training programme to this respect is also run. The 'Train the trainer: administering and facilitating effective training events' workshop programme has been developed for trainers operating in an information and technology-training context. The modules and units can either be used to guide the planning and implementation of training events or as a basis for training of trainers. The 'Working together to support research: optimising the use of e-resources' training programme seeks to bring together information professionals and researchers to work together on strategies for optimising the use of e-resources.

Most library and information professional particularly in the third world lack ICT technical skills that are pertinent in e-resource environments. INASP provides about three training programmes to address this aspect. PC Troubleshooting for Library Personnel is a training programme that aims to enable each institution to develop a realistic PC troubleshooting diagnostic procedure appropriate to their circumstances. It seeks to impart skills to diagnose simple hardware, software, network and Internet problems in libraries and also enable the librarians to liase with the IT support department. E-resources management requires working knowledge of the Internet. It also requires technical skills to develop web pages so that the resources can be linked to library pages.

The 'Web Page Design and Authoring, leading to Library Web Pages' training programme was designed to provide web design and authoring skills for library and information professionals and to highlight the importance of designing and building scalable, accessible and usable Web sites. Limited bandwidth has always been of great concern in transitional countries. It is, therefore, important that library and information professionals know how best to utilise the limited bandwitdh. The 'Bandwidth Optimisation' programme involves a series of workshops, training, advocacy and outreach activities aimed at capacity development in the area of bandwidth management and optimisation.

The training offered by INASP covers both practical and strategic aspects. The training material is also made available online for download. The training programmes attempt to cover all the fundamental issues associated with e-resource access and utilisation in transitional countries. It is commendable that INASP projects attempt to have a holistic approach in addressing all the factors that are pertinent to sustainable access and effective utilisation of e-resources. A lot of projects tend to focus on part of the e-resources matrix depending on the donor partner thrust, for instance, centering on access issues like subscriptions and licence aspects and neglecting the utilisation component. It is one thing having access to e-resources and yet another to effectively utilise them. This often produces 'white elephant projects' It is therefore important to integrate consortia objectives with those of the donor partner as they may not always be tied in together.

5.1.3 Other projects

Both ZULC and CARLC have managed to source computers on behalf of their members from such organisations like Computer Aid International (CAI) and World Links to support access to e-resources. CARLC managed to collaborate with EBSCO South Africa and EBSCO representatives managed to hold training sessions with CARLC members in effectively using EBSCO online resources accessible through PERI, for example how to effectively search using the various tools like the Business Search Premier and getting the best out of EBSCO resources. Through EBSCO these libraries can now access a number of agricultural journals and more than 490,000 Citations.

Both consortia have encouraged member libraries to implement individual projects where a member library has the capacity to do so and ZULC would support where it can. This has seen universities like the University of Zimbabwe developing such projects like the Database of Thesis and Dissertations. [5] Similarly most of the other universities are digitising lots of print resources like research projects and past exam papers and adding them to their digital collections. Chinhoyi University is currently implementing the Mandarin Project as a pilot project on the consortium's behalf and also experimenting with Koha and Evergreen, variations of Greenstone.

Africa and Chinhoyi Universities run full fledged agricultural programmes. These have also obtained TEEAL and AGORA electronic agricultural resources through collaborative efforts with the Food and Agricultural Organisation, AGRIS and other partners. TEEAL is a Cornell University initiated project created to give agricultural students and researchers in 100 low-income countries better access to current research published in high-quality agricultural journals.. The objective is to provide students, faculty, researchers and policymakers the kind of information they need to address important agricultural and rural development challenges in their countries. An institution can use a standalone PC or share searchable database on a local area network with no Internet or phone line required and subjects include Aquaculture, Crop and Soil Science, Economics and Rural Development, Natural Resources Management, Sustainable Agriculture, Livestock Production, Plant Protection, Food Science and Nutrition, Microbiology and Veterinary Medicine. Access to Global Online Research in Agriculture (AGORA) provides access to over 500 journals from major scientific publishers in the fields of food, agriculture, environmental science and related social sciences.

6. Industrial Significance and Eventual Benefits

ZULC initiated collaborative projects have transformed the face of Zimbabwean university, college and research libraries from being largely print-based to electronic. The INASP sponsored PERI projects have really increased the capacity of these libraries to provide agricultural and other resources for education and research and diminished the digital divide significantly. Academic and research libraries in Zimbabwe now have access to online electronic information resources (over 19,500 online journals, ebooks, and bibliographic databases) from over 50 publishers. A directory of free and open access resources is also added as the cherry on top. University library members pay a mere $US5,000 or less and College and Research Libraries Consortium Members $US1,000 per annual subscription for accessing such a vast resource base. This clearly demonstrates especially the monetary benefits derived from cohesive consortia organisation and the enriched service delivery. The various training workshops have also resulted effective

utilisation to a reasonable extent considering also the impact of other constraints in any economy like Zimbabwe.

The Greenstone Project training workshop gave a huge impetus to digital library development. It culminated in the establishment of NUST's first ever-digital library (NuStone). The digital library is known as NuStone (pronounced "new stone") from the words NUst and greenSTONE.[6] The URL is http://library.nust.ac.zw/gsdl/cgi-bin/library. NuStone runs on a Fedora Linux server. Other collections are also being built and in line with eIFL-FOSS aims and objectives, the 'Open Collection' was developed. This collection contains very useful Open Source Software for libraries (Greenstone, CDS/ISIS, Evergreen etc) and links to Open Access information resources.

Other institutions like Africa University have also started building digital collections using Greenstone whilst others have used other similar system versions like Dispace (University of Zimbabwe and Bindura University of Science Education). As mentioned elsewhere in this paper, Evergreen and Koha are also being tried. The Research Council of Zimbabwe, through the auspices of the College and Research Libraries Consortium has also started making trials of Greenstone in building collections of research done in Zimbabwe.

Through the various workshops, linkages and collaborations, the Greenstone Southern Pilot project produced probably one of the most vibrant Internet Support groups in Southern Africa. It has now come to be known as the Southern Africa Greenstone Support Network. This listserv used to be hosted by the University of Namibia www.sagreenstone.unam.na but is now hosted by EIFL. www.eifl.net. It offers a platform to share ideas, exchange notes and experiences and above all as a technical advisory focal point. Members have found it so practical and useful in troubleshooting and resolving a number of issues associated with technical requirements, interfacing Greenstone with other systems and metadata management.

This is very crucial especially considering the fact that with Greenstone, a library can build digital collections with fully searchable metadata driven indexes. It is a multi-platform support application offering a web-based user interface and is highly customisable. These collections may be of a variety of formats ranging from simple word and pdf files, various graphic formats to CDS/ISIS records among a myriad of other data formats. One simply ingests the collection and Greenstone builds it together with a searchable index using the respective plug-in depending on the format. In other words Greenstone is highly interoperable using contemporary standards, it incorporates a server that can serve any collection over the Open Archives Protocol for Metadata Harvesting (OAI-PMH) Greenstone also enables libraries to package these digital collections into CDs or DVDs and distribute them. The diversity of formats, inter-operability and multi-platform nature of the system means that there may not always be hard and fast rules in providing a solution for any given implementation hence the need for vibrant support.

6. Conclusion & Recommendations

The writer epitomizes the Zimbabwean collaborative developments as having been guided by a vision of agricultural electronic information resources being a seamless whole, managed and utilized to improve education and agricultural research, increase sharing of knowledge, help institutions build their agricultural information dissemination capacity, improve infrastructure and skills capacity, extend the value of digital libraries and open

access across the library fraternity in the country and regionally thereby bridging the digital divide. This will in turn boost agricultural production thereby ensuring food security in the country.

The factors leading to access and effective utilization of electronic information resources for agricultural research and development, however, may be so complex that an individual library may not be in a position of addressing them alone. These range from ICT infrastructure that includes hardware and software, technical skills, bandwidth, management and administrative issues and a host of other factors, some of which are so salient. Underpinning most of these factors is of-course the issue of funding. The new Web 2.0 (Library 2.0) paradigm also ushers in new, more robust but sophisticated and challenging systems and applications. This therefore calls for more cohesive consortia organisation and strategic partnerships. The projects derived from these collaborative efforts should seek to have an all-rounded, highly adaptive approach to addressing all the issues of sustainability in e-resource access and effective utilisation in the versatile digital environment.

"Much of the agricultural success enjoyed by the United States, for example has been grounded in the thriving network of partnerships – domestic and international, governmental and non-governmental - that help to clearly define needs, formulate priority approaches to meeting those needs, discovering new and better ways of responding to them, and then making broad use of new tools. Indeed, most all of the programs and activities listed in this report depend upon an array of international, national, regional, state and/or local partnerships for success" [7]

As O'Brien, in his paper 'E-research: An imperative for strengthening institutional partnerships' puts it: **"**Research is becoming more multidisciplinary, more collaborative, and more global. The term e-science has been used to describe large-scale, distributed, collaborative science enabled by the Internet and related technologies. research is a broader term that includes non-scientific research but that also refers to large-scale, distributed, national, or global collaboration in research. It typically entails harnessing the capacity of information and communication technology (ICT) systems … to study complex problems across the research landscape.**"** [8]

European research and development institutions and indeed other fraternities in other parts of the world need to cooperate with their African counterparts in promoting access to agricultural research information through wide use of Information Communication Technologies. This implies new ways of collaboration, dissemination and reuse of research results, specifically via the Web. This can be done through the development of open access agricultural digital institutional repositories. Africa will also be able to exploit the opportunity to make its knowledge output more widely known and accessible. The creation of open access digital repositories in African institutions is very important as many of the established databases in Europe, for instance contain very few local reports or journals on agriculture therefore very little to no citations of many of these published locally may exist on the Web.

'Though self-sufficiency in information resources is not a realistic goal, nor should it be a desired goal, the ability for developing countries to produce and disseminate relevant and useful information, especially in the field of (agricultural) research, makes it more of an equal partner in the exchange of research information, not just a North to South flow."[9] This aids in boosting the confidence of agricultural researchers in Africa because they will not feel either isolated from information or that their peers in Europe and other countries around the world overlook the information or knowledge they produce. It develops the

institutional competencies of African agricultural research institutions and also helps to diminish irregularities between African and European agricultural research capacity. Other opportunities for Europe-Africa collaboration include Blogs, Podcasts, social media, social networking and review sites among other Web 2.0 (library 2.0) trends. These library 2.0 initiatives have the further advantage of enriched agricultural electronic information resources as researchers (knowledge originators) and librarians and/or information professionals (curators) become partners in content generation and organisation.

Consortia initiated agricultural e-resource programmes should support the electronic resource service requirements by building upon existing investments in library technology and existing structures, through seamless interaction and efficient sharing of data with traditional online applications and systems, access management systems and traditional library management functions while at the same time keeping abreast with the ever-changing web-centric information society trends. It becomes easier if implemented as part of an existing library management system. In partnerships to build local capacities, local needs should be identified and projects developed that prioritises and builds around these. A good approach is to utilise existing infrastructure and resources, such as networks of expertise, traditional knowledge resources and local information. Using and building on local expertise helps avoid duplication, and includes and reinforces existing activities and outputs. “The e-resource management functions should complement rather than duplicate the capabilities of other systems deployed by the individual libraries.” [10]

Agricultural Online newsgroups, blogs, listserv discussion groups and chat groups attracting collaborators from Africa and the Diaspora can provide a very effective e-resources support network at very little to no cost for African academic and research libraries. Ideas and feedback can be exchanged very rapidly. At the same time these interactive consultations and collaborations generate a current, easily maintained body of knowledge that can be used in posterior e-resource projects that support sustainable agricultural research and development.

Partnership projects should always establish preferably local continuing support networks that will ensure sustainability particularly technical support. As afore-mentioned, e-resources management involves a lot of technical issues. At the same time most partnership projects usually attempt to impart the requisite skills and knowledge through one-off programmes. In Zimbabwe and a good number of other African countries, this challenge is worsened by the brain drain as trained and skilled information professionals leave due to the economic meltdown.

Both partners in agricultural e-resource programmes should “feel responsible for an development activity and its results. This commitment has been termed `ownership', and it is central to the notion of capacity building as a process. In the past, too much of the ownership has been with the donor or supporting agency and too little with the local partners whose capacities were being developed. The fostering of ownership is closely linked with the way in which an intervention is formulated, implemented and evaluated, and the roles played by the various participating agencies and individuals. Ownership should be fostered at two main levels. Capacity building interventions normally rely on specific people or groups acting as champions or leaders of the process, and then a wider range of stakeholders have to be involved in a fair and equitable way to ensure uptake and sustainability.” [11]

Finally, it has been observed that there are quite a number of international development partners who collaborate with academic and research institutions in as far as enabling accessibility to agricultural e-resources is concerned. However, it is an apparent paradox that very little to no linkages exist between and among these development partners that seek to promote sustainable access to agricultural information resources for development purposes. The World Bank at one time proposed `Global Development Gateway' supposedly to promote collaboration and coordination among organisations. This would in turn minimise duplication of projects and enable pooling of resources.

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