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Improving the Quality of Library *and* Information Science Journals in West Africa

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Online Publishing for Improving Visibility and Access to Research Publications in Africa

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Abstract

Online publishing is revolutionizing the way knowledge and information is shared among researchers worldwide. The prospect of online publishing for improving visibility and accessibility of research publications in Africa is examined, issues such as standards and quality control are discussed. Critical infrastructure needed to effectively produce and circulate electronic formats of journals is highlighted. Economic models of online publishing are examined with a view to determine an adoptable model for Africa. The sustainability potential of online publishing for African research especially in library and information science is explicitly attended to.

1. Introduction

Research has been the driving force of development in the world. It has also been described as infrastructure for improvement and change. Research is undertaken in many contexts and largely by universities, industries, government agencies and independent scholars. Research generates primary outputs (such as data sets, images, video files and sound recordings) and secondary outputs (such as books,

pre-prints, journal articles, conference papers, theses, technical reports, unpublished papers and web sites) which interpret and summarize the research findings (Cathro 2004).

Johannes Gutenberg's printing advances in the 15th century loosened the controls on publishing by broadening and democratizing information content and access, and ultimately helped to promote the cultural and scientific upheavals that followed. The Internet and the World Wide Web in particular- represent another step in this ongoing revolution.

In the library and information science (LIS) field, research is crucial for the development of staff of library and information centres as well as the continuing evolution of the profession.

For any discipline to grow, research must constantly be carried out as this will extend the frontiers of the discipline (Aina, 2004). The peculiarity and broad-based nature of library and information science as a field of study and a profession makes it to be without boundary or seam. This one characteristic portends the discipline as a multidisciplinary field of study drawing heavily on research methodologies from other fields.

LIS research is useful to a broad spectrum of people including those who have a role in the future of services – politicians at national and local level, policy makers and advisers, service heads, media, authors, as well as all levels of staff.

The creation, transmission and storage of knowledge is a vast human activity carried out by countless individuals, groups and institutions. But it is the academic system which performs the activity for income amounting to billions of dollars each year, through some 100,000 universities, research institutes, hauts écoles and other income producing and expending variations. For example, Harvard University had the world's richest annual sales income of US$1.78 billion, and an endowment of US$14 billion (Hoovers 2000), the core activity being the publication of research findings through printed journals (PJ). Even though there is generally no payment for publication in an academic printed journal but the paid benefits that follow such publication can be enormous as appointment, promotion, research grant funding; in other words the printed journal is a very powerful gatekeeper of entry into economic academia.

Online publishing (also used to mean electronic publishing in this paper), offers a significant cut in publishers costs and is widely gaining acceptance by scholars, library and information professionals. Electronic publishing is far wider and superior access to a wider range of information than print media leading to a huge increase in productivity. This paper focuses on access to and production of e-journals as a potential for enhancing research publications in Africa.

Enhancing Research Publications in Africa

There are about 50 regular peer-reviewed scientific journals – including medicine and the social sciences - in sub-Saharan Africa excluding South Africa, (Pakenham-Walsh 2001). This is in contrast to some 20,000 e-journals worldwide. Sub-Saharan Africa (including South Africa) contributes less than 1% of the global total of scientific papers. Most of these are in the 'high-priority areas' of agriculture and health. Apart from North Africa and South Africa, the main publishing countries are Nigeria, Kenya, and Zimbabwe.

The question that readily comes to mind then is 'Why does Africa have so few journals as compared with the rest of the world?'

It is believed that scientific research in Africa is under funded and it has a low priority with African governments as compared with industrialized countries. Despite the small gross national product (GNP), less than 1% of their GNP is spent on scientific research as compared with 3% in North America.

One of the problems of African journals in print format is the limited market potential. Academics in Africa have low salaries and are unable to afford personal subscriptions to journals and if they do subscribe to a journal, prefer international journals because the latter tend to have a higher quality of content and regularity of production.

With the increasingly limited budgets of libraries for journal acquisition, the availability of electronic publications has accelerated a shift from 'ownership' to 'access'. Libraries are cancelling their subscriptions to print journals in favour of access to shared online resources. African-published journals are considered 'non-core journals' – those which have a relatively small, specialist readership. Thus, they are vulnerable to cancellation. This trend is accelerated by the lack of confidence that the journals will be delivered on a reliable basis, or indeed will survive beyond the current issue. With the pressure of fewer resources as with libraries worldwide, many African libraries have no budget for acquisitions at all and have to rely on donations of books and journals through schemes offered by agencies such as Book Aid International. A journal donation scheme in 1994, by International African Institute called 'African Journals Distribution Programme' which involved the purchase of African scholarly journals on behalf of African university libraries was successful but has foundered recently after a hand-over to a Kenyan non-governmental organization, mainly because of an early withdrawal of support by the funding agency, Danida.

The specialized market for African scientific journals is relatively small hence the lack of interest of commercial publishers in Africa who prefer to focus on the much larger, secondary-level textbook market. However, research by Alemna et al (1999) has shown that a great majority of academic staff in African universities

consider African-published journals equal or more important than journals published elsewhere for reasons of contextual relevance of the results presented articles to African environment and conditions. The contribution of research published in African journals has been acknowledged by academics as immense to research and teaching but its use is limited by the lack of knowledge of what is available, access, regularity and quality.

Finance is another prominent problem in the visibility of African scientific journals. The income of most scientific journals comes from subscriptions, advertising and external finance. World over, the main stay of the financial health of most journals is the income from subscriptions. Most African scientific journals have a paid subscription base of less than 100, and often less than 50 (Pakenham-Walsh 2001).

Advertisers are usually unwilling to pay high prices for advertisements in journals with small subscription base and particularly where individual readers are seen to have limited purchasing power. The purchasing power is directly related to regional and national factors such as economic instability and reduced public sector spending capacity. An example is the *Medicine Digest,* a free educational journal for doctors in Africa, which ran commercially on income from pharmaceutical advertising but was forced to discontinue distribution in Africa during the 1990s because it was no longer able to attract advertisers.

Some African journals have to rely on subsidy from the sponsoring institutions which may be a professional society, association, or university. Most of these journals are distributed free to society members and academics. Journal production in African universities over the past 10 years has been the early casualty of budget cuts. Also, about one third of African scientific journals are dependent on support from donor agencies such as:

- Sida – which supports 13 journals in Ethiopia, 2 in Tanzania and 2 in Zimbabwe
- CTA (Technical Centre for Agricultural and Rural Cooperation, Netherlands) supports several journals mainly in Agriculture discipline.

The quality of a journal's content is critically dependent on the quality and quantity of the manuscripts to the journal. The low quality and quantity of manuscripts is ascribed to the unfavourable environment for African science authorship which is characterized by low income of African scientists, which forces them to concentrate on private consultancy work in preference to academic research and writing. The impoverished state of university libraries results in the lack of access to the up-to-date information needed to keep up to date with current developments in their field – a prerequisite to the planning, undertaking and reporting of new original research projects. There is also a general lack of spending on scientific research by government (as mentioned earlier). Hence the African scientists are not equipped to carry out research.

2. Overview of Online Publishing

With the explosive growth since 1990, the World Wide Web (WWW) seems set to be the immediate new medium for the publication of research results.

The WWW is democratic: there is no gatekeeper to prevent anyone from posting a publication, but the academic process is about selectivity, not democracy. The vastness of the WWW and the impermanence of things on the Internet seriously weaken its suitability for the publication of research findings, yet Odlyzko (1995) predicted that the demise of print journals (PJ) is inevitable in view of the existence of WWW and the potential power of its impact.

A simple definition of electronic publishing has been defined simply as: 'any non-print media material that is published in digitized form to an identifiable public' (Andersen Consulting 1996).

Whereas in certain fields, academics have come to recognize electronic journals as valid vehicles of scholarly discourse, some believe that electronic journals have failed the basic test of survival, thus contributing to the lack of acceptance a means of professional and scholarly communication"(Jul, 1992).

Intellectual property rights and management are difficulties faced by publishers in the electronic environment. Theses rights are among the most valuable assets of a publishing organization. Given the ease of electro-copying and distribution over the Net, the risks of illegal use of material are greater than ever. However, one recent initiative by publishers through an Information Identifier Committee has been to create a Digital Object identifier (DOI) system. It assigns a unique and permanent identifying number to a digital object and this serves to ensure the integrity and authenticity of materials distributed within electronic publications and facilitate the management of electronic copyright by linking the user to the object's current copyright owner (Prytherch, 1997).

The problem of discontinuity is a disincentive to an academic contemplating submission of his/her valuable research findings to an electronic journal, or in other words, the "fear of transience" (Jul 1992). An electronic journal, for example, is cheap to produce and has little cost to maintain it, whereas the printed journal is expensive to produce but the printed records lasts. A strong indicator of continuity (and quality) of an e-journal is the official backing of an educational institution.

Archiving of electronic documents is another on-going problem which will have to be managed before the electronic journals can assume a full role in the academic process. One of the visibility enhancement methods of publishing is multi-lingual publishing. Problems of visibility are also caused by the absence of integrated cataloguing, indexing and abstracting services for electronic publication but when

these problems have been solved, the visibility of an article in an electronic journal will be geared for exponential growth.

A major factor advancing the acceptance of electronic journals is the possibilities of 'hyperlinking', where hypertext links are provided in an article to works cited in the same article, a quantum leap forward from the traditional reference lists of PJ articles.

3. Prospects of Online Publishing in Africa

The Role African Journal Online (AJOL)

The International Network for the Availability of Scientific Publications (INASP) which is a cooperative network of partners was established in 1992 by the International Council for Science (ICSU). INASP initiated the Programme for the Enhancement of Research Information (PERI) in 2000 to facilitate the acquisition of international information and knowledge, improve dissemination of national and regional research and enhance skills in the preparation, production and management of journals.

PERI provides access to more than 17,000 full-text journals (of which 8,700 are peer reviewed) and many of the world's leading bibliographic and reference databases via Blackwell's, EBSCO and so on. Document delivery is available through the British Library Document Supply Centre (BLDSC) – providing online searching and hard-copy document delivery of the full-text of 20,000 journals –as well as African Journals Online (AJOL) with its 227 African titles.

Electronic publishing offers an important means of disseminating national and regional findings. A successful model is African Journals Online (AJOL). The African Journals Online (AJOL) programme was initially set up in 1997 with funding from UNESCO, International Council for science (ICSU), and NAS. The project aimed at providing increased access to African research, increase income for African journal publishers and assesses the impact of the Internet on African journal publishing. There were 17 journal titles in the programme in 2000 but by December 2004 there were 217 journals and it increased to 227 journals in October 2005.

AJOL provides information about each participating journal and tables of contents and abstracts (where available) for all articles published within these journals. All materials on AJOL are free to view, search and browse and full-text documents can be ordered (with a payment for each document forwarded to the journal in question).

Since the programme began, 1,749 articles have been obtained by developing country researchers using this facility (PERI-review-report 2004).

The internal evaluation of the AJOL project covering the years 2000-2002, aimed to discover the project's overall impact and how the service might be improved, show that AJOL is helping research published in African journals to become more widely known and used. Web hits soared and registered users grew between 100 and 200 each month, reaching just under 4,850 at the end of 2002.

Marketing of Journals

The Web offers a new potential for the marketing of African scientific journals. 'The WWW is now an important outlet for promoting journals and no publisher can afford to ignore it as a vehicle for publicity and marketing' (Zell 1998)

Only very few African editors advertise and market their journals on the web hence most African journals lack visibility (Teferra 1998a). Lack of visibility inevitably leads to low sales and low interest from academic contributors. Income generation potentials from document delivery via the Web is being improved world wide with the advent of e-commerce, Africa still is still far from full participation in the electronic commerce industry. The greatest benefit of online publishing to African scientific journals is increased visibility.

Standards and Quality Control Issues

Since anybody can publish on the Internet, there is need for a good quality control mechanism to be put in place. Some of the factors that would enhance the quality of e-journals are peer review and appropriate software for publishing

Peer Reviewing

Peer review of all articles to be published is recommended as this is the most acceptable method for scholarly publications. Reputable scholars from the African continent and around the world should review each article before publishing (as in the case of printed journals). The system of assuring quality is often called peer review- that is review by supposed equals but generally by acknowledged experts and therefore authorities often on an anonymous basis. The onus is on the editor to avoid reviewers known for a bias, and the system does create bottlenecks of delay. Peer review could help select the highly credible items the reader wants from an overwhelming supply of information. While some researchers have suggested peer review is no longer needed and is simply an excuse for publishers to control information, others believe review is a necessary component in the process of assuring quality, and must be part of the production of an electronic journal which seeks prestige. The creation of an association of peer-reviewed electronic

journals in a specific area is a development likely to advance the reputation of quality.

An interesting variation on the peer-review process is the post-publication review whereby articles are published as received and then voted on for publication in a more prestigious electronic archive.

Software for Electronic Publishing

To ensure quality control, open standards are advocated so that the widest possible group of contemporary readers may access a publication. Publishers adopt open standards for their publications from the outset to remain relatively stable for posterity. Free Software Foundation/open source systems are advised for electronic publishing. GNU/Linux is the ultimate open standard and an entire universe of software applications and document types that are extremely powerful and reliable, and are available at no cost. Other open standards for digital publications are: JPEG graphics, PNG, ASCII Text, HTML, XML and the open e-Book publication structure.

Open Journal Systems (OJS) is a journal management and publishing system that has been developed by the Public Knowledge Project in USA through its federally funded efforts to expand and improve access to research. OJS assists with every stage of the refereed publishing process, from submissions through to online publication and indexing. Through its management systems, it's finely grained indexing of research, and the context it provides for research, OJS seeks to improve both the scholarly and public quality of refereed research. OJS is open source software made freely available to journals worldwide for the purpose of making open access publishing a viable option for more journals, as open access can increase a journal's readership as well as its contribution to the public good on a global scale (http://www.openarchives.org)

4. The Electronic Publishing Structure

The staff structure should consist of:

- Editor (paid)
- Editorial board (still unpaid as in print journal or given a payment based on the success of the publication)
- Manager – replaces current production & copy supervisor in print system and is someone who understands the new technology); handles correspondence with authors; follows up on reviewers; oversees copy editor
- Archivist – someone to handle the long term database management of the journal
- Copy Editors – perform editorial and needed HTML/SGML coding

- Webmaster – responsible for computer systems; obtains/writes all needed software for system
- Accountant – handles user accountants/passwords and billing; oversees payroll of staff and editor/editorial board
- Marketing/Sales
- Advertising Staff – publicizes and sells journals

This structure provides a very slim staff and virtually all of which is outsourced, since outsourcing makes technical and financial sense for this endeavour.

Infrastructure for Electronic Publishing

The infrastructure needed for such an organization include:

Computers

A number of computers are needed and all connected to the Internet and each other. One each for administrative and business activities (i.e. subscriptions, accounting, payroll, and so on,) but some of this can be outsourced, for articles being reviewed, for archiving the database and for software development

Subscriptions

Subscriptions, to save costs, will be handled in a totally electronic manner, either using credit cards or electronic money. Electronic money is probably the best as it requires no manual intervention. As electronic publishing of scholarly manuscripts and information is just a small part of the Internet most of the standards that will be used will be developed for the Internet community.

Editing

Cost of editing can be reduced in the electronic journal subscription substantially by having work done by piece contracting work to complement copy editors around the world, via the Internet. Once an article is completed it will go directly to the operational computer to be made available to the customers and an e-mail message notifying them of availability of this article will then be sent to the author, all subscribers, and the abstracting services that include this article in their products.

Archiving

Archiving is an important issue stressed by information professionals. While it is hoped that publishers and professional societies publishing scholarly journals will 'always' exist, however concrete plans to archive their e-journals will make the journal very credible. Libraries could be an ideal repository for electronic journals.

To capture the cost of setting up an all-electronic journal in Africa is presently an ambiguous task. However some examples which might give a pointer to the possible cost are *The Internet Journal of Chemistry* which cost about US$40, 000 – 50, 000 to operate yearly and the *Chemistry Educator* which costs about US$100,000 to operate yearly. This amount is enormous for an African journal.

Pricing models options available to publishers of electronic Journals are pay per view and consortium licensing- where a publisher licenses all its electronic journals to all institutions in a region, state or even country.

5. Economic Models of Electronic Journal Publishing

In developing the economics of the model, the following guidelines should be adopted:

- The journal could be published on a regional basis e.g. West Africa
- The initial start off cost could be borne by professional societies e.g. Library and information science associations as in the case of the *Nigerian Libraries* journal.
- The journal could be hosted by universities that have grant funding for example the Macarthur or Carnegie institutions since they tend to have better network and Internet connections.
- All articles must be peer reviewed
- Four to six journals of an average of ten articles could be targeted for publishing yearly to avoid proliferation
- The journal should initially be set up on the open access model as this would help boost its acceptability and use. The open access movement is also primarily concerned with freeing the peer-reviewed literature from toll access.
- All articles would be submitted electronically.

Cost included in the model

- General overhead to include building and management cost. Since the office could be located in a university library or library school as in the practice of most printed journals
- Facilities e.g. computer, network, software.
- Publication e.g. editing, training and marketing mainly staff costs.

Facilities

Computer – for take-off the publishing secretariat might start with one computer and a server. A small network can be put in place in a case where the hosting institution does not have one in place. But the cost of putting up a LAN is almost negligible. Software to be used can be available free for example GNU/Eprints

(v2.3.3) is a usable open source software. A journal website is required to make the presence of the journal visible. Another cost centre is the website hosting. The table below highlights the different cost centers in online publishing and an approximate value of each.

Table 1: Facilities required for Online Publishing

	Items needed	Quantity	Cost per unit	Cost
1.	Computer	4	N140,000	N560,000
2.	Server	1	N600,000	N600,000
3.	Network	-	-	-
4.	Software	Free	Free	Free
5.	Website Development		N45,000	N45,000
6.	Website Hosting		N35,000/yr - 1Gb	N35,000
	Total			N1,240,000.00

The facilities component of the start up cost for electronic publishing of scholarly journal in Nigeria could be about N1.24m ($9,000).

6. Conclusion

Online publishing holds great promise for the enhancement of the visibility and accessibility of African Science research results. Even though the stage is yet to be fully set for the complete deployment of the entire necessary infrastructure for the successful transition to all-electronic journals, African scholarly publications publishers should begin to consider the all important migration of the contents of research results into the electronic realm.

The cost and pricing implications of the electronic publishing have great implication and dependence on the electronic commerce status of the African continent, which is at a terribly low level or even a state of inactivity. As the issues of bandwidth are tackled by the higher educational institutions in Africa, a better prospect awaits online publishing. However, the prospects of online publishing for the enhancement of African research once again calls attention to the issue of cooperation between and among African institutions both at local, regional and national levels.

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