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## MANAGING ELECTRONIC RESOURCES IN LIBRARIES: ISSUES AND CHALLENGES

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### ABSTRACT

*Electronic resources are increasingly being found in libraries. The management of the e-resources involves acquisition, cataloguing and classification and also providing access to them. Ways in which e-resources are managed are discussed pointing out the role of staff and users in the management chain. An online survey of librarians' knowledge of electronic resources and the use of electronic resources management software was conducted. Results from the survey reveal that quite a number of librarians are unaware of Electronic Resources Management Systems (ERMS) in their libraries, and managing e-resources in most of the libraries is deemed difficult. Various issues affecting ability of libraries to manage their e-resources and the challenges that have to be faced in the organization process are highlighted. Recommendations are made on the way forward for librarians and libraries to follow established guidelines and learn from other libraries that have success stories in e-resources management.*

**Keywords:** *Electronic resources; Libraries; Electronic resources management, Nigeria*

### INTRODUCTION

Management is the ability to control, organize, plan and deal with issues. For electronic resources, managing them can be a simple or difficult task depending on how it is handled. The first thing in managing e-resources is to understand the nature of e-resources and thereafter put structures in place to keep the resources functional, useful and in usable condition for those who need to make use of them. These library resources come in many forms, the major formats being books and journals. All these have to be acquired, processed and made available to users. In the digital or electronic era, the formats in which library resources are found are fast changing, and simultaneously there are rapid changes in the ways of managing the resources.

E-resources management entails outlining or mapping out what each resource is to be used for, and by whom, and also determining who will be in charge of providing the e-resources, and how the resources are going to be made functional and maintained. Managing resources in

libraries is often a daunting task especially for library managers and staff who have the duty of providing information in various formats to their clientele. The management of acquisition, cataloguing and classification, and access to e-resources, as well as the issues and challenges in e-resources management are discussed.

### DEFINITIONS AND CONCEPTUALIZATION

Electronic resources are one of the various items termed "special" materials in libraries. They are non-book in format and therefore are handled differently from the general books and journals in print format. Sadeh and Ellingsen (2005) describe an e-resource as an electric journal, an electronic book or an abstracting and indexing database. They further call it "a package of e-journals or database of abstracts and indexes that includes the full text of some or all articles referenced by the indexes". McCracker (2007) describes digital resources "e.g. electronic books and reference resources; electronic government publications, websites and databases, geospatial maps and digitized special collections".

The Anglo American Cataloguing Rules (AACR2) Rule 9.0A1 states that "Electronic resources consist of data (information representing numbers, text, graphics, images, maps, moving images, music, sounds, etc.), programs (instructions, etc., that process the data for use), or combinations of data and programs", while the Online Cataloguing Library Corporation (OCLC) defines an electronic resource as "Material (data/ and or program(s) encoded for manipulation by a computerized device. This material may require the use of peripheral directly connected to a computerized device (e.g. CD Rom drive) or a connection to a computer network (e.g. the internet)". The OCLC definition does *not* include electronic resources that do not require the use of a computer for example music compact discs and video discs. This definition is adopted as referring to electronic resources here.

### MANAGING ACQUISITION OF E-RESOURCES

The process for acquiring e-resources is quite similar to that for acquiring non-e-resources. The selection and ordering process for print journals for example is ideally done by a team of librarians with appropriate subject background (Pinfield, 2001), experience in ordering print materials, skills in negotiating with vendors and so on. However, Breeding (2004) points out that:

"It's not so simple with electronic resources, where access to the content often resembles a lease more than a purchase. The library will sign a license for each electronic resource—either for a single title, or, more often, for a large aggregation of material. Being essentially a contract, a number of details apply to each

license-the cost, the duration of the license and when it needs to be renewed, the number of simultaneous users allowed, whether the library retains access to the content if it ends its subscription, the telephone number to call for technical support, whether you're allowed to use the resource to fulfill an interlibrary loan request, and other issues that do not arise with print subscriptions."

Montgomery & Sparks (n.d) also describe the process as one in which the electronic journal subscription decisions are taken after considering the content of the journal, cost, faculty requests, Journal Citation Index ranking, and importance to the collection as well as factors such as: interface options, search features, display format (HTML and/or PDF), access restrictions, whether the journal is part of an aggregator's collection, the availability of a persistent URL, inclusion of color, and resolution of images. The library also has to find out whether the journal's articles can be linked to other full-text articles in other databases.

The ordering is done the same way with the main difference being that the electronic resources are easier to purchase online. The order forms are filled and sent, and after payment, the resources are delivered. In this case, the connections are made, and passwords permitting use of the resource if it is an online database for example is given. If it is a CD-Rom it is simply checked, accessioned and processed just as other materials in the library. Catalogues for e-resources are available in the book trade, online and also from vendors. While the ordering and receiving of the books is an open and shut case, acquiring electronic resources entails also acquiring the equipment that will make it workable. If a CD Rom is acquired for instance, it is expected that there are computers or laptops available for its effective utilization.

In libraries where electronic resources are being acquired for the first time, a lot of decisions have to be taken on which resources to purchase and from where. It is always good practice to look at catalogues of various vendors and companies and also ask questions from sister libraries who are ahead in the use of the resource(s) in view to get advice on the usability, durability and serviceability of the resource.

#### **MANAGING CATALOGUING AND CLASSIFICATION OF E-RESOURCES**

Cataloguing and Classification of electronic resources takes a slightly different procedure from that of books and journals in print. The bibliographic details as to author, title, statement of responsibility, imprint, and others are derived from the resource itself, often from the website on which it is projected. In doing descriptive cataloguing, electronic

resources are usually indicated as such by the General Material Designation [GMD] put in front of the title in brackets. Thus for example if the material is a filmstrip, [Filmstrip] is written after the title. This is the simplest indication in a card or book catalogue. Changes can be seen nowadays in the recent Machine Readable Cataloguing (MARC) format of catalogue records which allows the addition of information relating to the 'electronic location' of digital media that are accessible remotely through the internet. In an automated library where MARC records are created, the Field 856 in MARC21 bibliographic records is for electronic location and access to information to an electronic resource.

The new media are driving the creation of new rules for cataloguing. A MARC record should contain subject headings that accurately reflect content, ability to locate terms through faceted search engines and browsing, and URL and DOIs that work consistently. It is important to note that conforming to universal standards in entering in title and author(s) and subject terms is the best practice therefore automated libraries especially have to consider searching the Library of Congress Authorities for example, for established headings.

The content of the information package is the most important factor when cataloguing. The Anglo American Cataloguing Rules (AACR2) demands that an electronic resource that is primarily language material should be catalogued as a monograph, serial, or integrating resource, as appropriate. For example, a music score issued in electronic format should be catalogued as a score, not as an electronic resource. The computer/electronic aspects of these materials are brought out with the addition of a 007 field (see 007 Field: Physical Description Fixed Field: General Information and Policies) to the record. The 007 field is mandatory for all electronic resources. Subject cataloguing of e-resources is the same as for print materials. The material is browsed through and the subject is assigned using the classification scheme preferred by the library.

Copy cataloguing can be done from the internet using online cataloguing tools like the Library of Congress Online (<http://www.catalog.loc.org>), the World Cat (<http://connexion.oclc.org>) or Book Where cataloguing facilities. The information found on these online cataloguing tools are copied, modified if need be and stored as a fresh record in the library's database. The Library of Congress for example assigns classification numbers (but not call numbers) to Internet resources. The "set search limit" button on their search menu is used in order to limit the type of materials to computer files only. Only "title" and "serial title" (not "keyword" or other fields) can be searched. This poses a limitation for researchers who may

want to search using different search terms.

Majority of libraries do not classify Internet materials; they just provide the location (for example – "online", "electronic resource", "see URL" etc.) This is not surprising. Cataloging Standards, applied to the cataloging of electronic resources, allow catalogers to be flexible and feel free to make their own decisions. Each library can develop a policy about what to do about the resources it catalogues and classifies. The Library of Congress in its CONSER Cataloging Manual Module 31 Remote Access Computer File Serials Part 2 encourages libraries to classify electronic serials as well as the print ones. Classification, it states, provides a useful tool for assessing the types of serials that are online and for many other purposes, though it is not needed as a location device.

Local content in libraries that are in electronic format can be collated. Local electronic resources such as conference proceedings, seminar proceedings, annual reports, technical reports, peer-reviewed articles and other such can be organized in folders that have been classified by type e.g. (Law, Arts, Social Sciences etc), which will be linked to individual documents. A page can then be created for the resources in the library's HTML Editor, listing the various categories assigned. This is a way of managing the non-OPAC electronic resources.

Different new ways to describe and catalogue resources have been developed in the electronic age, for example, the Functional Requirements for Bibliographic Records (FRBR) concept model. Various metadata schemes and management tools known as Electronic Resource Management System (ERMS) are the current trends in the developed world. Unfortunately, developing countries have not yet been able to grasp the technologies properly, yet the changes are continuing relentlessly over there. However, whether used as a location tool or not, classification of electronic resources especially internet files included in Online Public Access Catalogues (OPACS ), provides an avenue for the librarian to put materials together for users who according to (McRee, 2000) then have the "ability to browse all of these resources along with our physically available material together on 'virtual' shelves". The important issue however is for the user to be able to retrieve and use the electronic resource without stress. How can this be effectively managed in libraries?

### **MANAGING ACCESS TO E-RESOURCES**

When electronic resources are acquired, equipment to go with them are usually either available already or are procured at the same time. E-books for example can be "read online via the desktop or laptop in the library, or

can be downloaded to a hand-held device" (Mattisson, 2002). An example of such a device is the Kindle reader. Making sure that the electronic resources in the library get to the user involves many procedures some of which are making sure that IP addresses are functioning, getting subscriptions to electronic journals up-to-date, ensuring that the bandwidths are enough to transmit the needed resources adequately, and sorting out problems with consortia routine maintenance if the electronic resources are got through a consortia.

An Electronic Resources Management (ERM) system provides infrastructure for data in the e-resource to be useful to the person accessing it. Reporting efforts of the Borough of Manhattan Community College (BMCC) library, Eng & Hernandez (2006) describe their efforts in a project that streamlined video to classrooms using technical services in the library. The video streaming project was effectively managed and the electronic resources made useful for staff and students online. They also reserved the videos for classroom use when called for from the library if the user could not get to use it online. The University of South Florida according to Borchart (2006) uses Customer Relations Management (CRM) software to manage their e-journals. The University of Montevallo uses software called Serials Solution (<http://www.serialssolutions.com>) to manage its Serials collection. These are examples of providing access to users in a well-managed system. The Digital Library Federation has taken an interest in this issue and has launched the DLF Electronic Resource Management Initiative which can be accessed at (<http://80-www.library.cornell.edu.proxy.library.vanderbilt.edu/cts/elicensestudy/home.html>) to look into issues of managing e-resources.

The ability to manage access to e-resources effectively is in getting the right software and the technical know-how to deal with issues and the challenges that may arise. Library users also have to be informed about the existence of the e-resources so that they can use them. As pointed out by (), lack of awareness of the resource is a problem which affects access. Users need to be trained to use the resources available properly. In many libraries automation attempts have been variously made and many are still on-going and are being reported in the literature (Nok, 2006; Hussein & Ansari, 2007; Jan & Sheikh, 2011). However little attempt has been made to evaluate the knowledge of librarians working in the libraries, of the electronic resources their libraries have been acquiring, using or attempting to use.

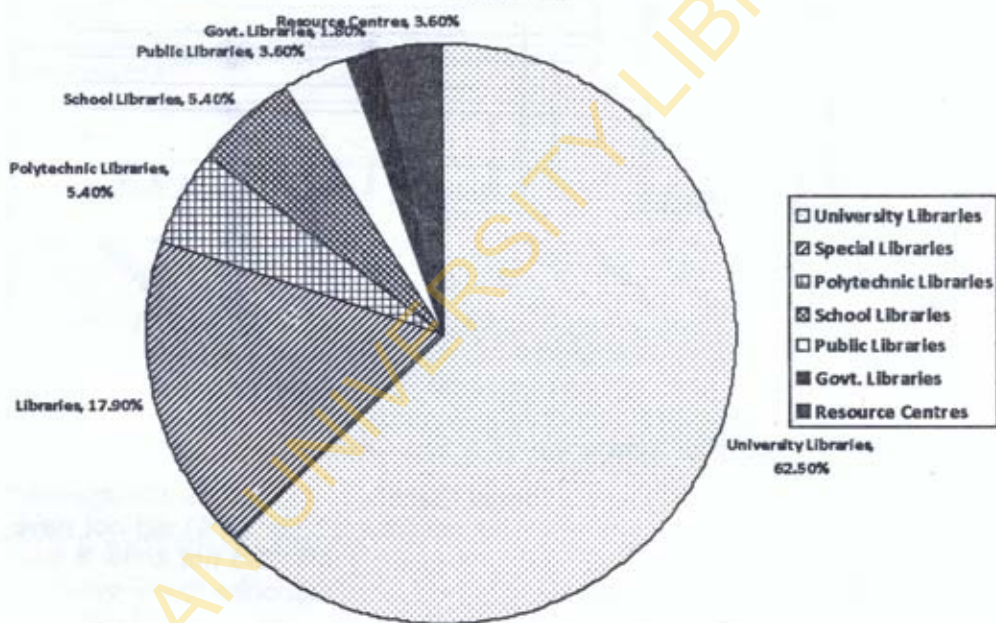
### Online Survey

An online survey of librarians' opinion was sought through a ten item questionnaire. This questionnaire was analyzed at the end of a two month

period. Fifty six librarians responded 44.6% were female and 55.4% male. They responded to issues of knowledge about e-resources in general, e-resources in their libraries, what e-resources they knew about, if their library used e-resources management system (ERMS) to manage their e-resources and to comment on what the state of management of e-resources was in their library.

The respondents were from different types of libraries - University, Special, Polytechnic, Government and School libraries. (See Fig. 1.) Thirty five (62.5%)

Figure 1:



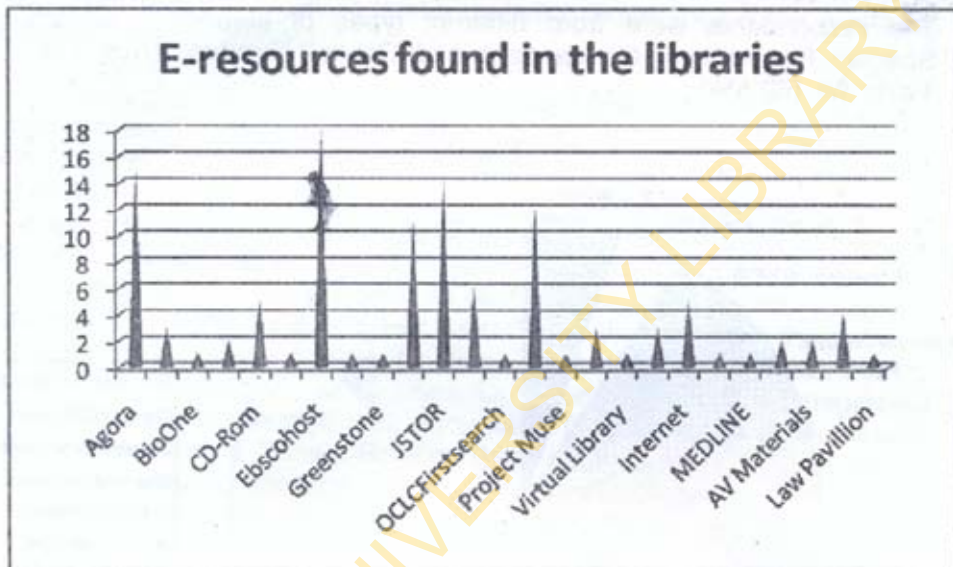
worked in University libraries, ten (17.9%) in Special libraries, three (5.4%) each in Polytechnic and School libraries, two (3.6%) in Public libraries, and one (1.8%) in a Government Library while two (3.6%) worked in Resource Centres.

Majority (82.1%) claimed that they had electronic resources in their libraries, while ten (17.9%) claimed not to have. Asked to name five resources each that they had, respondents mainly indicated that the most common resource found in the libraries was the EbscoHost, Agora, HINARI, JSTOR, and OARE. The LANTeal electronic database, the



internet, and CDroms ranked next most found in the libraries in question. The least found were BioOne, Project Muse, Virtual Library, MEDLINE, AV materials, Digital library Law Pavilion and Greenstone. (See Fig 2).

Figure II:



On whether their library had a formal Electronic Resources Management programme or not, it was found that majority (37 i.e. 74%) did not have, six (12%) affirmed that they had, and seven (14%) did not know if such existed or not. Six respondents (12%) gave no response to the question. Of the 12 claiming to have a formal ERM System only six could name the ERM System used. The systems used were: Ex Libris Stand Alone, VERA and SFX.

Generally, the respondents did not have much knowledge of Electronic Resources Management Systems. Thirty nine gave indication of knowing some ERMs while 17 did not respond. Of the thirty nine who responded, over half (69.2%) claimed not to know any, 8 (20.5%) knew about Ex-Libris Stand Alone, 5 (12.8%) knew of SFX, 3 (7.7%) were aware of VERA, two (5.1%) each claimed awareness of DLF EMRI and Verde from Ex-Libris while 3 (7.7%) indicated knowledge of other ERMs. Five respondents refrained from responding to the question.

On the whole, the opinion about the ease or otherwise of managing

electronic resources in their libraries, was not very encouraging, but of the 38 who did (See Table 1.), about half (47.4%) considered e-resources management difficult, while about a third (31.6%) considered it easy, and only a tenth (10.5%) considered it very easy.

**TABLE I:  
OPINIONS ON EASE OF MANAGING ELECTRONIC  
RESOURCES IN THE AFFECTED LIBRARIES**

Managing e-resources in my library is:	No.	%
Very Difficult	0	0
Difficult	18	47.4
Impossible	1	2.6
Easy	12	31.6
Very Easy	4	10.5
We have no e-resources	3	7.9

A minority (2.6%) felt it was impossible to manage e-resources in their library. However, the general opinion of the respondents tended to show that many librarians working in libraries are not well informed about electronic resources in their libraries, electronic resources management systems are not well known, and it is somewhat difficult to manage electronic resources in libraries.

### **ISSUES AND CHALLENGES**

When managing e-resources generally, acquiring, cataloguing and classifying them or providing access to them to users, many issues have to be considered and many challenges faced. More staff is needed to deal with electronic resources in many libraries. The staff is expected to do much more than when dealing with print materials. In cases where staff increase is impossible or impractical, the staff available needs to be trained to handle the resources. Training and re-training is the challenge to face. Provisions have to be made for staff to handle the registration of e-resources, to provide information about IP address ranges or passwords, and to actually set up access to e-resources. The issue of setting up this access correctly also has to be considered. After set-up, other staff who will be working with the resources need to be trained along with users of the library facilities. Both staff and users will have to be knowledgeable about what is current in the library and will also have

to adapt to the changes.

The issue of securing the physical property or e-resource in the library is a challenge that has to be addressed. Electronic security in terms of passwords, permissions and other such has to be taken care of. If the electronic security is not assured, the entire library set-up may be at risk, open to hackers, phishers, spammers and all sorts of cybercriminals (Adomi, 2008).

Another major constraint in the management of e-resources is the cost of procuring and maintaining them, or upgrading them. The library embarking on acquiring e-resources has to be well-funded and have a fixed budget for e-resources. It has to be able to afford the software and the hardware, maintain the facilities and get Vendor Support at least initially until its own staff can troubleshoot after learning the ropes. Again, the e-resources procured by libraries should be user-friendly and provide ease of use and guidance for the user. Links to other e-resources would be an added advantage.

Cataloguing and classification of electronic resources is a challenge if the e-resources cannot be readily accessed for cataloguing and classification. Lack of expertise in using the new cataloguing tools online could also be a problem. Classification and retrieval issues are such that uniformity in trained personnel's cataloguing skills cannot be guaranteed as they are not likeminded in classifying items the same way. Methods of adapting to the new will have to be sought.

For libraries with e-journals, there could be access problems. The problems could be with the journal (it could be cut off, or access denied after some time, or the publisher changing). There could also be archiving problems. The problem could be with user information literacy, the library or agency doing the archiving, the subscription agent and other such. Problems could arise from firewalls, internet glitch, incompatible browsers or outdated software. Furthermore, Digital Rights Management (DRM) issues could arise. The digital right to use an e-resource if it is an e-book or journal is sometimes problematic. This is because a book or journal may be made to auto-expire for one reason or the other therefore DRM has to be considered.

#### **THE WAY FORWARD**

These issues and challenges described have to be faced by the librarians who are experiencing the various changes in their libraries' operations. They can successfully do this if they adopt the Learning,

Flexibility, Communication, and Collaboration (*which I term LFCC*) Coping Strategy for Change. For change, the strategy is to continue learning. The learning process is continuous and therefore periodic training of library staff and users is important. Librarians also have to be flexible and adapt to new ways fast, in their management of e-resources. They have to communicate with one another and with their clientele continuously to get feedback on the e-resources services offered, and also collaborate with other libraries, librarians and agencies related to and involved in the business of information procurement, processing and provision. This way, changes in e-resources management will be less stressful or cumbersome and the goal of adequate electronic resources provision achieved.

### CONCLUSION AND RECOMMENDATIONS

Managing e-resources in libraries entails managing change. New products management styles and work patterns are coming up daily. The librarian has to be versatile and ready to 'go with the flow', learning new skills in the process. The library's budget, funding and technical human resources should be well grounded to be able to manage e-resources. Lessons should be learnt from mistakes made by other libraries one observes, understudies or collaborates with. The training and re-training of library users and staff in the handling of e-resources cannot be overlooked in managing e-resources.

The Functional Requirements for Bibliographic Records (FRBR) concept model should be studied closely and libraries automating and acquiring electronic resources should take serious consideration of the issues involved and the challenges to be faced in managing their electronic resources. The situation described by Breeding (2004) in which "the many facets of electronic resource management would be delivered through a set of interconnected modules that work together, sharing common data files or at least communicating with each other through open protocols", will become a reality and libraries, librarians and users of libraries can be assured of good quality service delivery in a fast moving electronic age.

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