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Introduction

Before the advent of information and communication technology (ICT), academic libraries were the sole custodians of information, which was predominantly in print. ICT brought changes necessitated by new information packaging. Academic libraries are faced with managing hybrid resources (print and electronic) and are challenged to acquire the necessary skills. Furthermore, electronic information is eroding the monopoly of academic libraries as the sole access point to information. Nevertheless, academic libraries can maintain their place by serving as an access point to both print and electronic resources. This paper discusses the nature of academic libraries in the digital age including resources, the concept of universal access, and the role of the in universal access to print and electronic resources. It also presents and describes a conceptual model of resource access for academic libraries in developing countries.

Academic Libraries in the Digital Age

A well established library is essential for any academic institution. As a focal point for teaching, learning, and research, it is expected to provide standard information resources. Today, academic libraries are struggling to keep their place as the major source of inquiry in the face of emerging digital technology. Digital technology has revolutionized not only the way information is packaged, processed, stored, and disseminated, but also how users seek and access information. Academic libraries no longer restrict themselves to print services such as collection development, cataloguing and classification, circulation and reference services, current awareness, selective dissemination, and other bibliographic services, but have extended their efforts to interdisciplinary concepts and computer software and hardware and telecommunication engineering and technology. As observed by Campbell (2006:17), "numerous creative and useful services have evolved within academic libraries in the digital age: providing quality learning spaces, creating metadata, offering virtual reference services, teaching information literacy, choosing resources and managing resource licenses, collecting and digitizing archival materials, and maintaining digital repositories". Academic libraries presently are faced with not only the decision on what books and journals to acquire to satisfy faculty and students but also on how to remain relevant in the digital era, mindful of low budgets and resentment on the part of institutional administrators. There is also the issue of library users opting for alternate, more convenient, and "qualitative" sources of information (the Internet). As Lombardi (2000) notes, users will prefer more computer content, more and more computer indices, digitized finding aids, digital repositories of articles, online access to newspapers, etc. Libraries also struggle with when, how, who, and where to begin digitization efforts, while keeping in mind that hesitation in the digitization of institutional archives will

result in relinquishing the function to another institutional repository host. The consequence is repositioning of academic libraries resources, operations, services and skills. Resources today occur in hybridized form: print and electronic, and therefore services provided and skills possessed by professionals in these libraries should reflect that trend.

Universal Access to Resources

Libraries have always served as access points for information. Services have evolved from the days of closed stacks, through shelf browsing and card catalogues, punch cards, and OPACS, to the concept of open access and institutional repositories (Cisse 2004). This historic migration has tried to satisfying the changing needs of library users, including ease of access, interaction richness, low interaction, and low cost. Eisenberg (1990) remarks that access is more important than ownership. The underlying issue becomes the provision of information resources in offices, hostels, classrooms, homes, etc., regardless of where the information is found.

Recognizing the importance of a new mode of information access, academic libraries took responsibility for automation. Funding bodies such as the Federal Ministry of Education in Nigeria introduced the Virtual Library Project, which pulls together resources electronically, connecting all the academic libraries in Nigeria, with the hub at the National Universities Commission (Federal Ministry of Education 2000). The participating libraries become access points to the universal information resources.

Whether through a consortium or by independent subscription, academic libraries acquire and disseminate electronic portals and databases. The Consortium of Nigerian university Libraries (NULIB) has subscribed to EBSCOhost. Internet portals include Access to Global Online Research in Agriculture (AGORA), Health Internetwork Access to Research Initiatives (HINARI), Online Access to Research in the Environment (OARE), Database of African Theses and Dissertation (DATAD), and many offline databases including MEDLINE. These are global information resources which could be accessed through academic library gateways.

Crow (2002) describes as institutional repositories as, “digital collections capturing and preserving the intellectual output of a single or multi-university community”. An institutional repository is a way of reducing the cost of scholarly publication and increasing visibility and access of scholarly research from faculty and students of academic institutions by hosting them in the institution's, professional societies, or third-party provider's website. The institutional repository is a sort of mirror image of print institutional archives, and in some academic institutions is being maintained by the institution's library. While academic libraries were at the center of providing access to print archives, the institutional repository has given them the responsibility of providing access and also interoperability functions (standardizing metadata formats and metadata harvesting).

Many academic libraries are playing a leadership role in their institutional repository project. Such projects include:

- The Academic Research in the Netherlands Online (ARNO) project initiated in September, 2000, and implemented by the Library staff of the University of Twente, the University of Amsterdam, and Tilburg University.
- DSpace which is a collaborative project of the MIT libraries and Hewlett–Packard.
- Ohio State University's Knowledge Bank.
- Utrecht University institutional repository

In Nigerian academic institutions, a leadership role in digitizing and providing universal access is demonstrated by the University of Jos library staff. Academic libraries must provide access to both print and electronic resources to serve users and to increase the visibility of their institutions, and as a measure of prestige (National Universities Commission 2007)

Conceptual Model of Print/Electronic Resources Access for Academic Libraries

The foregoing depicts a challenging situation for academic librarians who are expected to create universal access to both traditional and electronic resources. A survey of some federal university libraries in southern Nigeria suggests a dilemma. Hence, a model was developed as shown in Figure 1 to assist these libraries. The model consists of two access environments: the in-house, local, or independent environment, and the universal, global, or integrated access environment.

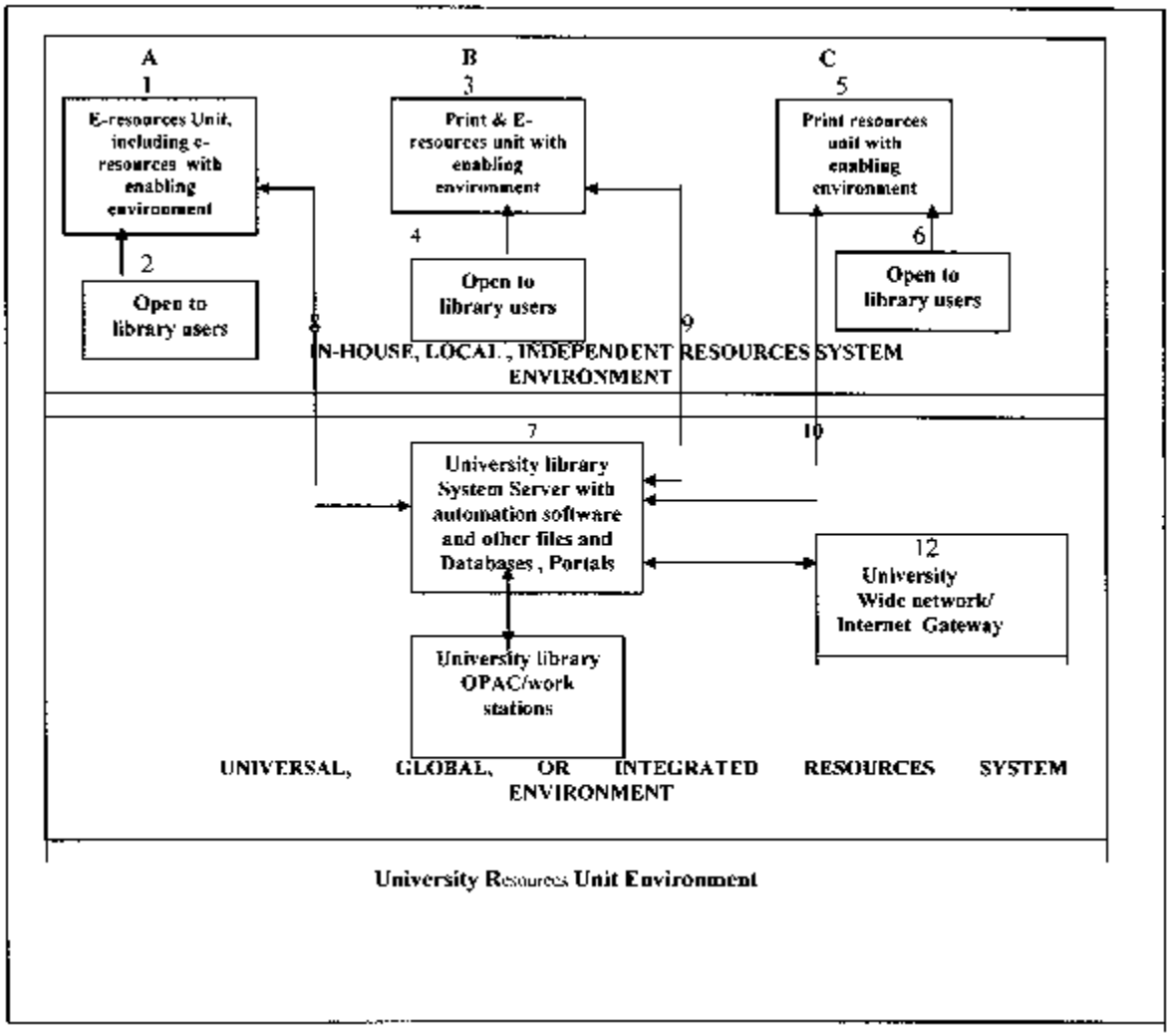
Three Alternatives for the In-house Environment

Figure 1 illustrates three alternatives. The first (A) is an e-resources Unit with the enabling environment (software, hardware, and trained staff), which is open to academic library users (2); A combined Print and E-resources Unit (B) with enabling environment (3)also open to academic library users (4); Print resources Unit (C) with enabling environment (5), open to academic library users (6).

The three alternatives are practiced in Nigerian academic libraries today. Inasmuch as they are amenable to the in-house access expected of traditional library services, they fall short of the universal access that is required of academic libraries of international standing. This environment is the hub of an electronic consortium. It works in a feedback mechanism with the e-resources, print and e-resources, or print resources, unit all of which revolve around the library server (7). It provides resources for the independent access environment and also receives resources from it .

The Server (7) with high capacity hardware, software, and telecommunication components, gets feedback from the e-resources unit (8), print and e-resources unit (9), or the print resources units (10). Each of the units can access the server, which can also be accessed universally through the library OPAC (11), available on the Internet (12). The integrated access environment allows academic libraries operating any of the options in the independent environment to be part of universal access with or without the involvement of their parent institutions.

Figure 1: Print/E–Resources Access Model for Academic library



The model consists of two access environments: the in-house, local, or independent environment, and the universal, global, or integrated access environment.

Emerging Issues for Academic Libraries in Developing Countries

For academic libraries to maintain a prominent position in their institutions, they must move from limited or local access to universal access. For academic libraries in developing to achieve this, requires expandability, flexibility and compatibility (Tebbetts 1991). It requires standard hardware, sufficient capacity, networking capabilities, flexible software, standards such as MARC for information storage and retrieval, local expertise, and a plan for the next system.

Conclusion

The emergence of information and communication technology has repositioned the frontiers of academic library resources, operations, and services as well as expectations of user groups. The practice of walking to the library to consult the card catalogue and browse the shelves is moribund in developed countries, and this trend is quickly approaching developing countries as well. Academic libraries must

embrace this scenario. The print/e-resources access model can serve as a stepping stone. When such a step is taken, academic libraries must remember expandability, flexibility, and compatibility.

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