EXAMINING THE USE OF ICT STORAGE AND DISSEMINATION OF LIBRARY MATERIALS IN ACADEMIC LIBRARIES IN GHANA

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Abstract

Information and Communication Technology (ICT) has transformed library and information services from the concept of storehouses of books to the concept of libraries without walls. Academic libraries exist to support the academic community. Their main functions include selection, collection, production, documentation, organization, preservation, organization, storage, dissemination and exchange of library materials. This study seeks to examine in detail, the role of ICT in the storage and dissemination procedures of Library materials in academic libraries in Ghana. The instruments for data collection were interviews coupled with observation and the researchers' experience as Assistant Librarians in an academic library. The responses demonstrate that, academic library materials come in different formats and are stored differently depending on the nature of the material. The libraries under study use multi-strand approach to disseminate information to ensure wide coverage.

Keywords: **Storage of Library Materials, Dissemination, Print media, Non- Print Media, Academic Libraries**

Introduction

Libraries are service organizations where individuals, institutions and societies are provided unhindered access to substantial information (Fagbola, Uzoigwe, & Ajegbomogun, (2011). A library according to Sahoo (1990: 1)

> "…*is a repository of wisdom of great thinkers of the past and the present. It is a social institution charged with the responsibility of disseminating knowledge to the people without any discrimination. The holdings of the libraries are the priceless heritage of mankind as they preserve facts, ideas, thoughts, accomplishments and evidences of human development in multifarious areas, ages and directions*".

Academic libraries exist to support the academic community; hence their development is always tied to the development of the institution. Libraries contribute in protecting intellectual outputs by

increasing access to this knowledge/information through acquiring, processing, storage and dissemination. Mabawonku (2002) in Makinde & Shorunke, (2013) adds that the functions of librarians include selection, collection, production, documentation, organization, preservation, dissemination and exchange. As information professionals, librarians search for and find information, collect and organize information and implement systems and vehicles that make information easy to access from long or short-range locations.

Dissemination of library materials is fast if the documents are properly grouped, arranged and stored in an orderly manner and in appropriate storage facilities. Carrying out research is facilitated by easy access to information. Easy retrieval of information depends on the storage of the materials.

ICT has revolutionized library and information usage. Information technology has aided library professionals to deliver quality information service and provide remote access to the inter-nationally available information resources. Information

171

technologies facilitate the storage of huge amounts of data or information in a very compact space. Information technologies provide fast retrieval of stored information. ICT has also changed the mode of library operations and services.

This paper therefore examines the use of ICT in the storage and dissemination of library materials/information in academic libraries in Ghana.

Objectives

The objective of this paper therefore is to examine in detail, the use of ICT in the storage and dissemination of library materials/information in academic libraries in Ghana. Specifically, the paper will look at the:

- various forms of materials available in the library
- how the various forms of materials available in the library are stored using ICT
- how the various libraries under study disseminate these materials/information using ICT to their users.

Methodology

The study is purely qualitative and the investigation was mainly based on interviews. Aina (2004) defines an interview as soliciting information from respondents through verbal interaction between the researcher and respondents. Interviews are helpful in establishing personal contacts with the persons to be interviewed. Such personal contacts could generate confidence and facilitate the "breaking down of barriers" for fruitful discussions. Interviews also establish close links between the interviewer and the interviewee. This leads the interview into areas which have not previously been considered but which are significant for the understanding of the topics being investigated (Dadzie, 2003).

The state-funded academic libraries in Ghana including University of Ghana (UG) (Legon), University of Cape Coast (UCC), Kwame Nkrumah University of Science and Technology (KNUST), University of Education, Winneba (UEW), University of Mines and Technology (UMAT), University for Development Studies (UDS) and University of Professional Studies, Accra, (UPSA), were all considered for inclusion in the study. The names of these libraries were written on pieces of paper and three libraries were randomly selected.

The three universities selected were UG, UCC and UDS and they constituted the sample for the study. University of Mines and Technology (UMAT), University of Professional Studies, Accra, (UPSA), University of Energy and Natural Resource as well as University of Health and Allied Sciences were left out because they are relatively new.

For the sake of anonymity, these universities were randomly named as University A, B and C.

Senior members of these academic libraries were purposely selected. Senior members usually are part of the decision making body of the academic institutions and they are in a good position to know the operations in the libraries and therefore respond to the issues under study.

The total number of senior members in the three selected university libraries according to the Secretary of the University Librarians were 38 but 30 available for interview. The researchers travelled to the various libraries for the interviews. The questions asked were generally based on the objectives of this paper. The interviews were conducted between 2014 and 2015 at the various university libraries using structured and semi-structured interview guides.

The data is classified into themes and synthesis using descriptive narratives to reflect the world views of all the respondents.

Discussion

Storage

The Information and Communication Technologies (ICT) have brought revolutionary changes in handling, delivery and storage of information. The transition of traditional library collections to digital or virtual collections presented the librarian with new opportunities and challenges (Rasul & Sahu, 2011). Academic libraries in Ghana store their materials manually or in computer systems depending on the types of materials. Library materials come in different formats. Libraries have books, periodicals, multi-media and electronic materials. Some are in print or electronic form or on storage material such as microfilm and tapes. These materials can be further classified into Books, Serials, Manuscripts, Cartographical materials, Graphic materials, Sound recordings, Motion pictures and video recordings, Microforms and Digital materials. These materials can further be grouped as print and non- print materials. The types of materials available and how they are stored are analysed and discussed below.

Non-Print Materials

One of the outcomes of growth of information has been the growing importance of non-book materials as a major storage system. This has been discussed below.

- ### Graphic Materials

Graphic materials are non-textual materials. Examples are diagrams, drawings, photographs and graphs. Aina (2004) stipulates that graphic materials are common in the library and they include: photographs, drawings, charts, filmstrips, slides and transparencies, realia or real objects like toys, games, puzzles and specimens like animals and coins among others .

All participating university libraries confirmed that they have photographs, maps and drawings. However, a critical observation revealed different things. University C Library has a special place where it stores its graphic materials called the Gallery. These materials are displayed in the gallery on the shelves and in glass cases. The materials include photographs, drawings, building plans, cloths, caps, cups, exercise books etc. These materials depict things from various halls, departments and faculties of the parent institution. Users are allowed to go there with no restrictions. It is presently the only University Library among the three academic libraries under study that has an organised place for its graphic materials. How well a university library is able to render effective information services has a functional relation with the awareness of resources available at its disposal. It was however revealed that although University B library had no photographs or graphic materials, it had "busts" mostly bronze statues of famous people. These are also stored in the basement under air-condition.

University A Library on its part, only has photographs and maps as graphic materials. The maps are stored in the open shelves, while the photographs are stored in an album. Unfortunately, the photographs are not catalogued and as such it is not accessible to the general public. The reason is that they do not consider the pictures as part of the library's collections. According to Balloffet, Hille & Reed (2005), albums, pamphlet boxes, envelopes, folders etc. are used to store library and archival materials.

- ### Electronic Resources

Advances in computer applications during the past few decades have brought radical changes in the way information is gathered, stored, organized, accessed, retrieved and consumed. The application of computers in information processing has brought several products and services to the scene (Sharma, 2009). An electronic resource is any information source which is accessible in an electronic format. The major advantages as highlighted by Sharma (2009:1) are indicated below:

> "The Internet and the Web are constantly influencing the development of new modes of scholarly communication; their potential for delivering goods is quite vast, as they overcome successfully the geographical limitations associated with the print media. Further, the distribution time between product publication and its delivery has been drastically reduced. The Internet can be used for efficient retrieval and meeting information needs. This is very important for university libraries since most of them call for more and more research work. This important fact is convincing many libraries to move towards digital e-resources, which are found to be less expensive and more useful for easy access. This is especially helpful to distant learners who have limited time to access the libraries from outside by dial-up access to commonly available electronic resources, mainly CD-ROM, OPACs and Internet, which are replacing the print media".

The study established that all the university libraries under study have e-resources. This is in line with Sharma's (2009) study which indicates that, the availability of e-resources in a university library is

very common. In all the study sites, there were special units for the e-resource materials called the Electronic Support Unit. This Unit, in all the universities, is responsible for the e-resources. The e-resources storage materials include sound tapes and electronically stored information such as CD ROMs and computer discs. The problem with these storage devices is that they face many threats including technological obsolescence and the deterioration of digital storage media. According to Li & Banach (2011), as the capacity of libraries to store information has increased, the irony, is that, the durability of media used to store the information has also decreased. For instance, paper based records can stay for over 1000 years, but a CD will damage in as little as 15 years.

Further investigations revealed that all the libraries have or are in the process of digitizing or reformatting some of their library materials which include theses, seminar proceedings and publications from lecturers. This is in conformity with University C Library's (2013) policy that as the use of digital collections in higher education increases, the library will need to digitize more materials in order to support the mission of the University and the Library.

Print Media

The print materials are a set of printed sheets of paper bound together along one edge. It is separately published and has a physical existence. They are made up of books, pamphlets, serials and theses, among others. These materials cannot be produced without the use of technology such as printers, computers for typing and typesetting.

Books

According to Aina (2004), a book is defined as any document that has a collection of 49 pages or more that are bound together with a distinctive title. Prytherch (2005) also stipulates that a book is a collection of manuscripts or printed leaves fastened together to form a volume or volumes forming a bibliographic unit. It is distinct from periodicals and other forms of materials, such as films and print maps.

The study revealed that the bulk of the library materials in all the libraries under study are books. This confirms the assertion of Agyen-Gyasi, Lamptey & Frempong (2010) that currently, the bulk

of the collections in academic libraries in Ghana, in recent times are in print format such as encyclopedias, handbooks, textbooks and journals. Both the printed and electronic sources have their usefulness. The print format is convenient to a majority of users in Africa because they are easy to use or access. It is a convenient mode of information since it can be moved around and also serves as a very useful backup. University Library C's Acquisition Policy indicates that though the University Library is a hybrid library, the majority of its collections are in paper format. The print sources are more comprehensive.

All the universities under study store their books on open shelves and closed stacks. Open stack is a system of library management in which patrons have direct access to stacks or the shelves for browsing (Dictionary.com). A closed stack library contains books and other items that are not available for viewing or browsing. The user needs to request a book by means of a call number through a library staff, (Agyen-Gyasi, Lamptey & Frempong (2010). Materials at the closed stacks are strictly out of bounds to users and materials requested by readers are therefore retrieved for them by assigned library staff. Such documents should be used in the reference reading room by readers, who are required to submit their identity cards as security guarantees to the library staff.

Shelves are manual systems of storage made of wood or steel. Books are stored on their spines and guides and tabs are used to hold the books together. Storing the material on open shelves allows users to have direct access to the materials. Krishan (1987), indicated that books stored on open shelves encourage browsing leading to greater use of such publications.

Serials

Serials are any publication issued in successive parts appearing at intervals and as a rule, intended to be continued indefinitely. The term includes periodicals, journals and magazines, among others (Prytherch, 2005).

Academic libraries are required to provide the latest journal titles in all the subjects/courses covered by their parent institutions. Also the staff and students are expected to make use of the serials section of the library to get current information in their chosen fields of study (Ogunniyi, Akerele & Afolabi, 2011).

Visits to the study sites revealed that all the universities house their serials in a separate room stored on shelves and on racks (for those bigger than the size of the shelves). The newspapers after sometime are bound together yearly. University B Library stores its bound newspapers in the basement in an air-conditioned atmosphere.

Serials contain valuable and current information on various disciplines. Serials play an important role in research. According to Nutsukpui (2015) they form the backbone of any academic library because of the nature of their informational value. It is therefore not surprising that they are separated from the main collections of the library so as to pay special attention to them. Majority of them are in closed stacks and one needs an identification to have access to them.

Books would seem easy to store and simple to preserve. However, most collections present challenges based simply on their size and the number of items they contain. When combined with considerations about storage space, storage methods and shelving, the challenges of storing one item among many become complex. Storage and handling methods have a direct impact on the useful life of collections and the accessibility of information.

Aside the use of shelves as storage places, the libraries also use pamphlet boxes, metal cabinets and book cases to store printed materials and documents that cannot stand on the shelves. Groups of pamphlets that are of the same size and title can be housed together in custom boxes or wrappers. This strategy is economical and practical for pamphlets that are physically and chemically stable, and for titles that are accessed infrequently.

Media and Forms of Dissemination

Rasul & Sahu (2011) posit that, information technology has emerged as the most potent tool to collect, organize and disseminate information to the people at large scale through communication network. According to Harmsworth & Turpin (2000:3), the term dissemination can be described as the "*delivering and receiving of a message*", "*the engagement of an individual in a process*" and "*the transfer of a process or product.*" Libraries and information centres are important agents for information dissemination (Oyeniyi, & Olaifa, 2011). The duties of academic libraries are integrally tied to the world of scholarly research. By organizing, disseminating and providing access to information, libraries act as gatekeepers of knowledge for countless students, researchers and professors (Sugimoto et al., 2014). ACRL (2007) adds that part of academic and research libraries' role is to help library users to access information and also to provide members of an academic community with tools for critical thinking. The conceptual tools libraries provide could lead seekers of knowledge to resources both within and beyond the library's own walls (ACRL, 2007) .

Harmsworth et al. (2000) posit that one will need to adopt a multi-strand approach to dissemination to ensure one's efforts are effective and this may include: Mailing lists, Newsletters, Briefings, Conferences, E-mail, Reports, Workshops, One-to-one, Websites, Roadshows and Media. Agyen-Gyasi, Lamptey & Frempong (2010) also stipulate that Library publications such as "Reader's Guides", "Library Bulletins, "Accessions lists", "User education" and ICT can be used as tools to disseminate information to library users.

Academic libraries play a major role in disseminating information to educate and inform focused groups of users on social, economic and educational issues, problems and opportunities of interest to them. The results from the study on the media used by the academic libraries to disseminate information to their users have been grouped into themes, analyzed and presented.

Websites

A Website is a group of World Wide Web pages usually containing hyperlinks to each other and made available online by an individual, company, educational institution, government or organization. Beal & Dissanayake (1986), contend that a website is a site (location) on the World Wide Web. Each Website contains a home page, which is the first document users see when they enter the site. The site might also contain additional documents and files. Each site is owned and managed by an individual, company or organization.

Bhattacharya (2010) stipulates that recently websites of organizations have become one of the most important vehicles for information dissemination. This is because the web is a highly cost effective medium of dissemination from the point of view of an organization. From the users perspective also, access to the information in the web is quick and

simultaneous. Especially, when quick interaction with the information provider is necessary, the web is one of the best media.

However, your target audience needs to know it is there and have to be interested enough to visit the site in the first place. Once you have attracted them to the site you then have to find ways of ensuring they visit the site regularly from thereon. Your website can be publicized via your newsletter, briefings, brochures and mail base lists. Make sure your site merits return visits by keeping it updated and by flagging up interesting items on the home page so that the user can see immediately that there is something new for him to look at. Be aware that keeping records of hits to your website is only useful if you can be sure that users are actively searching and using the website (Harmsworth et al., 2000).

A search on the Internet shows that, all the libraries under study have websites. However the extent and the degree of information differ. For example, University Libraries, B and C, have websites with extensive information about the library, rules and regulations, services, collections, Online Public Access Catalog (OPAC) and other information resources as well as "New Arrivals." This is very important since most academic libraries allow users to access their online holdings around the clock and remotely, whether they are in their halls, laboratory, offices or at home. As these resources continue to grow, patrons will spend less time making trips to the physical libraries, giving them time to do other things. This is in line with Harmsworth et al.'s (2000) assertion that, your target audiences need to know that the websites are there and have to be interested enough to visit the site, in the first place. Once you have attracted them to the site you then have to find ways of ensuring they visit the site regularly from thereon. A Website notifies an audience about the resources and services which the libraries offer in a preferential fashion to the university community. The news and bibliographic novelty sections aim to keep the users informed.

According to one interviewee, University B Library has a platform on the website titled "Ask the Librarian". This is an interactive service where users interact with the Librarian from any location and the users get answers to their questions. This is in line with Bhattacharya's (2010) statement that, access to the information on the web is quick and simultaneous. Especially, when quick interaction

with the information provider is necessary, the web is one of the best media.

University A Library's website is however not interesting to warrant visits by users since there is not enough information about the Library's activities and services. It therefore needs to be improved.

Institutional Repository (IR)

ACRL (2007) defines Institutional Repository (IR) as an electronic archive of the scientific and scholarly output of an institution, stored in digital format, where search and recovery are allowed for its subsequent national or international use. Lynch (2003) cited in Bailey (2008:2) expands the definition of IR as

> *"…University-based institutional repository is a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. It is most essentially an organizational commitment to the stewardship of these digital materials, including long-term preservation where appropriate, as well as organization and access or distribution".*

IR is therefore an electronic information system that collects, preserves, disseminates and provides access to the intellectual and academic output of the university community. An IR contains mechanisms to import, identify, store, preserve, recover and export a set of digital objects, usually from a web portal. An IR is a means of scientific communication, but it cannot be understood as a publication channel; it must be understood as a complement to the process of scientific publication formalised with peer review (ACRL, 2006).

Among the numerous benefits of IR, as enumerated by Jain, Sandhu & Sidhu (2007:4), include:

- Increasing visibility and prestige. IR may be used to support marketing activities to attract high quality staff, students and funding.
- Centralisation and storage of all types of institutional output, including unpublished literature.
- Support for learning and teaching. Links may be made with virtual

teaching environments and library catalogue.

- Standardisation of institutional records. The compilation of institutional "CV" and individual dossiers online linked to the full text of articles becomes possible.
- Promotion of the philosophy of wider communication.

These benefits and many more prompted the researcher to find out if academic libraries in Ghana have IRs as a study conducted by Agyen-Gyasi et al. (2010) concluded that at the time of the study there was no academic library in Ghana with the exception of Kwame Nkrumah University of Science and Technology (KNUST) that had an open access institutional repository. However, this study shows that all the university libraries under study have IRs. This presupposes that within five years of the study by Agyen-Gyasi, Lamptey and Frempong (2010), other universities have recognized the importance of IRs and they have all established one. An IR is an effective means of sharing research information/output with the world, since it is mostly open access and so institutions that have limited funding and cannot maintain library collections can also have access to critical information.

Mailing List
A mailing list is a group of e-mail addresses identified by a single name or single ID. When an e-mail message is sent on this ID/name, it is automatically forwarded to all the addresses on the list (Pujar, Manjunath, & Juttiyavar, 2003). Pujar et al. (2003) acknowledged that mailing lists, which are the by-products of the internet, serve as important tools for collaborating research and professional activities among faculty, scientists, researchers, students, etc. These provide means for a group of users to establish an e-mail forum on any topic of common interest. Mailing lists enable members to exchange information or make queries about specific topics with all the other members of the group. According to Harmsworth et al. (2000), the vast majority of people involved in learning and teaching within higher education are members of at least one mail base discussion list and this can be a very effective way of communicating with your target audiences. Depending on the nature of your group,

you may be able to engage people in lively, active discussions around topics that you have introduced relating to the work of your project.

Mailing lists help librarians in information dissemination to their members and professionals alike. The information could be about library services, products, newsletters, events, placements, etc. These also help to a great extent in knowledge and resource sharing activities among librarians (Pujar et al., 2003). Agyen-Gyasi, Lamptey and Frempong (2010) added that electronic mails (e-mails) could also be used in Selective Dissemination of Information (SDI) and other alerting services where a large proportion of the users are on e-mail since it is an easy way of reaching them, quickly and cheaply.

The study indicated that all the libraries under study use mailing lists to communicate to and with their members. This is in confirmation with Plockey & Alemna (2009) and Agyen-Gyasi, Lamptey and Frempong's (2010) assertion that, Universities A and B Libraries for example, use e-mails to transmit information to students and lecturers.
However, the reality is that, most of the users do not check their mail on time. Also, the unreliable supply of electricity and Internet connectivity make it difficult for users to check their mails frequently.

Library Publications
According to Agyen-Gyasi et al. (2010), library publications are an effective means through which libraries can market their resources to users. Among such publications are *Readers Guide*, *Library Bulletin* and *Accessions Lists*.

The study indicated that all the three libraries under study give their newly registered users copies of their *Reader's Guide*. This is corroborated by Agyen-Gyasi, Lamptey and Frempong's (2010) assertion that, University libraries in Ghana give their newly registered users copies of their *Readers Guide*. The *Reader's Guide* includes information on the layout of the library, opening and closing hours, names and designations of the professional staff, organisation of the library, rules and regulations, registration procedures, borrowing privileges and procedures and how to use the catalogue. This *Guide* is an important document because it introduces the new user to the library resources and most importantly, it makes the

user aware of the library's rules and regulations. According to Agyen-Gyasi, Lamptey and Frempong (2010), the *Reader's Guide* is a very important publication because no library's service is complete without its guide that provides information about its resources and the way to make optimal use of them. The *Library Bulletin* is a publication that reports on the policies, programs and events of the Library. The *Library Bulletin* includes new services and staff matters like promotions and resignations; it becomes useful and relevant if it is timely and regularly published. Agyen-Gyasi et al. (2010) stated that all the public university libraries with the exception of University A Library as a result of inadequate finances no longer publish their bulletins. However, my interactions with members of the library staff indicated that the University A Library has also suspended the publication of this very important document thereby contradicting Agyen-Gyasi, Lamptey and Frempong's (2010) findings.

An *Accessions List* keeps track of a library's recently cataloged titles, and produces complete lists of volumes of a given library. Agyen – Gyasi, Lamptey & Frimpong (2010) state that, the *Accession List* gives details of the materials that have been processed and added to a library's stock over a defined period. It is a way of marketing the resources in a particular library which could be either print or electronic.

The study revealed that, all the libraries under study produce accessions lists. The accessions lists can provide the number of books available in a library. This is a good way of knowing how many volumes a particular library has.

User Education and Information Literacy (IL)

The library also disseminates information during orientations and the teaching of IL programs in their respective institutions. User education and IL are essential. They help publicize library services and improve the image of the library. During orientation and the teaching of IL, students are exposed to the arrangement of the library, the location of the various collections and service points, the nature of the classification scheme used and the catalogues. The various library products are also explained. Other relevant information on the library including the membership, registration procedure, borrowing privileges and the rules and regulations governing the use of the various libraries are also highlighted.

Face To Face Communication

Zeldin (1998) defined conversation in the creation of knowledge as *"a meeting of minds with different memories and habits. When minds meet, they do not just exchange facts: they transform them, reshape them, draw different implications from them, and engage in new traits of thought"*. Conversation does not just reshuffle the cards; it creates new cards.

According to Chaudry (2005), and Parirokh, Daneshgar & Fattahi (2006) the most commonly used channels of communication are face – to – face communication. It therefore means that people are willing to spend more time in knowledge sharing through face-to-face media.

Interaction with all the respondents from all the three university libraries indicates that the most commonly used method of information sharing is personal conversations with the users and among staff. However, according to Parirokh, Daneshgar & Fattahi (2006) the problem with this method of communication is that it is generally considered as a less valid source for capturing knowledge about information needs of users.

Other Media of Information Dissemination

Other information dissemination media employed in the library (as mentioned by the respondents) included periodic seminars; reports; conferences; trainer of trainees' workshops; manuals; magazines and notice boards as well as staff meetings and durbars. The availability of these other channels was confirmed through an interview with the University Librarians and other respondents from the libraries. According to Shanhong (2000) information in academic libraries can be shared through:

- Establishing knowledge links or networking with other libraries and institutions of all kinds
- attending training programmes, conferences, seminars and workshops
- subscribing to listserv online or virtual communities of practice and
- buying knowledge products or resources in the form of manuals, blueprints, reports and research reports.

Conclusion

The study examined the use of ICT in the storage and dissemination of various materials available in three public university libraries in Ghana. The materials are stored in electronic format, CD-ROM databases, open shelves, closed stack, the basements, filling cabinets, albums, pamphlets boxes etc, depending on the nature of the material. The electronic resources that are available in libraries are an outcome of the advances in both computer technologies, including information storage and delivery mechanism.

Furthermore, the libraries under study use multi-strand approach to disseminate information to ensure wide coverage. Some of the media they employ include: Mailing lists; Newsletters; Briefings; Conferences; E-mail; Reports; Workshops; One-to-one communication and Websites searches.

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