

Enhancing Academic Visibility of Faculty Members in Nigerian University Community: The Role of Institutional Repositories

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Abstract: This paper focused on the role of institutional repositories in enhancing the academic visibility of faculty members in Nigerian university community. It began with a brief clarification of the concept of Institutional Repository (IR) before delving into its origin, spread, contents and mode of population of contents. This smoothed the ground for a detailed analysis of the role which IRs can play as enablers of information provision in Nigerian universities. Subsequently, attention was drawn to the potentials of IRs as avenues through which tertiary institutions of learning can increase access to, and visibility of, the academic outputs of their scholars and researchers. Notwithstanding the challenges to the optimal performance of the few repositories available in Nigerian universities, the paper posits that the prospects and fortunes of these IRs would change for the better with sustained efforts and commitment of various stakeholders. It is on the basis of this conclusion that several recommendations were made, including sustained awareness and advocacy, adequate funding of universities in Nigeria and their libraries, provision of better training opportunities for librarians to improve their IT competency, as well as increase in the rate of population of content deposition.

Keywords: Institutional Repository; Information Provision; Academic Visibility; Academic Libraries; Nigerian Universities.

I. INTRODUCTION

Access to information is a very vital factor for success in any human endeavor. It has, oftentimes, been seen to have encompassed broad aspect of human knowledge. Furthermore, information is believed to be a commodity, fifth factor of production, as well as a catalyst for change which in recent time has become as important as life itself (Chimah & Nwokocha, 2015). Today, the availability and utilization of information determines the effectiveness and visibility of any institution - be it academic, commercial, political, religious or cultural. The unrelenting quest for information in this 21st Century can, therefore, be rationalized on this score. This strong desire and eagerness for access to information has led to the establishment of information and media centers which has further restructured the way information is provided, especially, in higher institutions of learning. The sustained move for reorganization of information sources, enhance visibility in academic research outputs and strengthen the degree of information provided led to the establishment of

various repositories. Before now, these repositories were known to be mere archives as a result of difficulty in access. Some examples of these repositories, according to Akpokodje and Akpokodje (2015), citing Mellon include: institutional repositories, publisher's repositories, dataset repositories, learning object repositories, cultural heritage repositories, etc. However, these repositories have now been broadly categorized into three groups. Hence, repositories can either said to be institutional, cross-institutional or discipline-based (Hitchcoc, as cited in Zainab, 2010).

The concept of institutional repository (IR) has attracted several definitions. One such definition came from Lynch (2003) who sees an institutional repository as comprising a set of services that is offered by an institution to its publics for the management and dissemination of scholarly digital materials created or generated by the institution and its user community. This is similar to an earlier description of institutional repository as the digital collection used for capturing and preserving the intellectual output of a single or multi-university community (Crow, 2002). Although institutional repository, in the current usage, originated in an institution (i.e. university) with a large corps of researcher and scholars, the practice has spread to other non-university establishments, especially research institutes, hospitals, security agencies, financial institutions and multi-national corporations. However, no other organization has championed the course of institutional repository more vociferously than the universities. Going by its function, it is an organizational commitment to the stewardship of digital materials, as well as making for its long-term preservation and conservation where appropriate. This mechanism also provides an avenue for access or distribution of needed information with less stress. In another view, institutional repository has been described as a digital archive of the intellectual product created by the faculty, research staff, and students of an institution and made accessible to end-users both within and outside of the institution with little or no barrier to access (Johnson, 2002). Based on the foregoing definitions, it could be summarized that institutional repository is simply an online platform for collecting, archiving, preserving and making available in digitized form, the various intellectual, administrative and

scholarly output of an academic, research, commercial, etc establishment for present use and future reference.

Academic visibility, also known as academic external inlinks, can be related to the total number of unique external links received (inlinks) offering academic purposes, either owned or managed by an institution which provides research and other information services through the application of electronic document archiving. As a result of the information provided in the institutional repositories of the academic institutions, they tend to communicate to the external and internal links on research efforts and major strides made by the institution and its staff in different areas. To this effect, information provision encompasses all the activities involved from information generation, sharing to utilization. The information provision cycle is not complete until available information has reached the final consumer who puts it to appropriate use.

II. EVOLUTION AND SPREAD OF INSTITUTIONAL REPOSITORY

The idea of institutional repository (IR) is, arguably, as old as libraries. This is because libraries have always served as repositories of information as packaged in documents and other records. The only noticeable changes bother on approach, content and technology. Inventions and innovations are, more often than not, products of necessity. This is also true of IR as the difficulties experienced by academic institutions in time past on how to manage their intellectual output including journal articles, conference papers, reports, theses and dissertation, teaching materials, artwork, research notes, lecture notes and laboratory reports gave birth to these repositories in various institutions of higher learning.

Institutional repository (IR), as it is today, began as cross-institutional archive which was the brain-child of Paul Ginsparg, at the Los Alamos National Laboratory in 1991. He perfected the idea when he later moved to Cornell University where the authorities bought into the project and funded its implementation. Hence, the IR at Cornell University represents the first successful attempt to institute a digitized document archive. The focus of this repository was on research papers in sciences, especially physics and its related disciplines, nonlinear science, mathematics, computer science and quantitative biology submitted by researchers from all over the world. This shows that the concept of institutional repository started as a general practice to track the research outputs of scientists and other scholars by their parent institutions.

The repository at Cornell University paid attention to the needs of users, especially authors and researchers. It also reduced the role and activities of the publisher. Furthermore, it digitized and automated the processes involved in the collection and dissemination of these research papers. Users of the repository have the ability to browse and retrieve papers from the electronic database with the application of an online web interface, or through e-mail links. Zainab (2010) revealed

that authors were able to submit their papers or reports to the repository by either using the web interface, File Transfer Protocol (FTP) or e-mail accounts. Similarly, authors are allowed to update their submissions if they choose to, and previous versions of articles remain available for users to view. This makes for the availability of up-to-date information in the repository and supports the view that no information is obscure or irrelevant/useless. Users were also allowed to register and automatically receive a listing of newly submitted papers in areas of interest to them using automated Current Awareness Services (CAS) and Selective Dissemination of Information (SDI).

Furthermore, the development and spread of institutional repositories across the world in the last few decades have been phenomenal. Available records reveal that IR started at different times in different continents, countries and regions and has as well experienced different levels of development and acceptance within these regions and countries. The statistical analysis provided by *OpenDOAR* (2008) showed the annual growth of IRs in different regions of the world. However, there is a clear evidence that Europe and North America have the highest concentration of IRs. It has equally been proved beyond reasonable doubt that any institution of repute in the two regions will also have an IR. Moreover, there are clear pointers that the growth of institutional repositories has been very remarkable in developed countries, as well as some developing countries like Brazil, India and South Africa.

In recent times, IRs have been proliferating at a great rate. As at November 2006, about 10 years ago, there were 764 institutional repositories registered worldwide in the Registry of Open Access Repositories. The move for the adoption and wide spread of IR within this period was explosive which led to the December 2, 2006 prediction in *SPARC Open Access Newsletter*. Peter Suber in this newsletter predicted that going by the geometric growth of IR, by the year 2007 institutional repositories will be a new fact of life for universities, libraries or web sites, and the discussion will shift from their utility to the best practices for filling them (Suber, 2006). Although the prediction came to a reality in some countries, the reverse was the case in most underdeveloped parts of the world.

Down to Africa, in 2008, it was shown that thirteen out of the nineteen existing repositories were maintained by South African institutions, with the others in Egypt, Kenya, Namibia, Uganda and Zimbabwe. Of them all, the University of Pretoria is the only institution with a well established repository, judging by the number of item and records in its archive (over 2000). The other repositories have less than 1000, while most number below 500. This may be an indication that due mainly to inadequacy of financial resources, management issues and technological backwardness, Africa has been slow in embracing IR. However, notwithstanding the present large number of academic and research institutions in Nigeria, available records suggest that this phenomenon is still not widespread

as only a few institutional repository are operational in the country's universities (Nwokedi & Emeahara, 2015 and Kpakiko & Aliyu, 2015). The result is that the volume of research output emanating from the country, most of which address local and regional developmental issues, continue to reside in obscurity. The consequence is that a large volume of research findings generated in the country is not visible to those who may need them.

During this period, seminars, debates and symposia were organized to strengthen and facilitate the adoption of institutional repositories in Africa. Visible among them is the debate between Soo Young Rieh and Kevin Smith in 2009 for the adoption of institutional repositories in all universities. In 2011, Roy, Mukhopadhyay and Biwas (2011) in a research carried out in India, reported the effort of the government through the University Grants Commission in developing a policy document on building university-level institutional digital repository in India. The commission recommended that all the universities should set up these repositories to facilitate e-submission, archiving, maintenance and access to vital documents and research reports at the university level. This, among other benefits, strengthen national capability of produce electronic theses and dissertations, and maintain university-level and national level databases of theses and dissertations.

III. CONTENTS AND MODES OF POPULATING UNIVERSITY-BASED INSTITUTIONAL REPOSITORIES

The contents of an institutional repository (IR) generally mirror the operations and activities of the parent body. As a result, an IR in a university or other tertiary institutions of learning would be populated with faculty-generated publications and other academic documents while that of a conventional government office may have an abundance of memos, circulars, policy papers, civil service rules, staff records, etc. Hence, a university-based IRs customarily contains an abundance of pre-prints and post-prints, academic qualifications, conference proceedings, journal articles, book chapters, question papers, marking schemes, examination results, technical papers, research reports, on-going researches (work-in-progress), white papers, theses and dissertations, lecture notes, and other text-based forms of scholarly works. There are, however, newer, more complex, and extremely diverse forms of intellectual output being generated. These include data sets derived from research; learning and complex multimedia objects used in instruction, simulations, visualizations, and other forms of digital models; and audio/video webcasts of conferences, lectures, and symposia. A cyber infrastructure of people, technology and policies must be in place to enhance the management and preservation of the digitized contents, and provide access to these products. Ideally, an efficient library service should be in place to support the creation and use of the digital material in new and different ways.

Universities adopt different strategies to persuade their staff (especially, researchers, authors, scientists, administrators, technologists, etc) to deposit their intellectual products into IRs. Most of those who should populate the IRs are either unaware of their existence. Many are yet to appreciate the benefits of domiciling their e-documents on that platform. Some others are skeptical of both its workability and the safety of the archived materials. These issues impede the availability of documents to be uploaded into the IR. Therefore, after establishing the IR, the first step towards assembling relevant materials is awareness-creation and advocacy. Many universities have devised and tried a broad range of awareness techniques. Prominent among these are setting up of a dedicated website; advert placements/advertorials in the university bulletin and library newsletter; demonstrations and presentations at departmental meetings, college/faculty board, university committees and organizing special events. Other publicity techniques that have been tried by several universities include production of press releases, printing of promotional posters, raising of memos and insertion of feature advertisements about IR on universities' web pages. Some universities also invite experts to address staff concerning IR and clarify areas of concerns. Considering that some of the available IRs are infrequently accessed and under-utilized in some universities, these broad range of awareness programmes should be mounted at regular intervals to remind and educate old and new members of their existence and usefulness.

Having been sufficiently conscientized and convinced to deposit their documents into the university's IR, the next concern usually faced bothers on the mode of lodging the materials into the database. There are, basically, two modes or approaches to accomplishing this. These are self-archiving and mediated archiving. In self-archiving, the creator of the intellectual product (author, researcher, scientist, technologist, etc) personally deposit their works into the repositories. There is usually no assistance from the library/librarian or any other office/staff. This contrasts with mediated-archiving where authors, researchers, etc are assisted by libraries or any other office so designated, to deposit the documents into the IR. Most universities, however, combine the two modes or approaches to populate their IRs.

The two major modes of populating the IR have their merits and shortcomings. For instance, some people recommend self-archiving because the items are represented in the way the author wishes them to be (Taylor, 2009). As such, no alteration is made on the archived document which gives the creator or owner some confidence regarding the safety and veracity of the original work. However, there are counter arguments. The first is that a lot of time and energy which could have been put to other uses is expended in persuading staff to self-archive. Besides, academics have to be trained in a number of aspects including copyright and the correct version of the work to upload (Moahi, 2009). This is in addition to the fact that some of these academics consider

uploading their materials as avoidable extra work to their already busy academic schedule. On the other hand, some universities are attracted to the mediated-archiving which is considered to populate the IR easier than the self-archiving mode. Chan (2004) amplified the merits of mediated-archiving noting that it minimizes the workload of the faculty, fills the repository quickly and enables the library staff to learn about a range of issues that may arise as a result of diverse types of submissions that are regularly uploaded.

IV. USES OF INSTITUTIONAL REPOSITORY FOR INFORMATION PROVISION IN UNIVERSITIES

The institutional repository (IR) serves different uses in different organizations and establishments. Inference to this effect could be drawn from the general understanding of an IR as an online locus for collecting, preserving, and disseminating, in digital form, the intellectual output of an institution. Wikipedia (2012) it goes further to explain that for an academic environment such as the tertiary institutions (university), housed in repositories are materials such as research reports, journal articles, before (preprints) and after (postprints) undergoing peer review and digital versions of projects, theses and dissertations which may be born digital or digitalized. Unarguably, Akpokodje and Akpokodje (2015) expanded the scope of the IR to some extent when they opined that an institutional repository, in addition to digital assets generated by normal academic life, contains other vital information materials such as administrative documents, course notes, or learning objects. Based on these clarifications by different authorities, IR could be seen as an avenue or online platform for the uploading and downloading of intellectual outputs of a given institution or academic environment. The large volume of intellectual outputs from various communities and sub-communities in the repositories further sets the repository apart as an organized platform for the collection and dissemination in digital form the intellectual output of an institution. The fact that IR runs on Open Access (OA) softwares like Dspace, Eprints, Fedora and Greenstone makes it much more than an archive. It has become a platform for post-prints and e-prints. A careful analysis of the definitions and clarifications of an institutional repository reveals that its uses manifests in the following itemized points:

1. Collection of research output of an institution
2. Preservation in digital form the research output of the institution
3. Dissemination of research output.
4. Generation of new ideas and intellectual best practices relevant to the need of its immediate community, the nation and the world at large.
5. For accessing current and updated information and literature for intellectual work.
6. To advance the frontier of learning and breaking new grounds through quality teaching, research, and dissemination of knowledge of the highest quality.

7. Peer review amongst researcher, academics and other intellectuals.
8. Used in facilitating the attainment of vision of the university, national, educational, transformation and development. Today, ICTs and its components have made it possible. to create, store and access digital information material via online and offline.
9. Generally measure the level, volume and frequency of intellectual productivity.

V. ROLE OF INSTITUTIONAL REPOSITORY IN ACADEMIC VISIBILITY

The primary purpose of any academic institution revolves, primarily, on the creation, dissemination and preservation of knowledge. Different strategies and technologies are adopted to preserve and disseminate the information-cum-knowledge so created. This is where to situate the submission of Davis and Connolly (2007) to the effect that the digital revolution has affected how scholars create, communicate and preserve new knowledge. Hence, institutional repositories (IRs) which are essentially online or digitized archives, have been used widely by many academic institutions to preserve and communicate new knowledge and allied intellectual products of their members. IRs provide an institution with a mechanism to showcase its scholarly output, centralize and introduce efficiency to the stewardship of digital documents of value, and respond proactively to the escalating crisis in scholarly communication (Foster & Gibbons, 2005). These unique roles are responsible for the increasing popularity and pride of place which IRs have been enjoying in the last couple of years.

In this era of electronic publishing, academic institutions, especially universities, research institutes and other community of scholars, have increasingly recognized that an IR is an essential infrastructure of scholarly dissemination. However, an institutional repository, as a receptacle of digitized documents, is defined not by the type of data it stores but by the overall roles it plays in information handling. In essence, the role of any IR is evaluated based on the breadth of its coverage, security of its content and speed of access and retrieval.

Any discussion on the role of IRs in academic visibility, should, ideally, elicit some questions such as those asked by Walters (2006), including: “How will academic libraries and institutions look in the future? What types of information will their libraries and information centers contain? What resources would be accessed through them, and what services will they provide? In answering these questions, Walters (2006) posits that while many externally-produced information resources can be licensed and purchased, there can be no doubt that a growing number of academic libraries are also collecting, organizing, and disseminating the intellectual output of their parent institutions. The manner in which universities go about the discharge of these tasks will definitely reflect on the nature and services of academic libraries in future. It is a fact that a greater number of

academic output originated from the teaching, learning and research programmes of lecturer-researchers in various universities. These research outputs appear to be voluminous and diverse. Consequently, they require special handling and management not only for the long-term warehousing but for immediate and regular reference purposes. To meet the challenge of ensuring the readiness and use of these academic outputs IRs - where these items are held, organized and accessed - need to be established and publicized. The role of an IR is defined by its essential characteristics which is the fact that it is institutionally defined, scholarly in scope, cumulative and perpetual, open and interoperable (Crow, 2002). Majorly, the deposit within an IR is carried out in order to maximize the visibility and accessibility of comprehensive, local research. To this end, the roles and services of IRs are beneficial to both the researcher and the researcher's institution (Lynch 2003). Literatures and studies in the areas of IR posit that an IR sits firmly within the DS landscape, which includes “building digital collections, creating tools for collecting, analyzing, and authoring digital information, and using digital collections and analytical tools to generate new intellectual products” (American Council of Learned Society, 2006). Therefore, IR can also be considered as a benchmark of Digital Scholarship.

Availability and rate of usage of IR has played a major role in world webometrics ranking. This can likely be attributed to its intertwined nature with the Open Access movement. Evidence of the role of IR in academic visibility in Nigeria could be traced to the issue of University of Jos of which immediately after the installation of IR, the visibility of research output of the institution improved considerably. Thus, University of Jos moved from nowhere on the map to 4th position in Nigeria, 70th in Africa and 7000th in the world on the *Ranking Web of World Universities* for January 2010. This *Ranking Web of World Universities* has attracted a lot of interest in recent years among Nigerian universities (Akpokodje & Akpokodje, 2015). The process of making institutional resources available and visible demands a collective effort of several stakeholders within the academic-cum-research communities. Foremost among these stakeholders are scholars – who contribute reports of their ongoing and completed researches; librarians – who organize resources and put them in appropriate templates for upload, visibility, and accessibility; and technicians – who ensure that network infrastructure is up and running 24/7. Any hitch in any of these sub-components of the IR could adversely affect the success of the entire project. The following points, aptly, summarize the roles played by IR in boosting the academic visibility of the university, it:

1. Opens up the intellectual outputs of the university to the world;
2. Maximizes the visibility, utilization and impact of these outputs;
3. Showcases the university to interested constituencies – prospective staff and students, as well as other stakeholders;

4. Collects and curates digital outputs;
5. Manages and measures research and teaching activities;
6. Provides a workspace for work-in-progress, and for collaborative or large-scale projects;
7. Enables and encourages interdisciplinary approaches to research and publication;
8. Facilitates the development and sharing of digital teaching materials and aids;
9. Supports students' endeavours, providing access to theses and dissertations and a location for the development of e-portfolios;
10. Provides a veritable peer-review process for academic output; and
11. Serves as a model for ranking universities.

VI. CHALLENGES OF MANAGING INSTITUTIONAL REPOSITORY IN NIGERIAN UNIVERSITIES

Despite the numerous benefits of an IR and the roles it plays in academic visibility and information provision, there are implications and potential barriers to its success (Pickton & Barwick, 2006). While some of these challenges are generalized, others are specific to certain communities and nations. The major difficulties encountered in the establishment and managing IRs in Nigeria which, ultimately, undermine their abilities in information provision and academic visibility are summarized the challenges as follows:

Cost: Although the initial financial cost for an Open Source (OS) software adopted by most institutions for creating and managing IRs may not be high, the same cannot be said of the recurrent costs. This recurrent expenses go into staff salaries and emoluments, stationeries, maintenance of infrastructure as well as other consumables. Such costs manifest as monies spent drafting policies, developing guidelines, awareness creation/publicity, training, supporting users, creating metadata, hiring specialists/IT consultancy. Quite unsurprisingly, some academic institution that started the application of IR could not continue as a result of high cost of acquiring, developing and keeping the subscription to software updated. This is evident in the cases of institutions, whose repositories are shutdown as a result of their inability to keep standing subscription for regular update of the software.

Difficulties in Acquiring Intellectual Output: Success in terms of frequent and adequate information provision, as well as continuous existence of an IR depends on the eagerness and compliance of authors and researchers to deposit their work voluntarily. This is relatively so as the authors tends to protect their works in order to have it published in other journals, conference proceedings and textbooks within and outside the country. There is also the issue of difficulties experienced in generating content, especially at the beginning. Unless the value of an IR can be demonstrated quickly, the organization's sustained interest and long-term commitment to the project may begin to wane.

Sustaining Support and Commitment from Authorities and Parent Bodies: One of the greatest challenges to the adoption and existence of IR is the often-experienced difficulty to sustain continuous support and commitment from the management, academic staff and parent institution. This issue was further underlined by the observation that stewardship is easy and inexpensive to claim; further remains the fact that stewardship is expensive and difficult to honour, and perhaps it will prove to be all too easy to later abandon (Lynch, 2003).

Copyright and Patency Management Issues: This is another major constraint to the establishment and management of IRs in Nigerian universities. These challenges obstruct the ability of these IRs in the areas of information provision and academic visibility. Pickton and Barwick (2006) made pointed reference to this in their assertion that sometimes researchers are apprehensive about infringing publishers' copyright. This actually flows from the prevalent lack adequate awareness amongst researcher about their own intellectual property rights. As a result, such prospective depositors may be uncertain about making their work available online before it is published by a traditional publisher.

Disciplinary Differences: There is a disparity amongst disciplines with regard to the volume of their materials available in IRs. A survey of some IRs in the course of this study showed that disciplines in the sciences contribute more to university-based IRs than their counterparts in the social sciences and humanities. This is evident in a survey which result proved that 'fewer than 10% of literature department deposited materials in an IR compared to more than 20% of those in economics department and more than 40% of those in physics department' (Houseright & Schonfield, 2008). This disparity in the contributions of various disciplines to IRs was somewhat buttressed in another study by Janz and Wilson (2008). The observed disciplinary difference hint at the disparity in the level of importance attached to various sources or types of information. This differences and contestations among disciplines and faculties in respect of credibility of certain information sources contribute to the under-utilization of IR by members of the Nigerian university community.

Low Rate of Deposition: At present, the rate of content contribution into IRs in Nigerian universities is very low. Although this is, largely, because the phenomenon of IR is still new, this situation reduces the volume and quality of contents available for interested persons to access and utilize. A scrutiny of the literature suggests that scholars in the humanities recorded the lowest rate of deposition into various IRs (Houseright & Schonfield, 2008 and Janz & Wilson, 2008). This paucity of contents from some disciplines in the IRs limits the use of such material and their visibility within the academic community.

VII. PROSPECTS OF INSTITUTIONAL REPOSITORIES IN NIGERIAN UNIVERSITIES

Notwithstanding the present low rate of deposition into IRs in Nigerian universities and the challenges that the few available

ones contend with, the prospects of IRs as avenues for information provision and academic visibility are bright. The fortunes of IRs in these universities will change for the better in no distant time. The changes expected are briefly summarized in the following paragraphs:

With sustained awareness of the benefits accruable from IRs, the density will not only improve, more scholars and researchers will learn to voluntarily deposit their research products and other materials. The corollary to this would be easier population of the IRs at a faster rate in the nearest future.

More externally-produced information resources could be acquired, licensed and archived by the IRs in Nigerian universities. In addition, an appreciable number of academic output originated as a result of teaching, learning and research programmes in Nigerian would be deposited in the IRs attached to various university libraries. This will definitely transforms the nature, contents, services and status of these academic libraries in the nearest future.

IRs will form a permanent and critically-important part of the scholarly communication process in Nigerian universities. Their first role is to provide the Open Access to literature. Additionally, services may be added to these repositories to provide extra functionality. This will certainly diversify the services in university libraries in Nigeria. For example, a usage-reporting service may give authors and the institution information on how the content of the repository is being used. A search service may help users find specific items more easily. A service that organizes content in specific ways may help authors, for example, to download a list of articles into their curriculum vitae (CV), aid institutions in assessing the institution's research programmes and report data to meet other statutory requirements.

In the nearest future, IRs in Nigerian universities may play a formal role in the publishing process. These repositories can collect articles from authors, researchers, scientists, technologists, etc from these institutions when they are ready for peer review. Subsequently, a peer review service will collect them from the repository for processing. There are already positive signs of these things happening in other climes where scholarly society publishers encourage authors to notify them when a paper has been deposited in a repository and is ready to be peer reviewed and published. With time, some university presses in the country might work out a collaborative arrangements with the IRs to facilitate publishing of books and other research findings by institutional authors.

VIII. CONCLUSION AND RECOMMENDATIONS

IR was created as a response to the desire to improve access to the gamut of intellectual outputs of scholars and researchers. Although some organizations outside the education sector own IRs, there are strong evidences that the greatest supporters, owners, advocates and financiers of IRs are

universities and allied research institutes. The existence of IRs ensures better security of research results, improves and diversifies the quality of information services, as well as gives increases academic visibility to the host institution. Despite the several strategies adopted by universities to populate its contents, most academics and researchers in Nigeria are still reluctant to deposit their works in the IR. Besides, most of the universities in the country do not own IRs while the few available ones contend with a myriads of technological, administrative and financial challenges. These constraints undermine the potentials of IRs to enhance information services and facilitate greater visibility of scholarly products of Nigerian universities. Based on the challenges discussed above, the following recommendations are made

IRs should be managed by librarians: There is need to review the existing practice whereby different office and persons assume responsibilities relating to IRs in various institutions. Not only should librarians assume the responsibility for managing IRs in Nigerian universities, these information professionals should play a more central role in the design of these IRs. This assignment would be undertaken by officials within the university library in partnership, principally, with research and development (R & D), and information technology (ICT) sections. Stimulating engagement for buy-in is crucial in the early stages of an IR when efforts are made to build a critical mass of digitized material. Nixon (2002) rightly observed that “reference librarians are a library's eyes and ears. They understand users needs and perceptions. They know what's working and what's not. When they act as subject selectors, they are the library's primary liaison with faculty in their subject areas and its most visible representatives. They know how to help, inform, persuade, and teach users. For an IR to succeed, it is essential that they be involved in its planning, implementation, and operation.” So librarians have critical roles to play in both establishing and maintaining an IR.

Advocacy: Librarians need to know all about the principles, benefits and operational processes of the IR in order to promote and effectively manage it. This is in line with an earlier suggestion by Ashworth (2006) to the effect that librarians should act as ‘IR evangelists’. Librarians should develop effective advocacy programmes. Staff of IR should also device various awareness programmes as a deliberate strategy to popularize the IR and its services. In-house communication channels like memos/circulars, notice boards, posters, should be put to maximum effect. Institutional newsletter or bulletins should be used as platforms to advertize and advocate for IRs and respond to questions or enquiries by the stakeholders.

Building of content. Nigerian universities should populate their IRs with relevant and current information materials. Those concerned, especially at the university and library levels, can employ advocacy and marketing strategies to promote engagement with faculty members and help to generate content. They can also assist by proactively

searching for content independently. Moreover, incentives can be packaged and given to those who deposit their works in the IRs.

Collection administrators and metadata specialists: IR will create new job titles for librarians and other library staff. Such library staff have potential to function as collection administrators and metadata specialists. For effective implementation of IR, university libraries in the country need to recruit or train librarians in electronic archiving and digital collection management. It will be easier and more cost effective to provide mediated deposit service for reluctant ‘self-archivers’ where this corps of specialized manpower are available.

Training: All persons involved in the IR should be adequately trained on the technical, legal and administrative aspects of this project. For instance, librarians in Nigerian universities should be properly-trained on how best to run the repository. Students and researchers should acquire the skills for access and retrieval of materials in the repository while writers, authors and other creators of intellectual products should be equipped with the know-how to prepare their documents for upload into the IRs.

REFERENCES

- [1] Akpokodje, V.N. & Akpokodje, E.T. (2015). Availability and utilization of institutional repositories as indicators to institutional web ranking. *European Journal of Computer Science and Information Technology*, 3(2), 29-40.
- [2] American Council of Learned Societies. (2006). *Our cultural commonwealth: the report of the American Council of Learned Societies Commission on cyber infrastructure for the humanities and social sciences*. Retrieved from <http://www.acls.org/programs/Default.aspx?id=644>
- [3] Andrew W. Mellon Foundation. (2006). Augmenting interoperability across scholarly repositories. (April 20-21 Meeting website). Retrieved from <http://msc.mellon.org/Meetings/Interop/>.
- [4] Ashworth, S. (2006). *Role of librarians in the development of institutional repositories*. Retrieved from: <http://www.pfsl.poznan.pl/oa/ppt/2.ppt>.
- [5] Chan, L. (2004). Supporting and enhancing scholarship in the digital age: the role of open access institutional repositories. *Canadian Journal of Communication*, 29, 277-300. Retrieved from: <http://www.chan.core.kmi.open.ac.uk/download/pdf>.
- [6] Chimah, J. N. & Nwokocha, U. (2015). Categories, availability and awareness of electronic resources by postgraduate library users in South-east Nigerian federal universities. *International Journal of Library Science*, 4(1), 7-12.
- [7] Crow, R. (2002). The case for institutional repositories: a Scholarly Publishing and Academic Resources Coalition (SPARC) position paper. Retrieved from: <http://www.arl.org/sparc/IR/ir.html>
- [8] Davis, P.M. & Connolly, M. J. (2007). *Institutional repositories: evaluating the reasons for non-use of Cornell University's installation of Dspace*. Retrieved from <http://www.dlib.org/dlib/march07/davis/03davis.html>.
- [9] Foster, N. F. & Gibbons, S. (2005). Understanding faculty to improve content recruitment for institutional repositories. *D-Lib Magazine*, 11 (1). Retrieved from <http://www.dlib.org/dlib/january05/foster/01foster.html>
- [10] Housewright, R. & Schonfeld, R. (2008). *Ithaka's 2006 study of key stakeholders in digital transformation in higher education*. Retrieved from: <http://www.ithaka.org/research->

- publication/library-survey2006. Retrieved from: <http://www.ariadne.ac.uk/issue32/eprint-archives/>
- [11] Janz, R. & Wilson, M. (2008). Institutional repositories: faculty deposits, marketing and the reform of scholarly communication. *The Journal of Academic Librarianship*, 34(3), 186-195. Retrieved from: <http://www.doi:10.1010.6/j.acalib.2008.03.014>.
- [12] Johnson, R. (2002). Institutional repositories: partnering with faculty to enhance scholarly communication. *D-Lib Magazine*, 8(11). Retrieved from: <http://www.dlib.org/dlib/november02/johnson/11johnson.html>.
- [13] Kpakiko, M. M. & Aliyu, M. (2015). Institutional digital repository as gateway to web presence for Nigerian universities. *Ebonyi Journal of Library and Information science*, 2(1), 70 - 80.
- [14] Lynch, C. A. (2003). Institutional repositories: essential infrastructure for scholarship in the digital age. *Library Science and Publishing*, 3(2), 327-336. Retrieved from: <http://www.muse.jhu.edu/login>
- [15] Moahi, K. H. (2009). *Institutional repositories: towards harnessing knowledge for African development*. Proceedings of the First International Conference on African Digital Libraries and Archives (ICADLA) held in Addis Ababa, Ethiopia from 1st to 3rd July, 2009. Retrieved from: <http://www.mobile.wesedspace.wits.ac.za/bbitstream/handle>
- [16] Nixon, W. (2002). The evolution of an institutional e-prints archive at the University of Glasgow. *Ariadne*, No 32. Retrieved from
- [17] Nwokedi, G. I. & Emeaghara, E. N. (2015). Awareness and utilization of institutional repositories by lecturers in two federal universities in Nigeria. *Ebonyi Journal of Library and Information science*, 2(1), 19 - 39.
- [18] Ochai, G. (2007). *Information and communication technologies at a glance*, Nsukka: Excellent Press
- [19] OpenDOAR. (2008). *The Directory of Open Access Repositories*. Retrieved from <http://www.openoar.org/index.html>
- [20] Pickton, M. & Barwick, J. (2006). *A Librarian's guide to institutional repositories*. Loughborough:LoughboroughUniversity Press. Retrieved from <http://magpie.lboro.ac.uk/dspace/handle/2134/1122>
- Roy, B.K., Mukhopadyay, P. & Biwas, S.C. (2011). An analytical study of institutional digital repositories in India. *Library Philosophy and Practice*.
- [21] Suber, P. (2006). Predictions for 2007. *SPARC Open Access Newsletter*, No.104.<http://www.earlham.edu/~peters/fos/newsletter/12-02-06.htm>.
- [22] Taylor, S. (2009). *University of Bolton institutional repositories (UBIR) project*. University of Bolton. Retrieved from: <http://www.digitalcommet.bolton.ac.uk.ubiradim/9>
- [23] University of Southampton (2006). Registry of Open Access Repositories (ROAR). Retrieved from <http://archives.eprints.org/>.
- [24] Walters, T.O. (2006). Strategies and frameworks for institutional repositories and the new support infrastructure for scholarly communications. *D-Lib Magazine*, 12 (10). doi:10.1045/october2006-walters.
- [25] Wikipedia (Jan 2012). *Institutional repository*. Retrieved from http://en.wikipedia.org/wiki/Institutional_repository.
- [26] Zainab, A.N. (2010). Open access repositories and journals for visibility: implications for Malaysian libraries. *Malaysian Journal of Library & Information Science*, 15(3), 97-119.