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AVAILABILITY AND UTILIZATION OF INSTITUTIONAL REPOSITORIES AS INDICATORS TO INSTITUTIONAL WEB RANKING

Akpokodje, Vera Nkiruka [a]*, Akpokodje, Edore Thomas [b]

[a]Systems Unit, University Of Jos Main Library, Jos, 930001, Nigeria

[b]Federal College of Animal Health and Production Technology, NVRI, Vom, 930001, Nigeria

ABSTRACT*: The ranking web of world universities has attracted a lot of interest in the last two years among Nigerian universities. In response to the very high demand by both library staff and patrons to promote access to the University's resources, the University of Jos under the leadership of the library launched its open Access Institutional Repository- http://dspace.unijos.edu.ng – in June 2009. The purpose of this work is to evaluate the webometric ranking of the University of Jos. The main objectives of this study are to determine how the adoption of Institutional Repository (IR) at the University of Jos has affected its global visibility and to determine the ratio of research publications as against publications on its Institutional Repository. The data collection instruments used in this survey were both descriptive and exploratory. For the descriptive method, a questionnaire was designed and distributed to academic staff of the University of Jos based on stratified random sample. For the web Analytic method, data collected from University of Jos Institutional Repository statistic interface, along with Web server log files detailing visits to the repository, were processed and analyzed in order to calculate descriptive statistics for the repository. The adoption of IR by staff of the university has had a direct effect on the visibility of the university. IR was introduced to the university in June 2009 with 69 documents and increased rapidly by 81.8% in December, 2009. The university got its first ranking of 4th in Nigeria, 70th in Africa and 7000th in the world in January 2010 based on IR activities for the year ending December 2009. The adoption rate of IR declined to its lowest in December, 2011 to 6.9%. Many reasons have been implicated for this low patronage.*

KEYWORDS: Institutional Repository, Availability and Utilization of IR, Web-Ranking Indicators;

INTRODUCTION

The primary purpose of any academic institution is to take an interest in the creation, dissemination and preservation of knowledge. Davis & Connolly[1] noted that the digital revolution has affected how scholars create, communicate and preserve new knowledge. Institutional Repositories (IR) have been used widely by many academic institutions to communicate and preserve this knowledge. IRs have become very relevant in the last couple of years.

Institutional Repository

Scholars have defined Institutional Repository (IR) in different ways. Mellon [2] states that :"……A repository is a networked system that provides services pertaining to a collection of digital objects. Example repositories include: institutional repositories, publisher's repositories, dataset repositories, learning object repositories, cultural heritage repositories, etc…" Wikipedia [3] states that in Institutional Repository is: "an online locus for collecting, preserving, and disseminating -- in digital form -- the intellectual output of an institution, particularly a research institution." It goes on to explain that: For a university, this would include materials such as research journal articles, before (preprints) and after (postprints) undergoing peer review and digital versions of theses and dissertations, but it might also include other digital assets generated by normal academic life, such as administrative documents, course notes, or learning objects. IRs provide an institution with a mechanism to showcase its scholarly output, centralize and introduce

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efficiencies to the stewardship of digital documents of value, and respond proactively to the escalating crisis in scholarly communication (Gibbons S. 2004, as cited Foster, N.F. & Gibbons S. [4]). Institutional Repositories usage has played a major role in world webometrics ranking. This can likely be attributed to its intertwined nature to Open Access movement.

Webometrics

Information Research [5] defined Webometrics as the quantitative study of Web-based phenomena. Wikipedia noted that the science of webometrics (also cybermetrics) tries to measure the World Wide Web to get knowledge about the number and types of hyperlinks, structure of the World Wide Web and usage patterns. According to Björneborn and Ingwersen [6], the definition of webometrics is "the study of the quantitative aspects of the construction and use of information resources, structures and technologies on the Web drawing on bibliometric and informetric approaches." Webometric techniques include link analysis, web mention analysis, blog analysis and search engine evaluation, but from the perspective of digital library evaluation the main method is link analysis. Ranking of world Repositories is a new wave that tends to motivate both institutions and scholars to have a web presence that reflects accurately their activities. Ranking web of world Repositories (Jan 2012) stated that the aim of the ranking is to support Open Access initiatives and therefore the free access to scientific publications in an electronic form and to other academic material. The web indicators are used here to measure the global visibility and impact of the scientific repositories. The Ranking is built on indicators obtained from web search engines following a model close to the Impact Factor one. The activity accounts for a 50% of the index, including number of pages, pdf files and items in Google Scholar database, while the visibility takes into account the external in links received by the repository (the other 50%).

Internet Access in the University of Jos

Internet access in the University of Jos started with a small step of accessing electronic mail through American Online in 1996 and Skannet in early 1997. In June 1997 the backbone for a campus Wide area Network was laid with a server maintained in the NuNet office. The intranet was activated in 1998. The intranet was used to send and receive mails as well as host the University's newly created website which was created in 1998(Akintunde, [7]). Based on the availability of Internet (wired and wireless) on campus, the University of Jos under the leadership of the library launched its open Access Institutional Repository- http://dspace.unijos.edu.ng – in June 2009. Akintunde [8] stated that it was a realization of three years' dream. Between 2006 and 2009, there was a very high demand by both library staff and patrons to promote access to the University's resources.

Visibility of University of Jos Online

Immediately after the installation of IR, the visibility of research output of University of Jos became very obvious, 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 ranking. The ranking web of world universities has attracted a lot of interest in the last two years among Nigerian universities. The process of making institutional resources available and visible demands a collective effort of 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. The institution itself plays a critical strategic role of providing critical

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infrastructure such as bandwidth and electric power, and also ensuring through policy (and enforcement), that the university community makes resources available on the Internet.

Objective

- How has the adoption of Institutional Repository at the University of Jos affected its global visibility?
- To determine the ratio of research publication as against publications on IR
- What are the reasons that deter or discourage researchers from using this repository?

LITERATURE REVIEW

Ranking Web of World Universities

As noted earlier, Webometrics Ranking is measuring the volume, visibility and impact of the web pages published by universities, with special emphasis in the scientific output (referred papers, conference contributions, pre-prints, monographs, thesis, reports, …) but also taking into account other materials (courseware, seminars or workshops documentation, digital libraries, databases, multimedia, personal pages, …) and the general information on the institution, their departments, research groups or supporting services and people working or attending courses . The four main criteria used for assessing the web presence of universities and their weight are enumerated below:

Visibility (50%)

Visibility also known as external inlinks can be defined as the total number of unique external links received (inlinks) by a site. It can only be confidently obtained from Yahoo Site Explorer Ranking web of world repositories, January 2012. Ranking web of world universities (January, 2012) also defined it as the total number of unique external links received (inlinks) by a site, according to Yahoo Site Explorer.

WiseGeek[9] further explained that inlink is a term often used when people are seeking Search Engine Optimization (SEO), for their websites. SEO writers and programmers attempt to design sites that other people will hopefully link to, so that more traffic to the site is promoted. Additionally, many search engines like Google® use the number of inlinks as a way to decide where to rank a page or site. If you have huge numbers of inlinks, links directed to your site, then your page will show up as one of the first results in a Google® search, in most cases. This can in part depend upon how you acquired each inlink, and the popularity of the topic. Page title and keyword repetition also is a factor in most search engines' algorithms that determine how to rank a page. Generally, though, the highest consideration is given to how many people provide an inlink, also called a backlink, to your page or site.

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Rich File (10%)

Rich file is the number of text files (research output) in the following file format: Adobe Acrobat (.pdf), Adobe PostScript (.ps), Microsoft Word (.doc) and Microsoft PowerPoint (.ppt) files extracted from Google, Yahoo, and Bing.

Web Size (10%)

Number of pages recovered from the following large engines: Google, Yahoo, and Bing. Number of pages recovered from four engines: Google, Yahoo, and Bing Search.

Scholar (30%)

The data is a combination of items published between 2006 and 2010 included in Google Scholar and the global output (2004.-2008) obtained from Scimago SIR. Ranking web of world repositories defined it to be mean of the normalised total number of papers and those (recent papers) published between 2006 and 2010 Using Google Scholar.

Open Access

JISC [10] states that Open Access research literature is composed of free, online copies of peer-reviewed journal articles and conference papers as well as technical reports, theses and working papers. In most cases there are no licensing restrictions on their use by readers. They can therefore be used freely for research, teaching and other purposes. JISC [10] further explained that Open Access is not self-publishing, nor a way to bypass peer-review and publication, nor is it a kind of second-class, cut-price publishing route. It is simply a means to make research results freely available online to the whole research community. While the most popular Open Source and hosted applications share the advantages that IRs bring to institutions, such as increased visibility and impact of research output, interoperability and availability of technical support, IR advocates tend to favour Open Source solutions for the reason that they are by their nature more compatible with the ideology of the freedom and independence of the internet from commercial interests. On the other hand, some institutions opt for outsourced commercial solutions. In her briefing paper (JISC, [10]) on open access repositories, advocate Alma Swan lists the following as the benefits that repositories bring to institutions:

- Opening up outputs of the institution to a worldwide audience;
- Maximizing the visibility and impact of these outputs as a result;
- Showcasing the institution to interested constituencies – prospective staff, prospective students and other stakeholders;
- Collecting and curetting digital output;
- Managing and measuring research and teaching activities;
- Providing a workspace for work-in-progress, and for collaborative or large-scale projects;
- Enabling and encouraging interdisciplinary approaches to research;

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- Facilitating the development and sharing of digital teaching materials and aids, and
- Supporting student endeavours, providing access to theses and dissertations and a location for the development of e-portfolios.

METHODOLOGY

The data collection instrument used in this survey was both descriptive and exploratory. For the descriptive method, simple descriptive method adopted the use of structured questionnaire as instrument for data collection. The designed questionnaire was validated by two experts in library and information science profession before it was administered to the respondents. A total of 100 questionnaires were distributed to Academic staff of the University of Jos based on stratified random sampling, and 62 duly completed and returned. 51 copies were found usable and thus were used for the data analysis. Simple statistical packages (SPSS) like frequency counts, percentages and cross-tabulation were used to analyze the data.The questionnaire was divided into four sections, with section 'A' seeking information on the biodata of the respondents. Section 'B' sought for information on the respondents' level of Awareness and use of Institutional Repository, section'C' sought for information on the benefits of IR to respondent and section 'D' sought for information on the impact of IR on Institutions Web ranking. Tables 2 and 3 below shows the case summary of distributed questionnaires according to gender and designation. For the exploratory method, data collected from University of Jos Institutional Repository statistic interface (http://dspace.unijos.edu.ng/statistics) , along with Web server log files detailing visits to the repository, were processed and analyzed in order to calculate descriptive statistics for the repository (participation rates, and metadata view counts)

RESULTS / FINDINGS

Table 1. University of Jos Monthly growth statistics for all Items in IR (from 2009 to 2012).

Month / Year	2009	2010	2011
January	0	0	0
February	0	22	24
March	0	5	33
April	0	54	81
May	7	267	80
June	54	100	56
July	0	88	7
August	0	43	6
September	0	43	25
October	319	0	0
November	0	0	0
December	0	0	56
Total	380	622	368
Cumulative total	380	1002	1370
Percentage change	-	38.90%	-69.02%

This data was collected from IR statistic interface (http://dspace.unijos.edu.ng/statistics)

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Table 2. Gender

	frequency	Percentage (%)
Male	36	70.6
Female	15	29.4
Total	51	100

Table 3. Designation

	Frequency	Percentage (%)	Cumulative (%)
Graduate Assistant	5	9.8	9.8
Assistant Lecturer	12	23.5	33.3
Lecturer II	9	17.6	50.9
Lecturer I	17	33.3	84.3
Senior Lecturer	3	5.9	90.2
Reader	1	2.0	92.2
Professor	4	7.8	100

Table 4. How many published articles do you have * How many of your published articles are published in IR Cross tabulation

		How many of your published articles are published in IR				Total
		None	1-2	3-4	9and above	
How many published articles do you have?	0-2	14 (28.0%)	1(2.0%)	0	0	15 (30.0%)
	3-5	8 (16.0%)	0	1 (2.0%)	0	9 (18.0%)
	6-8	11 (22.0%)	0	0	0	11 (22.0%)
	9and above	14 (28.0%)	0	0	1 (2.0%)	15 (30.0%)
Total		47 (94.0%)	1 (2.0%)	1 (2.0%)	1 (2.0%)	50 (100.0%)

Note: case summary: Valid = 50 (98.0%) ; missing item = 1 (2.0%)

Table 4 shows that a total of 50 (100%) people have published between 0-2 articles and above 9 articles. It also shows that almost all of the respondents (47 people (94.0%)) do not have their publications in IR.

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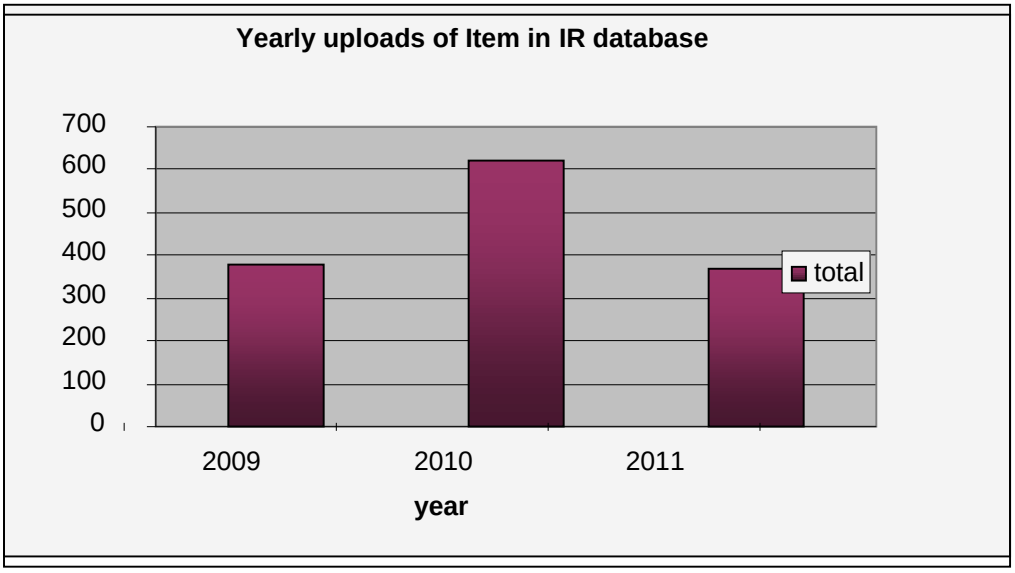

Figure 1. Yearly uploads of IR

The figure above shows that a total of 380, 622 and 368 items were uploaded in the years 2009, 2010 and 2011 respectively. 2010 recorded an increase of 38.9% over previous year (2009) and 2010 recorded a decrease of 69.02% over the previous year (2010). The reasons enumerated by the respondents includes lack of interest, lack of technical knowhow, fear of plagiarism and many more.

Table 5. Growth of University of Jos Institutional repository over time

Date	All Item	Percentage increase over previous year
June 2009	69	
Dec 2009	380	81.8%
June 2010	828	54.1%
Dec 2010	1002	17.4%
June 2011	1276	21.5%
Dec 2011	1370	6.9%

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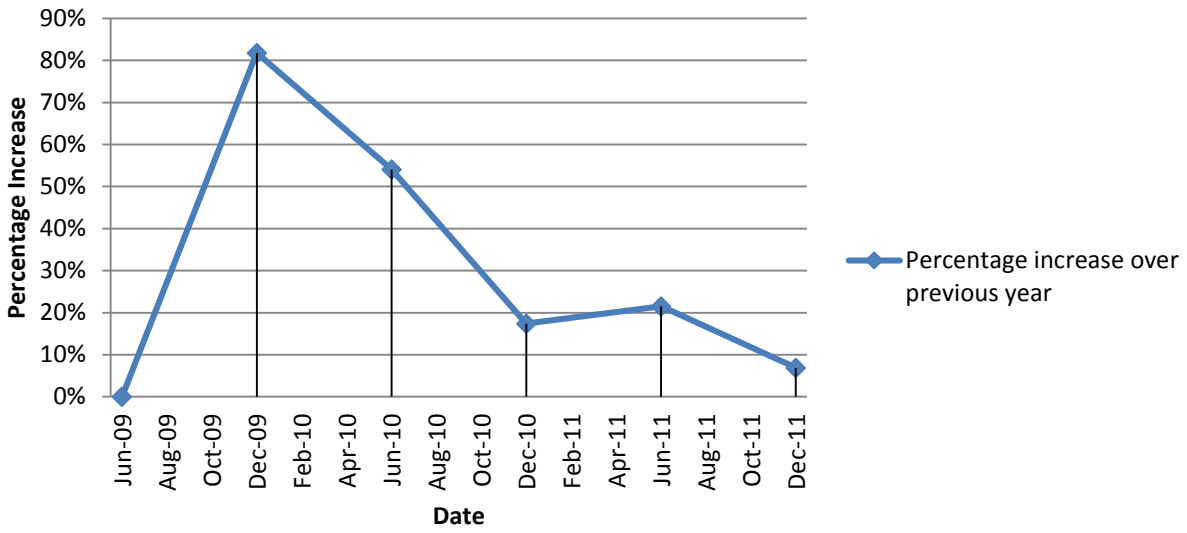

Figure 2. Growth of University of Jos Institutional repository over time

The table 5 and figure 2 show a decline the IR growth rate of University of Jos repository. From a very sharp increase of 81.8% between June 2009 and December 2009, there was a consistent decrease in overall IR growth broken by a marginal increase in growth of 21.5% between December 2010 and June 2011 from the previous period of 17.4% between June 2010 and December 2010. The growth rate went to an all time low of 6.9% between June 2011and December 2011.

Table 6. Web Ranking of University of Jos over time

	Global position			World position			
	Nigeria	Africa	World	Visibility (50%)	Size (10%)	Rich Files (10%)	Scholar (30%)
January 2010	4th	70th	7000th	NA	NA	NA	NA
July 2010	3rd	66th	5882nd	9184th	7260th	5743rd	1588th
January 2011	2nd	42nd	4087th	11,092nd	6906th	4426th	1770th
July 2011	8th	67th	5376th	11,504th	6052nd	3923rd	2360th
January 2012	9th	88th	5681st	10220th	5022nd	4760th	2900th

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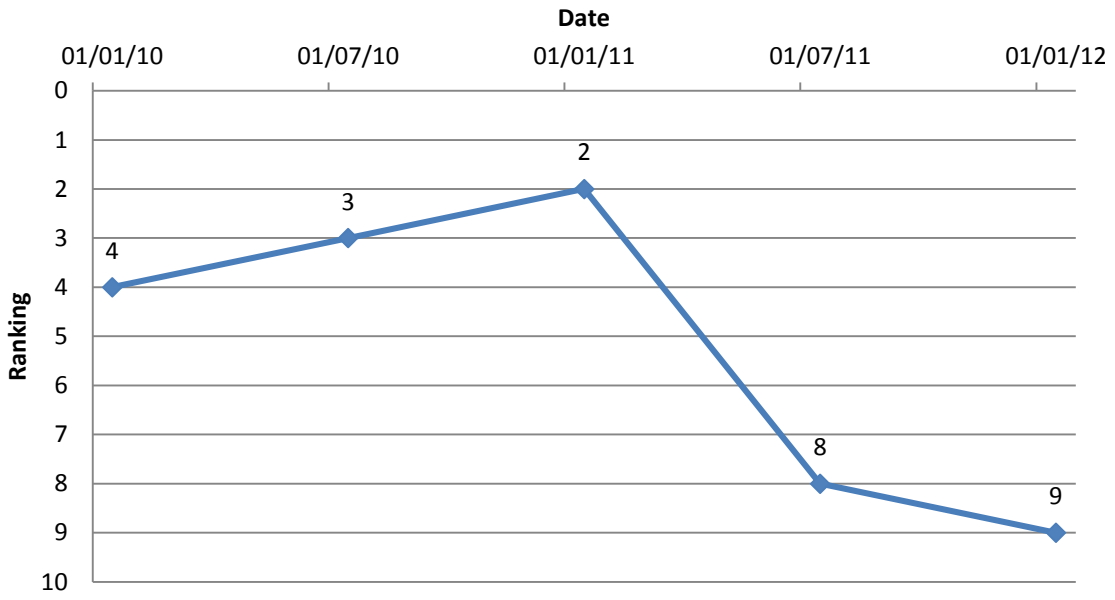

Figure 3. Web Ranking of University of Jos in Nigeria

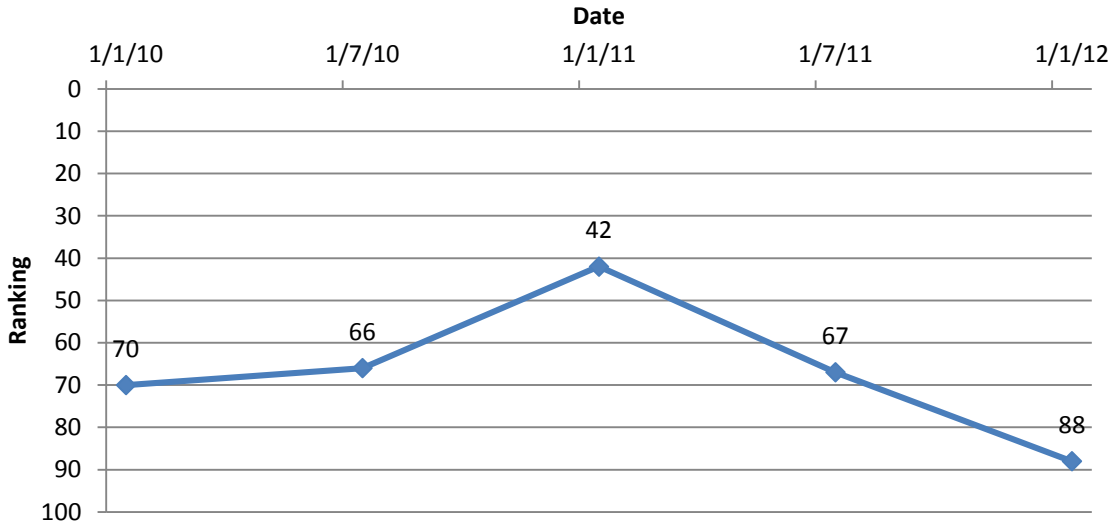

Figure 4.Web Ranking of University of Jos in Africa

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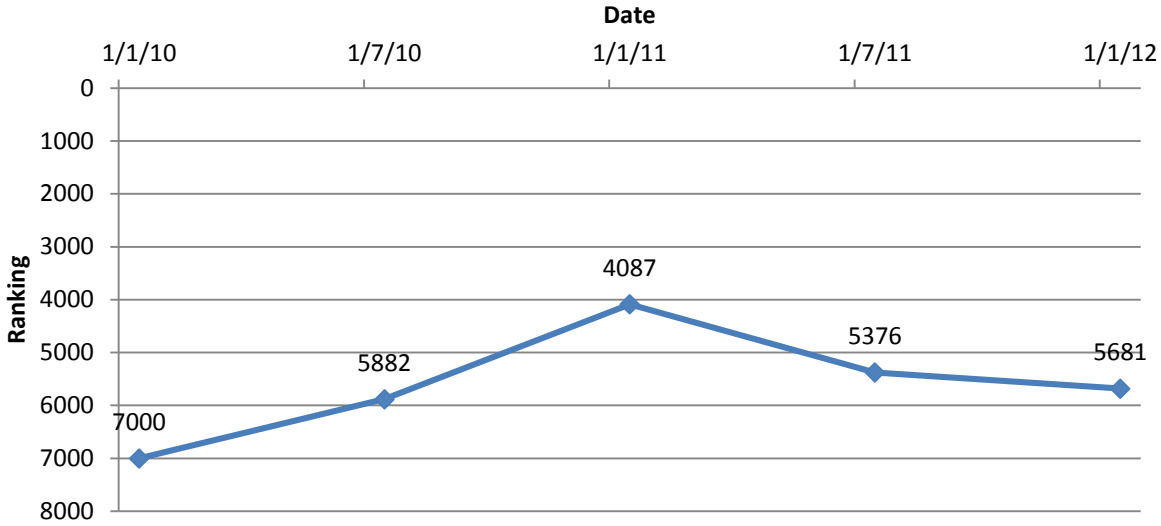

Figure 5. Web Ranking of University of Jos in the World

Figures 3, 4 and 5 show almost the same pattern in the web ranking of University of Jos in Nigeria, Africa and the world. The pattern shows a progressive increase from January 1st, 2010 till 1st January 2011and a decline till 1st January, 2012. University of Jos declined to its lowest point both in Nigeria and Africa. However in the world web ranking its lowest point was on January 1st 2010.

DISCUSSION

From the responses gotten from staff of the university, most of them(94%) do not have their publications in IR. Many reasons have been implicated for this low patronage which are enumerated in the discussion below:

- Lack of interest
- Lack of equipment to scan and upload documents
- Still planning to do so
- Just joined the institution from another service, still settling in
- Inaccessibility of server
- Do not have the technical know how to do so
- Frustrating internet service
- Fear of plagiarism
- Inadequate time to do so
- Ignorance of the existence of IR and its functionalities
- Not interested yet
- procrastination

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The adoption of IR by the University of Jos in 2009 has given the university visibility among universities in Nigeria, Africa and the world. However, visibility steadily declined after an initial boost due to the low patronage of IR by staff of the university. The visibility patterns in Nigeria, Africa and the world seem to follow the same trend. For example when the position of University of Jos peaked in January 2011 (2nd position) in Nigeria (Table 2, Fig. 3) it also peaked in Africa (42nd position) and in the world ranking(4037th position).

The adoption of IR by staff of the university has a direct effect on the visibility of the university. IR was introduced to the university in June 2009 with 69 documents and increased rapidly by 81.8% (Table 2) in December, 2009. The university got its first ranking of 4th in Nigeria, 70th in Africa and 7000th in the world in January, 2010 based on IR activities for the year ending December 2009 (Table 2). The subsequent improvement in the ranking of the university to peak at 2nd in Africa was due to the cumulative increase in the number of documents in IR although there was a significant reduction in the growth rate of documents uploaded to the universities IR(Table 2, Fig. 2). The slight increase in the IR adoption from 17.4% in June 2010 to January 2011(21.5%) had a very minimal effect on the visibility of the university as its position dropped from 2nd in January 2011 to 42nd in December 2011. This must have been due to the drastic reduction in IR adoption rate which had peaked at 81.8% in December 2009. The adoption rate of IR further declined to its lowest in December, 2011 to 6.9% (Table2, Fig 2). This further reduced the ranking of the university to its lowest at 9th position in Nigeria and 88th position in Africa (Fig.3,4, Table 2). It also reduced its world ranking to 5681although this was not the lowest. This was not a change from the Nigerian and African trend. Due the smaller number of universities in Nigeria and Africa as compared the world a change in the IR adoption rate at the university of Jos will have a larger effect on its visibility in Nigeria and Africa than in the world.

CONCLUSION

Installing IR software is just the first step towards a successful IR and Institutions' global visibility. Without content, an IR is just a set of empty shelves. And, in spite of the rapid pace at which institutions are establishing IRs, the quantity and quality of content deposited into them remains key to a successful repository.

The research shows that there is need to make recruiting of more contents and stability in the network a top priority as these will ping down the achievements of both the Institution and the individual researchers as well. Thus increasing University of Jos global visibility.

FUTURE RESEARCH

The scope of the study need to be expanded to cover Nigerian Universities who has an online presence of Institutional Repository to determine trends in webometric ranking. A comparative analysis of webometric raking of Institutions in different regions of Africa needs to be conducted. Research could also be done on user acceptance and satisfaction of IR in Institutions

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Increased contents of IR may be achieved by working with a small early-adopter group (of about 4 users) from every department and then networking from them to their colleagues. There will be need for the subject Librarians to be properly trained to serve as "Library liaisons" at their various faculties to assist designated IR administrators in recruiting contents.

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