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Assessment of the Impact of the USIU- Africa Digital Repository on Research Visibility and Webometric Ranking

By

Arnold Mwanzu & Rodney Malesi

Abstract

Repositories have widely been acknowledged as ideal platforms for disseminating research findings from scholars in the different research spheres. Organizations that carry out ranking of academic institutions have as result utilized repository evaluation as a tool for determining research output of Institutions.

Current Webometric ranking of Universities in the world focuses up to 30% of grading on repositories. This is because they depict the extent to which an institution is involved in research and scholarly addition to the body of knowledge. Universities across the globe have over the years taken initiatives to establish institutional repositories to host their in-house publications and to efficiently avail research findings to their users. Some institutions have embraced Open Access and gone a mile up to open their repositories giving full text access to the public domain in the web. USIU-Africa is yet to evaluate the gains realized by the establishment of the digital repository.

The purpose of this paper is to explore the extent to which the USIU-Africa Digital Repository is enhancing visibility of University Research and faculty output and its bearing on University Webometric Ranking. The research will be conducted at USIU- Africa through a mixture of a qualitative and quantitative research methodology. Questionnaires will be distributed to the

teaching staff; and views collected that will in turn be useful for the progression of this research.

Findings will confirm the variables for the research, out of which the conclusions will be made to steer the way forward for this discussion. The findings of this study shed light on the progress of the new USIU-Africa repository; and will discuss its impact on Kenyan research, Faculty research and output and the University Webometric ranking

Keywords:

Webometric ranking; University Research; Research in Kenya; Digital Repository

Introduction

According to Johnson (2002), institutional repositories (IR) are digital archives of intellectual items created by the faculty, staff and students of an institution accessible to end users both within and outside the institution publications. He further adds that an IR may hold variant kinds of publications such as pre-prints and post-prints of journal articles, conference papers, research reports, theses and other scholarly items. Institutional repositories are digital collections of the outputs created within a university or research institution. Whilst the purposes of repositories may vary (for example, some universities have teaching/ learning repositories for educational materials), in most cases they are established to provide Open Access to the institution's research output and this is the focus here. This way, scholarly contributions of intellectuals are made available free of charge to the whole knowledge community around the world. Repositories give the opportunity to academicians and research scholars from universities to freely publish and facilitate open access to the findings

of their research activities. There is also a good chance for scholars and research communities to highly increase their visibility globally. Research output has emerged as a major criterion for ranking of institutions of higher learning. This is because universities are expected to add to the body of knowledge. IR's have a clear and open platform to determine research heights of universities and this is done partly by checking repositories of individual universities. Institutional repositories have the same advantages as other types of author self-archiving: global accessibility, increased speed of dissemination and potentially reduced subscription charges for institutions.

LITERATURE REVIEW

According to Quin (2010), the potential value of digital repositories is dependent on the cooperation of scholars to deposit their work. He argues that although many researchers have been resistant to submitting their work, there is very little research explaining the psychology of resistance on embracing digital repositories.

At times, as libraries struggle to determine how to develop and obtain content for an institutional repository, it appears that institutional repositories are a solution in search of a problem. Surveys of faculty, such as that done at Oklahoma University, find that the teaching fraternity does not necessarily see advantages to participating in an institutional repository (Brown & Abbas, 2010)

Psychologists have devised many potentially useful strategies for reducing resistance that might be used to address the problem. There has been an increasing push for institutions to establish their own digital repositories, to capture both the grey literature (theses, working papers, etc.) and the published articles authored within their institution. In some scenarios,

there has also been a long history of archiving papers for peer attention prior to publication (e.g. ArXiv.org). There are increasing mandates for researchers in Academic Institutions to deposit their articles in their repositories so as to increase their research visibility and also improve the ranking of the institutions globally.

Advantages of Institutional Repositories

According Beer (2009), a repository opens up the outputs of the university to the world; it maximizes the visibility and impact of these outputs as a result; a repository showcases the university to interested constituencies – prospective staff, prospective students and other stakeholders.

Kim (2007), asserts that institutional repositories collect and curate the digital outputs of an institution. He adds that other advantages of a repository are 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. He adds that repositories facilitate the development and sharing of digital teaching materials and aids while also supporting student endeavors, providing access to theses and dissertations and a location for the development of electronic portfolios

According to a survey by Manjunatha (2011), finding on attitudes towards depositing faculty publications in IR's showed that most of the researchers were found to have low awareness of the institutional repository, high interest in contributing contents to the University Institutional Repository and have positive attitude to make free access of their research results by improving the website functionality and its usability, more researchers would have been attracted to contribute their content to the University Institutional Repository had they been made aware of the potential benefits such as global visibility. The study conclusion

asserts that simplicity and ease of use is required of the technology in order to save researchers time and attract more users to the use of institutional repositories.

Repositories are fast becoming popular among countries and usable platforms for scholarly research communication. Ranking bodies have since become reliant on repositories to determine research heights of individual institutions of higher learning. Repositories are believed to be alternative outlets for research findings dissemination other than paid up subscription databases and gold Open Access.

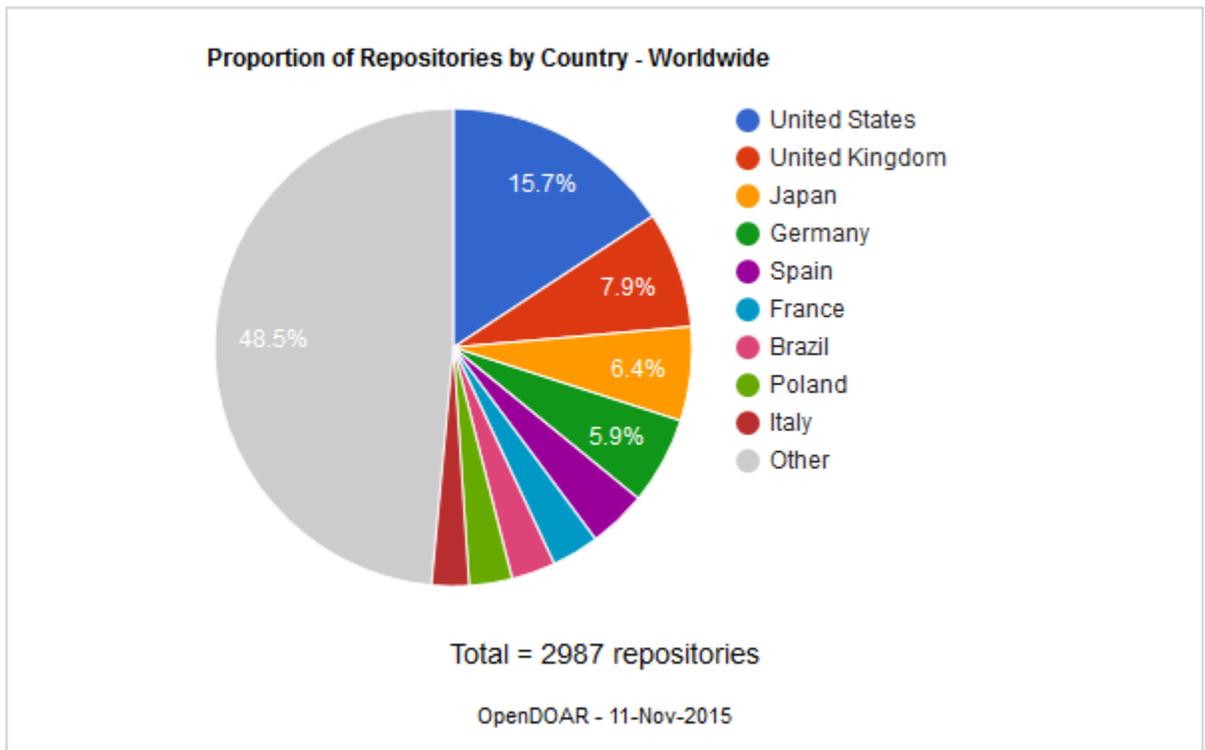


Figure 1. Proportion of repositories by country worldwide

The above chart highlights the proportion of repositories by country worldwide.

Impact on University Ranking by Research

According to Wanzala (2014), Rankings of Universities' globally are mostly based on research contributions from each university. He highlights the universities from South Africa taking up most positions in the ranking for universities in Africa 2015. University of Nairobi. For instance was the only Kenyan institution of higher learning that made it to the top 900 universities in the world in the QS World University Rankings of 2015. UON ranked number 701 out of 891. This survey had considered about 3,539 institutions globally. The ranking of universities also extends to ranking of repositories. According to the 2015 July World ranking of repositories only 4 Universities featured. USIU-A happened to miss out because its repository had not yet been established.

Table 1. Kenyan universities repositories ranking in World Repository Ranking 2015

Kenya

ranking	<u>World Rank</u>	<u>Instituto</u>	<u>Size</u>	<u>Visibility</u>	<u>Files Rich</u>	<u>scholar</u>
1	176	University of Nairobi Digital Repository	223	624	13	34
2	1451	Jomo Kenyatta University of Agriculture and Technology Digital Repository	1683	1784	1160	1168
3	1576	Kenyatta University Institutional Repository	152	1077	412	1895
4	1707	South East Kenya University Digital Repository	535	2109	1110	1232

Beer (2010) asserts that repositories are at the forefront of impacting research visibility of institutions and subsequently high ranking. The rankings are widely referenced by prospective and current students, university professionals and governments worldwide. The purpose of the rankings is to recognize universities and to provide a global comparison of their success against their hypothetical undertaking of becoming or remaining world-class.

Academic rankings are based on four key pillars: research, teaching, employability and internationalization. The methodology consists of six indicators: academic reputation (40 %), employer reputation (10 %), and faculty student ratio (20 %), citations per faculty (20 %), international students (5%), and international faculty (5 %). This shows that the impact of repositories is felt when the citations per faculty and research publications are used in ranking.

Wanzala (2010) argues that for the QS World University Rankings of 2015 about 11.1 million papers indexed by the Scopus/Elsevier bibliometric database were analysed and 58.2 million citations counted, which amounted to 44.9 million citations once self-citations were excluded. These redirected mostly from repository URL's of individual institutions.

A study by Martínez-Torres (2013), on web indicators of research production globally shows that scholars have an interest in disseminating their work to all who can make use of it. The findings show that researchers and academicians want the widest possible audience since it is the best way to be noticed, read, used, and cited. The study goes on to assert that for royalty-free literature, enlarging the sphere of fair use serves the author's interests; for royalty producing literature, it invades the author's interests. Having relinquished royalties, authors of royalty-free literature have no need to protect a revenue stream, in this case they have everything to gain by consenting to Open Access and nothing to lose.

Objectives of the Study

The primary objective of the study was

- a) To explore the extent to which the USIU-Africa Digital Repository is enhancing visibility of University Research and faculty output and its bearing on University

- b) To assess the impact of repositories on research visibility
- c) To assess the impact of repositories on webometric ranking

Methodology

Questionnaire was used to collect data from respondents. The study was conducted at the United States International University–Africa in Nairobi, Kenya. The study targeted researchers from the ranks of Fulltime Faculty, Adjunct Faculty, post-graduate students, Staff Researchers and Research scholars. Under graduates and were not included in the study on the assumption that they were not experienced in research and scholarly publishing and therefore their contribution to this kind of study would be minimal. Semi-structured questionnaires were distributed to the sample population of 80 respondents who were selected through stratified random sampling from a population of 500 researchers. Stratified random sampling was necessary to ensure the representation of the respondents on the basis of their designation and research discipline. Of the 48 (86.82%) returned questionnaires, 35 (84.8%) were found usable for analysis while eleven were discarded as incomplete.

Analysis of data

The responses from the 35 respondents from the target population were analyzed and the findings gave used to answer the objectives of the study.

Category-wise distribution of questionnaire

There were 80 questionnaires distributed among the sample size of the study and the returned questionnaires gave 64% response rate meaning the results account to a substantial percentage of the expected target population. Most of the respondents were Full time Faculty who include Professors and Senior Lecturers from the four Schools of the University.

Table 2. Category-wise distribution of questionnaire and responses received.

Full Time Faculty	54.29%	19
Adjunct Faculty	14.29%	5
Post Graduate Student	0.00%	0
Research Scholar	2.86%	1
Staff	25.71%	9
Other (please specify)	Responses 2.86%	1
Total		35

Use and awareness about IRs

On awareness of the USIU-A digital repository the findings shows that 62.86% are aware of the USIU-A digital repository and have even submitted their publications to be uploaded in the repository. 31.43% of the respondents know about the USIU-A digital repository but have not yet submitted publications to the repository. Only 2.86% of the respondents do not know about the repository and 2.86% gave other open responses which included not having published or written any articles and not knowing what a repository is.

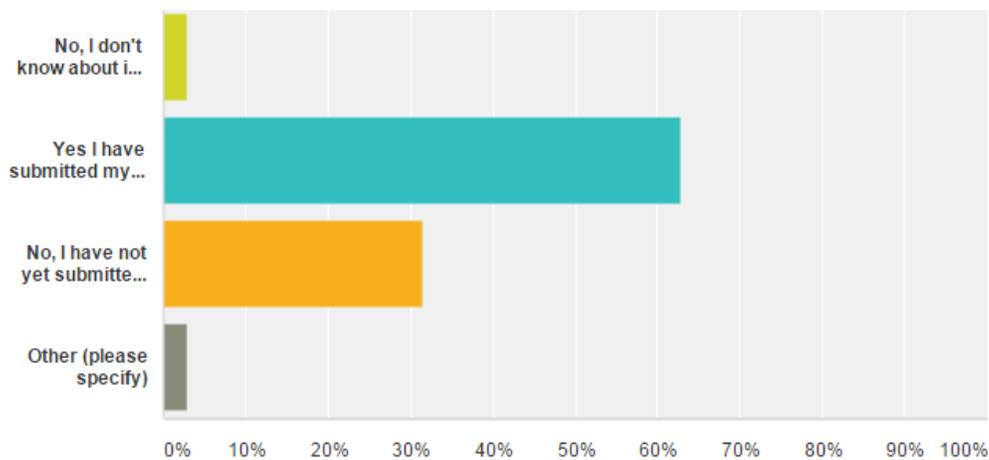


Figure 2. Use and awareness about IRs

Impact on Visibility

Regarding the impact of the repository on visibility of individual research output, 99% of the respondents agreed that having publications on the USIU-A repository will give individual authors wide visibility on the World Wide Web.

Table 3. Impact of repository on visibility of individual research output.

Answer Choices	Responses	
▼ I Strongly Agree	51.43%	18
▼ I Agree	40.00%	14
▼ Neutral	8.57%	3
▼ I Disagree	0.00%	0
▼ I Strongly Disagree	0.00%	0
▼ Other (please specify)	Responses	0.00% 0
Total		35

Respondents were also in agreement that the USIU-Africa Digital repository has increased the visibility of researchers' findings and their individual scholarly visibility on the World Wide Web. 50% strongly agreed and 38.89% agreed with the statement. 8.33% of the respondents had a neutral response. Others specified that they have not yet felt the effect since the repository was just recently established.

Table 4. Impact of USIU-A Digital repository.

Answer Choices	Responses	
▼ I Strongly Agree	50.00%	18
▼ I Agree	38.89%	14
▼ Neutral	8.33%	3
▼ I Disagree	0.00%	0
▼ I Strongly Disagree	0.00%	0
▼ Other (please specify)	Responses	2.78% 1
Total		36

Regarding impact on webometric ranking the respondents gave the following responses: 58.33% strongly agreed and 36.11% agreed that the USIU-Africa Digital repository will increase the chances of the university's high ranking during the annual university ranking. 2.78% had a neutral feeling. The findings show that most of the respondents are in agreement that the repository will increase the university rankings.

Table 5. Impact on Webometric ranking.

Answer Choices	Responses	
I Strongly Agree	58.33%	21
I Agree	36.11%	13
Neutral	2.78%	1
I Disagree	0.00%	0
I Strongly Disagree	0.00%	0
Other (please specify)	2.78%	1
Total		36

Respondents gave reasons as to why they submit their publications to the repository. The majority of the respondents, 77.78% answered that they do so to improve their scholarly visibility on the World Wide Web. 75% of the respondents said they do so to share their research findings globally. 66.67% responded that they upload materials on the repository so as to increase the webometric ranking of USIU-Africa in the University rankings. 61.11% responded that they upload onto the repository so as to increase citations of their publications and to take advantage of the free publicity of their publications through the repository. 2.78% specified other reasons in their responses by stating that they upload materials in support of Open Access, they also do so because they were requested by the Library, and they also submit their materials for uploading in the repository so as to improve their research profile within the university so as to be legible for any imminent promotions.

Table 6. Reasons of publishing on the USIU-A digital repository.

Answer Choices	Responses
▼ To increase citation of my publications globally	61.11% 22
▼ To Increase the Webometric ranking of USIU-Africa in the University Rankings	66.67% 24
▼ To improve my Scholarly visibility on the World Wide Web	77.78% 28
▼ To take advantage of free publicity of my publications through the repository	61.11% 22
▼ To share my research findings globally	75.00% 27
▼ Other (please specify) Responses	2.78% 1
Total Respondents: 36	

A majority of the respondents were in agreement that the ability of the USIU-Africa repository to make publications searchable on all search engines like Google and Yahoo makes USIU-Africa researcher's output widely visible. 61.11% of the respondents strongly agreed, 36.11% agreed while 2.78% had a neutral feeling on the above hypothesis.

Table 7. Indexing and search ability on search engines gives wide visibility.

Answer Choices	Responses
▼ I Strongly Agree	61.11% 22
▼ I Agree	36.11% 13
▼ Neutral	2.78% 1
▼ I Disagree	0.00% 0
▼ I Strongly Disagree	0.00% 0
▼ Other (please specify) Responses	0.00% 0
Total	36

Still on webometric ranking and general ranking of universities the findings showed that most of the respondents were of the opinion that USIU-Africa has not ranking highly among universities locally and internationally partly because research output by its community had not been made publicly available on the World Wide Web. 50% of the respondents strongly agreed with these while 47.22% of the respondents agreed. None of the respondents

disagreed with the hypothesis but 2.78% of the respondents specified other reasons like lack of many degree programs and minimal research activities in the university.

Table 8. Low university ranking due to lack of repository.

Answer Choices	Responses	
I Strongly Agree	50.00%	18
I Agree	47.22%	17
Neutral	0.00%	0
I Disagree	0.00%	0
I Strongly Disagree	0.00%	0
Other (please specify)	2.78%	1
Responses		
Total		36

Open Access

Regarding the opinion of respondents on Open Access knowing that the USIU-Africa digital repository makes its content available freely online through the global open access initiative, the responses were relative. 91.67% said that they support Open Access since knowledge is for sharing. 50% said that they support Open Access since it gives their publications wide visibility while 13.89% said that they do not support open access since they are afraid of their work being plagiarized. None of the respondents agreed that they do not support open access since they do not want to share their publications online for free.

Table 9. Opinion on Open access

Answer Choices	Responses
I do not Support Open Access since i do not want to share my publications online for free	0.00% 0
I do not support Open Access since i am afraid of my work being plagiarized	13.89% 5
I support Open Access since knowledge is for Sharing	91.67% 33
I support Open Access since it gives my publications wide visibility	50.00% 18
Other (please specify) Responses	0.00% 0
Total Respondents: 36	

Summary

The findings of the research showed that USIU-Africa Digital Repository is enhancing visibility of University Research and faculty output and its bearing on University. Repositories have accounted for 30% of ranking criterion for universities and USIU-Africa has been missing out on high rankings probably because it had not yet implemented avenues of sharing its research output on the public domain. It was also evident that repositories are being valued as platforms of visibility for researchers and faculty. The fact that the USIU-Africa digital repository is indexed on Google and can enable redirection on performing searches gives the respondents confidence in the ability of the repository to improve their scholarly profile on the World Wide Web and even increase citations of their publications.

The study also assessed the impact of repositories on research visibility and the general feeling was that researchers trust repositories to give wide visibility to their research output by virtue of embracing the global Open Access initiative. Finally the study gathered that USIU-Africa is projected to positively impact the University's position in webometric ranking. This is in accordance with response and comparison to local universities which had already implemented repositories which further influenced their high ranking.

Recommendations

External Institutional Repository indicators should help managers to gauge the impact of the repository both at national and international levels and to assess its value as a research tool for end-users (i.e. for academic communities working for other institutions). To measure the external value of a repository we propose the adoption of:

a. Future ability of funding

A successful interoperable and visible repository is one that has the ability to attract funding. The capacity of the IR to attract external funding either from policy makers, foundations, institutions or from private companies at local, national and international level is necessarily an indicator of the visibility and of the reputation attained by the repository as a hub of knowledge. Depending on the mission of the institution they serve and on the profile of their collections some repositories are more likely to attract local and national funding while others may become more active at the international level. The ability of funding will mean that the research output will enormously increase leading to more visibility and web ranking.

b. Participation in national and international projects

The Open Access paradigm is a global paradigm. It has no boundaries and contributes to the world-wide dissemination of the science. After ten years of repository development, projects supporting the self-archiving OA strategy are flourishing both at the national and international level. The degree of repositories' participation in these projects assesses the level of internationalization of an institutional repository and indirectly is a tangible indicator of the IR quality. This will mean that the level of collaborations will increase; with an obvious positive bearing on the ranking.

c. ***Reward for participation***

According to Hahn and Wyatt (2014), many universities are creating IRs and DRs and passing policies to require their faculty to submit their published work to their IR, but many remain largely unaware that IRs exist and very few submit their work to an IR or DR. Many in the teaching fraternity believe that the IR does not add value for them in their career development. Others see depositing their work in one as time-consuming and cumbersome; many do not receive any incentive from their institution or department to do so. In addition to passing policies to mandate deposition in IRs, institutions need to find ways to reward premium output and faculty participation in IR development alongside adding value to their professional growth. Moreover, IRs need to be easy to use, allow faculty to remove their work when sent to external reviewers, and offer other services which the faculty appreciate.

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