JOURNAL OF LIBRARY RESOURCE SHARING
2021, VOL. 30, NOS. 3–5, 101–116
https://doi.org/10.1080/1072303X.2022.2103227

Routledge
Taylor & Francis Group

Check for updates

University Academics' Usage of Open Access Institutional Repositories

Kwame Kodua-Ntim

University of South Africa, Pretoria, South Africa

ABSTRACT
The article explores the usage of Open Access Institutional Repositories in universities. The quantitative research approach and survey design were adopted, and simple random sampling and stratified sampling techniques were employed. A questionnaire was used as a research instrument to gather appropriate data for the study; descriptive and inferential statistics were used as statistical tools to analyze data. The study looked at the level of usage of Open Access Institutional Repositories, reasons for Open Access Institutional Repositories usage, and ways of enhancing usage of Open Access Institutional Repositories in universities. Although the level of Open Access Institutional Repositories usage was low, all the respondents were willing to use it (deposit in and download from Open Access Institutional Repositories). The article recommends strategies for the usage of Open Access Institutional Repositories in universities. This strategy consists of improvements in the user experience and user interfaces, archiving services, advocacy and marketing, Open Access Institutional Repositories policy, and automatic harvesting. Universities will be able to determine which factors affect the usage of such repositories in libraries and will be able to design strategies on how to sustain and manage them.

KEYWORDS
Academics; institutional repositories; libraries; open-access; universities; usage

Introduction

Given the proliferation of the use of Information Communication Technology (ICT) and the need for global access to information in academic libraries, Open Access Institutional Repositories (OAIR) are becoming key in archiving library resources in the 21-century academic libraries. The right Information Communication Technology is required to enable libraries around the world to build Open Access Institutional Repositories for the implementation and capturing of the intellectual assets of their institutions (Ezema & Onyancha, 2016). Open Access Institutional Repositories are a collection of full-text materials that can be accessed

CONTACT Kwame Kodua-Ntim koduantim@gmail.com University of South Africa, Pretoria, South Africa.
© 2022 The Author(s). Published with license by Taylor & Francis Group, LLC
This article was originally published with errors, which have now been corrected in the online version. Please see Correction http://dx.doi.org/10.1080/26915979.2022.2113704.

freely and instantly from an institutional website on the internet. Open Access Institutional Repositories unlike certain specialized repositories contains research from the institution's academics across a wide range of disciplines. Open Access Institutional Repositories enable the broadest possible dissemination of faculty research by providing unrestricted access. The key to the provision of worldwide information and knowledge in Open Access (OA), articles enjoy significantly higher citation rates than traditionally published articles with adequate indexing and search mechanisms in place. Open Access Institutional Repositories increase the institution's visibility and prestige which enhances its reputation of the institution. Notably, Open Access Institutional Repositories resources include courseware, back copies of journal articles, conference papers, technical reports, theses, dissertations, and other institution-specific materials. According to data from the Directory of Open Access Repositories (DOAR) and Registry of Open Access Repositories (ROAR) catalogs, Open Access Institutional Repositories have vastly increased the number of resources deposited worldwide. In comparison to advanced countries such as the United States and the United Kingdom, their use is not yet common in developing countries. The paper investigates the usage of the Open Access Institutional Repositories as an Information Communication Technology tool in university libraries and suggests ways by which the usage of Open Access Institutional Repositories as an information tool can be enhanced.

Statement of the problem

Open Access Institutional Repositories facilitate the recognition of individuals' academic outputs; draw specific attention to the work and academic activities of researchers in the world (Agyen-Gyasi et al., 2010), and provide access to the world's research by ensuring the long-term preservation of large volumes of academic outputs (Ibinaiye et al., 2015). There have been attempts to provide evidence of Africa's contributions to Open Access Institutional Repositories by scholars such as Fox and Hanlon (2015) and Chimah, Ugwoke, and Ogwo (2015). Some universities have recognized the role of Open Access Institutional Repositories in centrally gathering, disseminating, and maintaining the institution's academic records and invested in implementing Open Access Institutional Repositories projects, although some of these universities are not very old and still need to accumulate online visibility and accessibility of collections. Nonetheless, there is a reluctance among academics in Ghana to contribute to such repositories. Most do not submit their research outputs for this purpose as evident from the low number of deposits; analytics also show that there is a low number of

Open Access Institutional Repositories users at libraries. The study seeks to examine the usage of Open Access Institutional Repositories in university libraries in Ghana and is guided by the following research questions:

- What is the level of usage of Open Access Institutional Repositories in university libraries?
- What are the reasons for Open Access Institutional Repositories usage in university libraries?
- What are the strategies for Open Access Institutional Repositories usage in university libraries?

Literature review

Open access

Several concepts and terms are associated with Open Access as its scope continues to evolve. Nevertheless, the best current definition builds on concepts proposed by, among others, the Budapest Open Access Initiative (2002), the Bethesda Statement on Open Access Publishing (2003), the Berlin Declaration on Open Access to Knowledge in Science and Humanities (2003) and the Bangalore Open Access Commitment (2006) (Mgonzo & Yonah, 2014). Increasing interest in Open Access scholarly communication is mainly due to the marked opportunities such initiatives provide for the wider dissemination of research findings, specifically in and among developing countries. Access to scholarly information has traditionally been restricted by subscriptions, licenses, or other fees payable to commercial publishing houses (Bjork, 2017). Open Access is a platform that offers researchers a greater opportunity to disseminate their findings widely without concomitant article processing charges (Van Noorden, 2013). Open Access grants researchers freely available information (Nwagwu & Ojemeni, 2015) as it increasingly breaks down barriers to access which have slowed down the universal availability of data for years. A study by Bjork and Solomon (2012), however, found that research grantors have begun requesting Open Access publishing from their grantees.

Institutional repositories

Institutional Repositories store and preserve institutional resources, including unpublished or gray literature (materials produced outside the traditional commercial publishing distribution channels). By offering critical components that expand access to research and increase competition, they reduce the monopolistic power of journals, thereby providing economic relief to the institutions and libraries supporting them. Institutional

repositories provide the current scholarly publishing model with an immediate and useful component while promoting creativity in a new disaggregated publishing system that is bound to develop and improve over time. According to Adeyemi et al. (2017), Institutional Repositories are an online locus for collecting, preserving, and disseminating (particularly academic or research) intellectual output of institutions in digital form. Institutional Repositories may include other digital assets created in the course of normal academic life, such as administrative records, course notes, or objects of learning. Consequently, Institutional Repositories are institutionally defined; the content may be purely academic, but it may include administrative, teaching, and research material (both published and unpublished); it is cumulative and perpetual, accessible and interoperable and it fosters academic interaction (Adeyemi et al., 2017). Institutional Repositories is one of the strategies universities and libraries use to meet information needs, although it faces several challenges as it evolves.

Usage of Open Access Institutional Repositories in academic libraries

Usage of Open Access Institutional Repositories is a research activity that involves depositing or downloading resources from an institutional repository for teaching, learning, and research (Kodua-Ntim & Fombad, 2020). The immediate use of Open Access Institutional Repositories is that all research contributions collected and stored are unconditionally made available to its staff and all other members affiliated with it. The ability to collect and coordinate the long-term preservation of digital material is presented by using Open Access Institutional Repositories. Using Open Access Institutional Repositories serves as a way of efficiently maintaining and preserving the knowledge of the university (Dlamini & Snyman, 2017). These archives can link local and international research and provide a better picture of the research performance and specialization areas of the country. This will encourage future international cooperation, collaborative studies, plans for funding, and even recruitment and retention of faculty members. Open Access Institutional Repositories is a good marketing tool for universities in addition to providing easy access to educational information. Open Access Institutional Repositories usage optimizes the quality, accessibility, discoverability, and usability of scholarly research outputs at no cost to users. According to Farida et al. (2015), Open Access Institutional Repositories usage focuses on the academic output generated by the researchers of the university, offering a better explanation of its science, educational, social, and economic importance; thus, adding prestige to staff and the institution. Open Access Institutional Repositories communicate the capability and value of the institution by highlighting faculty

and student research and other academic activities (Dlamini & Snyman, 2017). The role of libraries, academics, and researchers in establishing functioning Open Access Institutional Repositories is critical.

Open Access Institutional Repositories as an Information Communication Technology tool in academic libraries

Open Access Institutional Repositories play an important role in maintaining and disseminating academic research outputs in academic libraries. Open Access Institutional Repositories are becoming part of the Information Communication Technology infrastructure and a preferred option for retrieving research output in academic institutions (Sivankalai, 2020). Most university libraries are lacking in terms of technology, software, internet nodes, and bandwidth. Researchers employ a variety of Information Communication Technology products and services to make it easier to find and access information (Onunga, 2021). Training and providing funds for Information Communication Technology infrastructure can be structured to boost the adoption of Information Communication Technology-based products and services. Modern users' information requirements have evolved, they cannot wait for long periods to receive the information they seek. Users want real-time, precise, and pinpointed information with a single click at all times. These changes have brought new difficulties for libraries in terms of improving their level of service through the use of current Information Communication Technology tools. Many university libraries around the world have automated a variety of organizational and technical tasks to improve services to their patrons (Sivankalai, 2020). University libraries have offered a variety of advanced and unique services using these Information Communication Technology tools. Information Communication Technology tools are employed in academic library Open Access Institutional Repositories operations such as downloading, depositing, archiving, publishing, and so on, this has drastically impacted the management of information resources.

Strategies for Open Access Institutional Repositories usage in academic libraries

Open Access Institutional Repositories have the potential to play an important role in research growth, mainly because it enhances access to and exchange of research-based knowledge produced in specific universities. In Kakai's (2018) study, 68% of respondents supported having university mandates requiring researchers to deposit research output into Open Access Institutional Repositories. The University Libraries Consortium

of Uganda (CUUL) universities have incorporated compulsory statements into their Open Access Institutional Repositories policies (Kakai, 2018). Institutions that initiated repositories in the early 2000s did not begin with policies, which affected Open Access implementation.

Intellectual property results in the content of Open Access Institutional Repositories reaching beyond digital printing to include research data, electronic learning, and other materials. Universities as major primary research producers and intellectual and scientific content centers (whether in developed or developing countries) are expected to take an interest in information creation, dissemination, and preservation (Dlamini & Snyman, 2017). The situation is improving with the education and guidance given so far to universities with Open Access policies aiming to provide more material in the repositories. Although mandatory usage is a great and highly recommended, mandates alone would not overcome the psychological reluctance of the researcher to engage in Open Access Institutional Repositories and proposed that this should be done in conjunction with other approaches to enable faculty to use Open Access Institutional Repositories. Kakai (2018) advised that a top-level champion and a management structure that includes relevant advisory committees would contribute to sustained success and also every college board at Makerere University is sensitized to the different statements in the Open Access Institutional Repositories policy. This generates an understanding of how content is supposed to be created in the repository with responsibilities allocated to different categories of stakeholders. A broader digital curation viewpoint is essential concerning Open Access Institutional Repositories usage considering the different collections it attracts as well as sustaining long-term preservation of intellectual work.

Methodology

Positivism was adopted as a paradigm along with the quantitative research approach. Quantitative data were collected and analyzed using a survey design. Here, simple random sampling and stratified sampling were used. Five university libraries in Ghana, from among the country's 92 higher education institutions, were purposively selected because they were the only universities listed on the DOAR (2018). They are the University of Ghana (UG), Kwame Nkrumah University of Science and Technology (KNUST), University of Cape Coast (UCC), University for Development Studies (UDS), and Ashesi University (AU). These libraries were obligated to meet certain operational criteria in respect of infrastructure and resources; the number of qualified and permanent staff; how well-equipped they were and the postgraduate programs offered. The target population

of the study was the 3439 academic staff identified for this phase. The population was deemed to be uniform because the researcher believed the participants were stakeholders who sought to enhance the learning environment through instruction, applied research, scholarly activity, and service, all of which support the mission of a university. The academic staff has various ranks; therefore, the study participants were stratified before being randomly selected so that each rank would be fairly represented. The study used a statistical power analysis software package known as the Sample Size Calculator of Creative Research System to calculate the sample size for each rank (Creative Research Systems, 2012). Out of the 3439 academic staff, 1085 were randomly selected to participate in the study. In the end, 998 respondents completed the questionnaire which had been distributed face to face and by email with a response rate of 91.98%. A data collection technique is determined by the researcher's chosen research design. After carefully examining the research questions, the type of information the researcher wished to obtain, the paradigm and the purpose of the study as well as related studies, the researcher chose a questionnaire as an instrument. The data were presented in frequencies, percentages, mean and standard deviations, using a five-point Likert scale.

Results

The first research question determined the level of usage of Open Access Institutional Repositories among academics. The study revealed that out of the 998 respondents 629 (63%) had not used the university's Open Access Institutional Repositories, and 369 (37%) respondents had used the Open Access Institutional Repositories. Out of 369 respondents who used the Open Access Institutional Repositories, 145 (39.3%) had deposited in the Open Access Institutional Repositories and the remaining 224 (60.7%) had not deposited in the Open Access Institutional Repositories. On the other hand, all respondents were willing to deposit their works in the Open Access Institutional Repositories in the future. The findings are presented in Table 1 below.

Table 1. Descriptive analysis of the use of Open Access Institutional Repositories among respondents.

Have you ever used the university's Open Access Institutional Repositories?	Frequencies	Percentages
No	629	63.0
Yes	369	37.0
Have you ever deposited any of your work in the university's Open Access Institutional Repositories?		
No	224	60.7
Yes	145	39.3

The multinomial logistic regression analysis was used to determine the level of usage of Open Access Institutional Repositories based on universities, rank, gender, age, years of service, and subject area. From the regression analysis, there was no significant difference between the universities regarding the usage of Open Access Institutional Repositories. Concerning academic ranking, there was a significant difference of $p = 0.001$ between the professor position when compared to the lecturer position, but there was no significant difference between the senior lecturer position when compared to the lecturer position. Regarding gender, there was a significant difference of $p = 0.000$ between males and females when it comes to using Open Access Institutional Repositories.

Once again, there was a significant difference between the age group 31–40 with ($p = 0.000$) and the age group 41–50 with ($p = 0.001$) when compared to the age group 51–60 years, but no significant difference when compared to aged 60 years and above. Also, there was a significant difference between the years of service 1–5 with ($p = 0.000$) when compared to 6–10 years, but no significant difference when compared to 11–15, 16–20 and over 21 years. Lastly, Sciences with ($p = 0.000$) and Others with ($p = 0.000$) were statistically different when compared to Humanities, but there was no significant difference when compared to Art and Business. The findings are presented in Table 2 below.

Table 2. Multinomial logistic regression for respondents associated with Open Access Institutional Repositories usage.

Background information		N	Std. error	Sig.	Exp (B)	95% CI for Exp (B)	
						Lower	**Upper**
Universities	UG	260					
	KNUST	250	.182	.778	1.052	.737	1.502
	UCC	231	.185	.960	1.009	.702	1.450
	UDS	216	.188	.883	.973	.673	1.406
	AU	41	.348	.712	1.137	.575	2.250
Rank	Professor	80	.334	.001*	3.082	1.603	5.928
	Senior Lecturer	291	.163	.185	.806	.586	1.109
	Lecturer	627					
Gender	Male	816					
	Female	182	.212	.000*	4.040	2.667	6.119
Age	31–40 years	258	.182	.000*	2.226	1.557	3.182
	41–50 years	257	.165	.001*	.564	.408	.779
	51–60 years	360					
	61 years and above	123	.214	.686	1.091	.716	1.660
Years of service	1–5 years	244	.224	.000*	5.912	3.811	9.171
	6–10 years	331					
	11–15 years	212	.177	.258*	.623	.440	.882
	16–20 years	61	.279	.429	.802	.464	1.385
	Over 21 years	150	.200	.276	1.243	.840	1.839
Subject area	Arts	60	.162	.973	1.006	.733	1.381
	Humanities	696					
	Sciences	151	.183	.000*	1.000	.698	1.432
	Business	60	.270	.973	2.742	1.614	4.659
	Others	31	.240	.000*	.338	.211	.542

*Significant at $p = 0.05$.

The second research question considered the reasons for Open Access Institutional Repositories usage in universities. The general result showed that there are numerous reasons for Open Access Institutional Repositories usage in university libraries. The general mean of means and standard deviation of M = 3.83, SD = .795 showed that the majority of items elicited a positive response from respondents. To confirm some of these responses with statistical evidence, to communicate research results produced a high mean and standard deviation of M = 4.54, SD = .498. This shows that communicating research results is a major reason for using Open Access Institutional Repositories among respondents. Work being disseminated more quickly proved significant with a medium mean and standard deviation of M = 4.12, SD = .728, showing that work being disseminated more quickly among the respondents attributed to Open Access Institutional Repositories usage. Published material is easy to find and was also significant with a medium mean and standard deviation of M = 4.09, SD = .755. This shows that published material is easy to find and can result in Open Access Institutional Repositories usage among respondents. And finally, work will be permanently archived and available with a medium mean and standard deviation of M = 4.03, SD = .799 as a result of using Open Access Institutional Repositories among respondents in the five universities. The findings are presented in Table 3 below.

The last research question explored the strategies for Open Access Institutional Repositories usage in universities. The mean of means and standard deviation of M = 4.14, and SD = .889 show that most items elicited positive responses from respondents. Advocacy was a way of enhancing Open Access Institutional Repositories usage among respondents. The mean and standard deviation of M = 4.42, and SD = .821 give statistical evidence to those results. On the issue of 'Information Communication Technology connectivity and infrastructure', it is evident that it is of benefit to Open Access Institutional Repositories usage among respondents in Ghana. The means and standard deviation (M = 4.40, SD = .736) give a

Table 3. Descriptive analysis of reasons for Open Access Institutional Repositories usage among respondents.

Reasons for usage of Open Access Institutional Repositories	Means	Standard deviation
Communicate research results	4.54	.498
Work is disseminated more quickly	4.12	.728
Published material is easy to find	4.09	.755
Work will be permanently archived and available	4.03	.799
The number of citations for my work gets increased	4.00	.852
Access to work is cheaper for others	3.84	.824
The repository is well-indexed and archived	3.79	.727
IR protects research works from plagiarism	3.33	.939
Chances for promotion are increased	3.30	.972
Can add multimedia data to my work	3.24	.855
Mean of means	3.83	.795

Table 4. Descriptive analysis of strategies for Open Access Institutional Repositories usage among respondents.

Strategies for Open Access Institutional Repositories usage	Means	Standard deviation
Advocacy	4.42	.821
ICT connectivity and infrastructure	4.40	.736
Technological skills	4.24	.955
Copyright issues	4.12	.979
Institutional repository policy	4.03	.837
Incentives	3.97	.906
Funding	3.79	.880
Mean of means	4.14	.889

strong indication of this effect. Again, technological skills for the usage of Open Access Institutional Repositories among respondents, the mean and standard deviation (M = 4.24, SD = .955) give statistical evidence to this fact. The findings are presented in Table 4 below.

Discussion

Level of usage of Open Access Institutional Repositories

Most academic staff had not used the Open Access Institutional Repositories. The findings indicated that there was a low level of Open Access Institutional Repositories usage among academic staff, but all the participants were willing to consider using it. Open Access Institutional Repositories have no justification for existence without the dedication of university libraries to train academics to use them. Academics can master the use of Information Communication Technology systems and other skills through encouragement, motivation, and additional training (Onunga, 2021). The findings revealed that most participants in the senior lecturer and lecturer category were depositing in and downloading from the Open Access Institutional Repositories. The study findings presented evidence that male participants used Open Access Institutional Repositories frequently and therefore, female academic staff needs to be motivated to use Open Access Institutional Repositories. The study findings presented indicated that most academic users were in the age groups of 31–40 and 41–50, this concluded that younger academics were using the Open Access Institutional Repositories. The young generation is more competent in Information Communication Technology tools usage and more supportive because they were born at the onset of computer technology (Sivankalai, 2020). Thus, making them confident in technology usage and could easily use the Open Access Institutional Repositories. On the other hand, lecturers in the age groups 51–60 and over 61 years of age were considered to be decision-makers and may promote the use of Open Access Institutional Repositories in university libraries.

Reasons for Open Access Institutional Repositories usage

The study revealed that communicating research results, work is disseminated more quickly, the published material is easy to find, work will be permanently archived and available, and citations for work get increased among others were the main reasons for Open Access Institutional Repositories usage in university libraries. Communicating research results is critical, to effectively convey findings to the scientific community After data is collected one must know which medium is appropriate. Submitting an abstract, exhibiting a poster, giving an oral presentation, or publishing a peer-reviewed original research report are all traditional options and all these can be archived in an Open Access Institutional Repositories. Open Access Institutional Repositories offer the means for processing, searching, and accessing all forms of research output. Multimedia and teaching materials can be introduced and university libraries should ensure that metadata for all types of materials is provided with high quality and international standards for search and accessibility.

Also, on enhancing the quality of teaching and scholarships, Nagra (2012) states that Open Access Institutional Repositories enable the archiving of institutional research and scholarly activities at one location for easy retrieval. It also enhances the quality of scholarship through sharing and collaboration; which fundamentally creates the basis for new ideas for the dissemination and sharing of teaching and research in universities. The goal of Open Access Institutional Repositories is to act as the institution's intellectual output and communicate the concrete results of these activities internationally. The success of Open Access Institutional Repositories, therefore, depends on contributions from the faculty but not all faculties contribute to it.

Again, Open Access Institutional Repositories are well-indexed, permanently archived, and available and this leads to digital preservation. Digital preservation refers to a series of management activities necessary for ensuring continued access to digital materials for as long as necessary (Okumu, 2015). Open Access Institutional Repositories can also play an important role in sustaining academic research performance (Dlamini & Snyman, 2017). Combined with the tremendous increase in computer power and network capacity, the ease with which digital information can be generated has contributed to the proliferation of a vast amount of digital information. This data overflow has prompted many to deal with the issue of long-term preservation to ensure that the data generated today will withstand technological change and can be retrieved in the future.

Furthermore, the number of citations for research work gets increased. The Research Information Network looked at the web traffic for almost 700 papers published in the hybrid scientific publication Nature Communications 2014. They discovered that open access publications were viewed twice as often as

subscription-only articles over six months. A survey of almost 2,000 publications published in Nature Communications between April 2010 and June 2013 discovered that open-access articles had a median of 11 citations. In comparison, closed publications had a median of seven citations. Again, the work is available online and plagiarism software can verify it when other research works are run, it protects research works against plagiarism.

Nevertheless, the broad view of Open Access Institutional Repositories, as a way of efficiently maintaining and preserving the information of an institution based on intellectual property, results in the content of Open Access Institutional Repositories reaches beyond digital prints to include research data, electronic learning materials, and other materials and other types of institutional intellectual output that are typically not published or maintained elsewhere. Open Access Institutional Repositories provide institutions and faculties with the ability to collect and coordinate the long-term preservation of digital information. Material types may be in any digital format, but the author should be allowed to post them to Open Access Institutional Repositories.

Strategies for Open Access Institutional Repositories usage in universities

The study discovered that advocacy, Information Communication Technology connectivity and infrastructure, technological skills, copyright issues, and institutional repository policy among others were the core strategies to enhance Open Access Institutional Repositories usage in university libraries. Advocacy provides all stakeholders with information and evidence of Open Access Institutional Repositories services and demonstrable impact. Libraries can influence decision-making by providing advice and communicating the benefits of Open Access Institutional Repositories and information services to the university community. Moreover, Information Communication Technology connectivity and infrastructure involve all of the equipment, networks, protocols, and procedures needed in the telecommunications and information technology areas to facilitate Open Access Institutional Repositories usage among many stakeholders. All of these must be made available or funded by universities. Libraries are currently facing significant challenges in developing Open Access Institutional Repositories in their universities and adequate funding is critical for a library's services and programs. Open Access Institutional Repositories statistics can be used as lobbying and strategic decision-making tools to push for financial support.

Again, when depositing into the Open Access Institutional Repositories, it may be important for the author to be able to link the item to other relevant items in complex digital objects so that such a relationship can be expressed between objects. It is critical to know the content, subject, files,

and media type for submission in your Open Access Institutional Repositories are critical. University libraries will need to specify the acceptable document formats and conversion tools, as well as ensure that they are aligned with long-established standards. It is critical to create avenues for training academics on the proper technical skills needed for using Open Access Institutional Repositories. As academic institutions implement Open Access Institutional Repositories, the faculty is often reluctant to contribute, as shown in the Association of Research Libraries (ARL) survey of directors. Schonfeld and Housewright found that less than 30% of university faculties contributed to Open Access Institutional Repositories. Higher education and research systems have debated the use of academic incentives as a motivator for research outputs. Universities should provide a subsidy to the researcher's department, with the researcher receiving a percentage of the funds for that output, or the funds might be deposited into a research account for future study. There are no monetary incentive schemes, which can lead to high academic production.

Experiences indicate that Open Access Institutional Repositories will only work to their full potential when a requirement is in place to fill it. Besides, researchers may react negatively to any indication of coercion and may not respond to an invitation to add research output to the Open Access Institutional Repositories. Also, low deposit rates are often due to a lack of organizational policies and mandatory provisions because of a lack of motivation and low priority for faculty members and researchers. University Libraries are usually in charge of Open Access Institutional Repositories and must develop an institutional repository policy that outlines the technological and long-term approach to dealing with research materials. The sort of document that will be included, as well as the criteria for software selection, should determine the institution's acquisition policy. Also, Academics must be certain that their research and activities will be free of all copyright issues and difficulties, and that their literary outputs will be protected under intellectual property law (copyright Act). This must be stated clearly and emphatically in the university's Open Access Institutional Repositories policy, and all academics must have access to it.

Conclusion and recommendation

This article examined the usage of Open Access Institutional Repositories at universities. Ultimately, the success or failure of Open Access Institutional Repositories rests on its ability to meet the needs of the members of the institution it serves. Open Access Institutional Repositories are not attracting the deposit volume that was originally expected, In the context of scholarly communication, researchers have to respond with a great deal of interest to the services of Open Access Institutional Repositories if

developing countries are to meet the demands of the fourth industrial revolution. It is hoped that academics will come to recognize the need to use Open Access Institutional Repositories.

Open Access Institutional Repositories is a service that allows you to share and save your work. You can utilize Open Access Institutional Repositories to self-archive your pre-and post-refereed manuscripts and other documents in addition to the scholarly journal articles targeted. Open Access Institutional Repositories accepts a wide range of file types and invites you to include supporting materials with your papers (including data, images, audio and video files and many more). Metadata harvesting, Google Scholar, and other indexing services make work deposited in Open Access Institutional Repositories visible to colleagues around the world. Increased visibility leads to more citations and influence. You establish intellectual importance sooner when you post early versions of your work before publication. Although mediated archiving is the most common procedure for depositing content in Ghana, self-archiving is the future of Open Access Institutional Repositories.

To improve the level of usage of Open Access Institutional Repositories in the university libraries, it is recommended that:

- Universities must take forward high priority improvements in the user experience and user interfaces, leveraging relationships with commercial system providers and open-source communities.
- Archiving services: Authors can use this service to assist them to upload their work. Faculty members can submit their work via e-mail. The library staff will subsequently verify for copyright issues, enter the document's information, and publish it on Open Access Institutional Repositories.
- Advocacy and marketing: Open Access Institutional Repositories service must be conducted informally or formally, and through many sources (print, online, in-person). From casual encounters to face-to-face conversations to seminars, workshops, and meetings with academics or department members.
- Open Access Institutional Repositories policy: aids in the enrichment of knowledge content by requiring campus community members to submit scholarly works. It offers the academic librarian status and power in accumulating faculty scholarly materials.
- Automatic harvesting: a few Open Access Institutional Repositories are capable of automatically capturing knowledge by gathering the material themselves; for example, the system collects content from a faculty or department's website on campus. Most authors who have already published their works on the internet will be pleased to share their work with others.

Limitations

The study focuses only on five university libraries with the understanding that they were the only universities featured in the Directory of Open Access Repositories (DOAR); an authoritative international registry that provides data on several registered institutional repositories throughout the world. There were other university libraries with OAIR but were deemed not operational. These libraries' OAIR were not listed in the DOAR, OAIR must meet certain criteria to be listed. It is expected that university libraries with operational OAIR have comparatively well-established libraries.

Areas for further research

1. Using Institutional Repositories to improve access and dissemination of scholarly literature in a cost-effective way.
2. The role of funding as a 'stick' to improve open access adoption.

ORCID

Kwame Kodua-Ntim http://orcid.org/0000-0002-3736-3054

References

Adeyemi, J. A., Appah, H. D., Akinlade, O. O., & Bribena, E. I. (2017). The Nigerian institutional repositories: Opportunities and barriers. *Academia Journal of Educational Research*, *5*(10), 297–305.

Agyen-Gyasi, K., Corletey, A., & Frempong, A. T. (2010). *Open access institutional repositories: Issues and challenges*. Proceedings of the Ghana Library Association AGM, KNUST, 2010, Ghana. Kumasi: GLA, 1–26.

Bjork, B. C. (2017). Gold, green, and black open access. *Learned Publishing*, *30*(2), 173–175.

Bjork, B. C., & Solomon, D. (2012). Open access versus subscription journals: A comparison of scientific impact. *BMC Medicine*, *10*(73), 73.

Chimah, J. N., Ugwoke, N. J., & Ogwo, U. (2015). Implementing Institutional Repositories in Nigerian Universities: Status, Challenges, Prospects, and Roles of Librarians and Libraries. *International Journal of Applied Technologies in Library and Information Management*, *1*(1), 30–42.

Creative Research Systems. (2012). Sample size calculator. https://www.surveysystem.com/sscalc.htm

Directory of Open Access Repositories. (2018). Website. Retrieved April 24, 2018, from https://v2.sherpa.ac.uk/opendoar/

Dlamini, N. N., & Snyman, M. (2017). Institutional repositories in Africa: Obstacles and challenges. *Library Review*, *66*(6/7), 535–548. https://doi.org/10.1108/LR-03-2017-0021

Ezema, I. J., & Onyancha, O. (2016, March). *Status of Africa in the global open access directories: Implications for global visibility of African scholarly research*. Fourth CODESRIA Conference on Electronic Publishing: Open Access Movement and the Future of African Knowledge-Economy. Senegal.

Fox, M., & Hanlon, S. (2015). Barriers to Open Access uptake for researchers in Africa. *Online Information Review, 39*(5), 698–716. http://dx.doi.org/10.1108/OIR-05-2015-0147

Farida, I., Tjakraatmadja, J. H., Firman, A., & Basuki, S. (2015). A conceptual model of Open Access Institutional Repository in Indonesia academic libraries: Viewed from knowledge management perspective. *Library Management*, *36*(1/2), 168–181. https://doi.org/10.1108/LM-03-2014-0038

Ibinaiye, D., Esew, M., Atukwase, T., Carte, S., Lamptey, R. (2015). *Open access institutional repositories: A requirement for academic libraries in the 21st century. A case study of four African universities*. Proceedings of ICADLA 4: International Conference on African Digital Libraries and Archives, Accra, Ghana, May 2015, 1–20.

Kakai, M. (2018). Open access institutional repositories in selected East African universities: Achievements, challenges and the way forward. *SCECSAL Publications*. *1*(12), 205–226.

Kodua-Ntim, K., & Fombad, M. C. (2020). Strategies for the use of open access institutional repositories at universities in Ghana. *Library Management*, *41*(6/7), 515–530. https://doi.org/10.1108/LM-02-2020-0023

Mgonzo, W. J., & Yonah, Z. O. (2014). A review of open access publications in Tanzania. *International Journal of Engineering and Computer Science*, *3*(9), 8159–8165.

Nwagwu, W. E., & Ojemeni, O. (2015). Penetration of Nigerian predatory biomedical open access journals 2007–2012: A bibliometric study. *Learned Publishing*, *28*(1), 23–34. https://doi.org/10.1087/20150105

Okumu, O. D. (2015). *Adoption of institutional repositories in the dissemination of scholarly information in universities in Kenya, regarding the United States International University-Africa* [Doctoral dissertation]. University of Nairobi, Kenya.

Onunga, J. O. (2021). Applications of Information Communication Technology (ICT) in academic libraries: An overview of Turkana University College Library. *Open Journal for Information Technology*, *4*(2), 35–40. https://doi.org/10.32591/coas.ojit.0402.01035o

Nagra, K. A. (2012). Building institutional repositories in the academic libraries. *Community & Junior College Libraries, 18*(3–4), 137–150.

Registry of Open Access Repositories (ROAR). (2018). Website. Retrieved April 24, 2018, from http://roar.eprints.org/

Sivankalai, S. (2020). Awareness of library automation among the professionals in academic libraries at state of Eritrea. *International Journal of Academic Library and Information Science*, *8*(1), 17–21.

Van Noorden, R. (2013). Open access: The true cost of science publishing. *Nature*, *495*(7442), 426–429.

Copyright of Journal of Library Resource Sharing is the property of Taylor & Francis Ltd and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.