

A study of Institutional Repository Development, Policies and Challenges in University Libraries in Nigeria

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Abstract

The purpose of this study is to investigate the availability of various institutional repository policies that guide the development of institutional repositories in university libraries in Nigeria. The study adopted IRs investigation and interview method to collect data on IR policies, challenges from the 19 IRs in Nigeria. The study brought to light some of the IR related policies to guide the implementation and management of contents in institutional repositories. The challenges repository administrators/librarians encountered in the process of developing and implementing IRs in Nigerian universities were also identified. Some of the challenges includes: lack of fund; inadequate facilities; absence of IR related policies; challenge of collecting contents from various contributors; considering copyright issues; lack of mandatory self-archiving policy; lack of interest from contributors to submit to IR. Therefore, the study called for universities intending to establish IR to consider making policy statements related to IRs such as access policy, content policy, submission policy, preservation policy to guide the successful development and management of IRs.

Keywords: Institutional repositories, policies, developing countries, university libraries, content recruiting, Nigeria.

Introduction

Universities as institutions of higher learning places emphasis on research as one of their core functions apart from teaching and community services. An institutional repository could thus be viewed as a digital archive that provides the platform where the universities can archive their intellectual output. IRs could contain theses, dissertations, projects, course notes, seminar papers, conference proceedings, administrative documents, learning objects and other forms of grey literature. One key criterion that is used to measure the quality of a university is the quality and quantity of research output (Anenene, Alegbeleye & Oyewole, 2017). It appears that the daily research outputs from universities such as research papers, theses and dissertations, projects, and other valuable library information resources are not widely communicated to users and researchers all over the world. The situation where the totality of the research output emanating from a particular university cannot be accessed will make it very difficult to evaluate the university intellectual output which can adversely affect the university visibility and ranking. This reveals the need to formulate institutional repository policies such as access policy,

submission policy, digital preservation policy, and copyright policy to guide the development of IRs. Omeluzor (2014) stated that both institutions and contributors benefit from IR. The author reported that institutions benefit from IR as it; serves as tangible indicator of an institution's quality, thus increasing its visibility, prestige, and public value; increases the ranking of an institution both at local and international level; enhances learning, online teaching and research especially in universities; and presents an institution's intellectual capital to a whole lot of scholars.

Institutional repository (IR) has the potential of increasing the visibility, prestige, ranking and public value of researchers and universities. Just few years ago, universities in Nigeria have started to heed to the call made by the National Universities Commission (NUC) in 2007, which encouraged academic libraries to provide access to both print and electronic resources especially those generated within the university in order to increase access to information resources and visibility of their institutions as a measure of prestige and recognition internationally (NUC, 2007). With proper ability for institutions to manage the digital scholarship of what their communities produce (Mulumba et al., 2017). It is sad to note that out of the 202 NUC approved universities in Nigeria as of June 2022, only 19 universities have their presence in OpenDOAR (OpenDOAR, 2022). The Nigerian universities have not made their presence in OpenDOAR simply because they lack visibility, many of them have not created institutional repositories to showcase their research power to the world. For example, in the Centre for World University Ranking (CWUR), in its 2021-2022 rankings of the top 2000 universities, it is sad to note that only 15 universities from Africa made the list of the top 1000.

The worst thing is that no Nigerian university made the list of the top 1000 universities. Among the 15 Africa universities that made the list, 7 are from South Africa (University of Cape Town – 269 position; University of Witwatersrand – 292 position; Stellenbosch University – 435 position; University of KwaZulu-Natal – 483 position; University of Pretoria – 580 position; University of Johannesburg – 676 position; and North-West University – 924 position), 5 universities from Egypt (Cairo University – 546 position; Ain Shams University - 797 position; Mansoura University - 984 position; and Alexandria University - 999 position), 1 each from Morocco (Mahammad V. University – 946 position), Uganda (Makerere University – 934 position), and Tunisia (Tunis EI Manar University – 952 position) (CWUR, 2022). CWUR's rankings grade universities on seven factors. They are: quality of teaching, alumni employment, quality of faculty, research output, quality publications, influence, and citations. The methodology has been enhanced this year, with research now accounting for 70 per cent of the score (CWUR, 2022). This ranking together with the other factors is based on a visible institutional repository.

Despite the potential benefits associated with the development of institutional repositories (IRs) in universities, observations have shown that most universities in Nigeria have not keyed into this laudable innovation. This could be as a result of some factors such as low level of awareness on the part of the management of universities, coupled with lack of fund, and lack of IR policies. Several studies have been conducted relating to IR development in Nigeria, but the existing literature shows that little is said about institutional repository policies. The current study aims to fill the gap by investigating the availability of policy statements to guide the development and management of contents in the IRs, and challenges encountered.

Research Questions

- RQ1. What access policy is available in the IRs in Nigeria?
- RQ2. What submission policy is available in the IRs in Nigeria?
- RQ3. What content policy is available in the IRs in Nigeria?
- RQ4. What digital preservation policy is available in the IRs in Nigeria?
- RQ5. What copyright policy is available in the IRs in Nigeria?

RQ6. What are the challenges repository administrators/librarians encounter in the process of developing and implementing IRs?

Literature review

It has become imperative for university libraries in developing countries like Nigeria to embark on formulation of policies regarding the development of institutional repositories to serve as a platform for the visibility of research outputs from Nigerian universities. In Nigeria, research outputs in form of theses and dissertations are completely buried in individual university libraries to the extent that it is only very few researchers in the university community that are aware of the existence of these materials (Ezema & Ugwu, 2013). Ezema, (2010); Baro and Otiode, (2014) have reported the poor visibility of Nigerian scholarship thereby giving low impact to published works and other valuable information resources coming out from the country. Therefore, development of well-articulated institutional repository policy is the answer to research visibility and accessibility.

According to Grundy (2017) one of the prominent indicators for university ranking is research productivity. That is, it looks at a university's reputation for research excellence among its peers. Another important criterion is the research influence (citations). The research influence indicator looks at university's role in spreading new knowledge and ideas, i.e. the number of times a university's published work is cited by scholars globally. The fruits of research from the formal research programs of conventional universities and academic research institutions in Nigerian universities are under-utilized as the access to the theses and dissertations is very limited to users outside the university (Ezeani & Ezema, 2011; Baro & Otiode, 2014).

Policy statements concerning IRs

With IR content growing rapidly, it is important to look at how policies have been developed to guide the issues like content submission, type of materials to be added to the institutional repository, digital preservation, and copyright issues. The study by Ukwoma and Ngulube (2019) identified the existence of an IR policy to serve as a guide to collection and submission of publications, continuity and sustainability of the IR project as one of the strategies employed to avoid most challenges faced in implementing institutional repositories.

- Submission policy

In so many IRs, there are collection policies put in place to guide what content is to be submitted to the IR. The study by Li and Banach (2011) on 80 Association of Research Libraries (ARL) member institutions in the United States revealed that collection policies mostly include selection criteria (such as the nature and type of the materials that can be submitted), recommended file formats, and procedures such as withdrawal, access, and preservation). As to how content is deposited in the IR, the survey asked about three methods: author self-archiving, by third party on behalf of the author, and by repository staff. Li and Banach's (2011) study revealed that content is deposited in the IR by using all three methods in 92 percent of the surveyed institutions.

- Policy on type of materials to be added to the IR

A wide variety of content may be included in the institutional repositories for the multiplicity of purposes and users depending on the policy. Though some repositories may contain materials that are not scholarly in nature depending on the policy, the main trust of IR is to preserve and make accessible the scholarly publications of an institution. Singeh, Abrizah and Karim (2013) reported that for repositories to be successful and sustainable, they must be populated with scholarly works of

enduring value. Similarly, Abrizah, Noorhidawati and Kiran (2010) have studied the content management policies of Open Access Repositories in Asian universities and found that a huge score of the repositories have an “undefined” policy for content submission and preservation with a meager score of repositories having a defined “recorded content policy,” “recorded submission policy” and “recorded preservation policy.” “Recorded metadata re-use policy” and “recorded full-text data re-use policy” also reflected in a low score of repositories.

- **Digital preservation policy**

Developing preservation policies ought to be the first step toward guaranteeing preservation actions. The strategies for preserving IR content and the decisions about what content requires short, medium, or long-term preservation should be driven by preservation policies. To be able to manage collections effectively and to design and select the appropriate long-term digital preservation solution, there must be an appropriate policy framework in place; this framework should include policies concerned with the preservation of the objects within the collection (Bunakov, et al. 2014).

- **Copyright issues.**

The principle of fair use recognizes the lawful use of copyrighted work without deeming it an infringement, notwithstanding that the copyright holder has not authorized the use (Chuma-Okoro, 2010). Repositories require that legal issues bordering on copyright be cleared. Acquiring the rights from content contributors and copyright holders to distribute the content freely is an integral part of collecting content.

Challenges to development of IRs in developing countries.

In many African countries, the development of institutional repositories have faced serious problems ranging from low internet connectivity; software and hardware challenges; lack of highly skilled personnel; inadequate power supply; low bandwidth; legal copyright laws; poor funding; lack of organizational infrastructure and policies; project sustainability and many others (Ezeani & Ezema, 2011). Salau et al (2020) investigated the performance of electronic theses and dissertations (ETD) initiatives in the repositories of federal government-owned universities due to the poor global visibility of ETDs from Nigeria. The authors found that the ETD initiatives in repositories of Nigerian federal universities have not made remarkable progress as digital libraries based on policy, content and system architecture. The repositories housing the ETDs are also not compliant with the open archive initiative-protocol for metadata harvesting framework. Knowledge of software and other technical issues such as negotiating licensing agreements seem to be tough issues for librarians.

Kamraninia and Abrizah (2010) observed that institutional repositories are not fully developed in some universities because the librarians are often not aware of their roles and are not skilled in the implementation of institutional repositories. Ukwoma and Ngulube (2019) found that having IR policy is one of the means of implementing IRs. A well-articulated institutional repository policy should be the content of the advocacy strategy. The policy statement should include: aims and benefits of institutional repositories to the institute, cost of software and hardware; cost and method of digitization; staff training; robust internet bandwidth; contents of the repositories and means of generating contents; copyrights and intellectual property rights management among others. Jelagat, Odiini and Wamukoya (2021) reported that IRs as currently modelled in Kenya are not efficient in supporting teaching, learning and research in universities because of challenges in content recruitment and the type of content in them. The authors added that, the predominance of grey and non-published literature in IRs over

published and peer reviewed material limit the ability of repositories in supporting teaching, learning and research.

Research Methodology

The study adopted IRs site investigation method. Data collection for the study was in three parts: First, OpenDOAR database (www.opendoar.org/) search was used to identify university libraries that have developed IRs in Nigeria. In the process, 19 IRs developed in university libraries in Nigeria and are registered in OpenDOAR were identified and used for the study. Second, the IRs were searched to identify IR policy statements in each of the university libraries. Third, IR administrators/ institutional repository librarians were contacted to request for interview schedule to elicit data related to the challenges encountered in implementing IRs in Nigeria. The 19 repository administrators/librarians voluntarily agreed to participate in the interview. Due to the present COVID-19 challenges, the interview was conducted online separately with participants using WhatsApp video. The interview question was:

1. Since you are the person in-charge of the IR in your library, can you mention some of the challenges your library encountered in the development of IR in your university.

The qualitative data on the challenges encountered in the development of IRs were grouped according to similar topics and re-arranged to major categories that appeared frequently in the literature.

Data collection for the study started September 2021 and ended January, 2022. The data on availability of policies related to IRs was done using check-list. Some of the IR policies in the various IR sites were presented in the discussion section. Other results are presented in Tables.

Results

Table 1: Institutional repository policies available IRs in Nigeria.

s/ n	Universities	Country	Access policy	Submission policy	Content policy	Preservation	Copyright	IR Address
1	Ahmadu Bello University, Zaria.	Nigeria	√	√	√	√	√	http://kubanni.abu.edu.ng/jspui/
2	Afe Babalola University	Nigeria	□	□	□	□	□	http://eprints.abuad.edu.ng/
3	Covenant University, Ota	Nigeria	√	√	√	√	√	http://eprints.covenantuniversity.edu.ng/
4	Federal University Ndufu Alike-Ikwo	Nigeria	□	□	□	□	□	http://dspace.funai.edu.ng/

5	Elizade University.	Nigeria	☐	☐	☐	☐	☐	http://repository.elizadeuniversity.edu.ng
6	Ebonyi State University	Nigeria	☐	☐	☐	☐	☐	http://ir.ebsu.edu.ng:8080/
7	Federal University Dutsin-ma	Nigeria	☐	☐	☐	☐	☐	http://dspace.fudutsinma.edu.ng/jspui/
8	Federal University Lokoja	Nigeria	☐	☐	☐	☐	☐	http://repository.fulokoja.edu.ng/
9	Federal University Oye Ekiti	Nigeria	☐	☐	☐	☐	☐	http://www.repository.fuoye.edu.ng/
10	Federal University of Technology, Minna	Nigeria	☐	☐	☐	☐	☐	http://dspace.futminna.edu.ng/jspui/
11	Federal University of Technology, Akure	Nigeria	√	☐	√	☐	√	http://dspace.futa.edu.ng:8080/jspui/
12	Landmark University	Nigeria	√	√	√	√	√	http://eprints.lmu.edu.ng/
13	University of Ibadan	Nigeria	☐	☐	☐	☐	☐	http://ir.library.ui.edu.ng/
14	University of Ilorin	Nigeria	☐	☐	☐	☐	☐	http://uilspace.unilorin.edu.ng:8081/jspui
15	University of Jos	Nigeria	☐	☐	☐	☐	☐	http://irepos.unijos.edu.ng/jspui
16	University of Lagos	Nigeria	☐	☐	☐	☐	☐	https://ir.unilag.edu.ng/
17	University of Nigeria Nsukka	Nigeria	☐	☐	☐	☐	☐	http://www.repository.unn.edu.ng
18	Ambrose Alli University Ekpoma	Nigeria	☐	☐	☐	☐	☐	http://154.68.224.61:8080
19	American University of Nigeria (AUN)	Nigeria	☐	☐	☐	☐	☐	http://digitallibrary.aun.edu.ng:8080/xmlui/

Access policy available in IRs in Nigeria.

Out of the 19 IRs investigated in Nigeria, only 4 (21.1%) IRs have defined policy on open access to the institutional resources (Table 1). For example, at the Federal University of Technology, Akure, Nigeria, the access policy states that

Records for theses and dissertations held in the institutional repository will be made available on the computer catalogue to the full text of the theses. Only abstract of theses and dissertations are uploaded. Users are to refer to the Unit of Host for original. Other IR contents such as inaugural lectures, annual lectures etc are uploaded whole and accessible online.

At the Covenant university, Ota, Nigeria, the access policy states that

Anyone may access full items free of charge. Copies of full items generally can be: reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge.

Submission policy available in IRs in Nigeria.

Out of the 19 IRs in Nigeria, only 3 (15.8%) IRs have defined submission policy (Table 1). For example, the Covenant University IR submission policy states that

Items may only be deposited by accredited members of the institution, or their delegated agents. Authors may only submit their own work for archiving. Eligible depositors must deposit full texts of all their publications, although they may delay making them publicly visible to comply with publishers' embargos. The validity and authenticity of the content of submissions is the sole responsibility of the depositor. Items can be deposited at any time, but will not be made publicly visible until any publishers' or funders' embargo period has expired.

At the Ahmadu Bello University, Zaria, Nigeria, the submission policy reads

University document may be deposited by only accredited members of Ahmadu Bello University, Zaria or their delegated agents. Authors may submit their own work for archiving.

Content policy available in some of the IRs.

Results in table 1 revealed that only 4 (21.1%) out of the 19 IRs have defined policy statement on type of content to be collected (Table 1). This shows that majority of the IRs do not have defined content policy. This finding agrees with findings of previous studies in other regions such as Ukwoma and Ngulube (2019); Gul, Bashir and Ganaie, (2020); Alreyaee and Rahman (2014). For example, the study by Gul, Bashir and Ganaie, (2020) reported that the content management policies for the majority of the repositories is poor as all the policies score low in IRs of the South Asian region. Ahmed, Alreyaee and Rahman (2014) have also reported that the majority of the repositories in Asian have an undefined policy for content submission and preservation. The authors also reported that only a small percentage of ETD repositories had defined recorded content policies, recorded submission policies, and recorded preservation policies. Elahi and Mezbah-ul-Islam (2018) have also witnessed a weaker status of open access repositories in Bangladesh in terms of content management policies.

Date collected revealed that, at the Ahmadu Bello University, Zaria, the IR content policy states that:

The Ahmadu Bello University, Zaria Institutional Digital Repository shall hold Theses/Dissertation etc. of postgraduate students of ABU, Zaria university community members' publications including refereed research article at the pre-print and post-print stage of publications, Grey literature, including special collections, Conference Proceedings and seminar papers.

At the Covenant University, Ota, the IR content policy states that

The University holds all types of materials. Deposited items may include: working drafts; submitted versions (as sent to journals for peer-review) accepted versions (author's final peer-reviewed drafts); published versions (publisher-created files).

Preservation policy available in IRs in Nigeria

Results on preservation policy available in the IRs revealed that only 3 (15.8%) out of the 19 IRs have defined preservation policy (Table 1). This shows that majority of the IRs do not have defined preservation policy in Nigeria. This finding agrees with the findings of Roy, Biswas and Mukhopadhyay (2013) that content management policies are prominent in Indian open access institutional repositories with a weaker status in terms of preservation policies. Some examples of preservation policies in IRs in Nigeria are:

At the Covenant University, Ota, the preservation policy states that

Items will be retained indefinitely. Covenant University Repository will try to ensure continued readability and accessibility. Items will be migrated to new file formats where necessary.

At the Ahmadu Bello University, Zaria, the preservation policy states that

Document shall be retained indefinitely. The Repository shall endeavor to ensure continued readability and accessibility through: Migrated to new file formats where necessary; Where possible, provision of software emulations shall be provided to access un-migrated formats.

Copyright policy available in some of the IRs.

Out of the 19 IRs investigated, only 3 (15.8%) IRs have clearly defined copyright policy statement (Table 1). Some copyright policy statements in the IRs in Nigeria are as follows:

At the Ahmadu Bello University, Zaria, the IR copyright policy states that

The author/owner shall grant Ahmadu Bello University the right to preserve and distribute the work via the Repository. Copyright in a work created in the normal course of employment belongs to Ahmadu Bello University unless there is an agreement which states otherwise.

At Covenant University, Ota, Nigeria, the IR copyright policy states that

Items can be deposited at any time, but will not be made publicly visible until any publishers' or funders' embargo period has expired. Any copyright violations are entirely the responsibility of the authors/depositors. If Covenant University Repository receives proof of copyright violation, the relevant item will be removed immediately.

Challenges repository administrators/librarians encountered in the process of developing and implementing IRs.

Repository administrators/librarians were asked to mention the challenges they encountered in the process of implementing IR. The qualitative data was grouped according to similar topics and re-arranged to major categories that appeared frequently in the literature.

Table 2: Challenges of implementing IRs mentioned by repository administrators/librarians.

s/n	Major categories	Frequency	Percentage
1	Lack of fund	19	100%
2	Inadequate facilities	16	84.2%
3	Absence of IR related policies	15	78.9%
4	Challenge of collecting contents from various contributors	12	63.2%
5	Considering copyright issues	10	52.6%
6	Lack of mandatory self-archiving policy	9	47.4%
7	Lack of interest from contributors to submit to IR	8	42.1%

Lack of funds

The qualitative data shows that all the 19 (100%) respondents mentioned lack of fund as an obstacle in implementing institutional repository. The development and management of institutional repository is capital intensive as it requires sound infrastructure, stable internet facilities, and so on. This finding is consistent with the findings of Anyaoku, Nwabueze-Echedom and Baro (2019); Sadiku, Kpakiko and Tsafe (2018); Dlamini and Snyman (2017). For example, Dlamini and Snyman (2017) conducted a study on institutional repositories in Africa and identified inadequate funding or financial support among others factors as the obstacles to development of IRs in African institutions. Sadiku, Kpakiko and Tsafe (2018) also reported on the issues around building and sustaining an institutional digital repository and its corresponding challenges to global visibility in Nigeria. They argued that building and sustaining an institutional digital repository project requires a strong financial backing.

Inadequate facilities

The analysis of the qualitative data revealed that almost all (16: 84.2%) the respondents mentioned inadequate facilities as challenge to implement IR in Nigerian universities. Institutional repositories are information and communication technology driven, therefore, any university that would develop its IR must devote huge sum of money for information and communication technology infrastructure. Unfortunately, most developing countries particularly in Africa are associated with poor information and communication technology development (Dlamini & Snyman, 2017; Anene, Ozor & Baro, 2020). Development of institutional repositories requires dedicated infrastructure such as hardware and software, stable internet facilities, and so on. Evidently, most of the university libraries in Africa are still struggling with stable and high-speed internet connectivity (Sadiku, Kpakiko & Tsafe, 2018; Anene, Ozor & Baro, 2020).

Absence of IR related policies

The qualitative data shows that the majority (15: 78.9%) of the respondents mentioned lack of IR policy. This is an indication that many IRs in Nigeria are developed without consideration of formulating policy statements to guide the IR development. This finding agrees with recent findings by Salau et al (2020) who found that there is no specific policy for the management of electronic theses and dissertations in Nigerian library repositories. Similarly, the study by Bangani (2018) found that

many of the institutional repositories in public universities in South Africa do not have their own open access policy. This absence of policies related to IRs may be why Hawkin, Miles and Maura (2013) called for institutions to make their electronic theses and dissertation policies and information about electronic theses and dissertations available prominently and conveniently on their websites and in their practices.

Challenge of collecting contents from various contributors.

The results in Table 2 also shows that 12 (63.2%) out of the 19 respondents mentioned collecting contents from contributors as a challenge to development of IRs in Nigeria. Collecting contents such as electronic theses and dissertations and journal articles from authors is a major challenge in building IR in Africa (Karanja, 2017; Bosah, Okeji & Baro, 2017; Bangani, 2018; Jelagat, Odini & Wamukoya, 2021). For example, if submission of electronic theses and dissertations is not made mandatory, masters and Ph.D students will not want to submit their work for the purpose of developing IR with the fears that online access to their full-text theses will increase the chances of misuse of their researches. Faculty members need to also be enlightened and encouraged to submit their journal articles to build IRs.

Considering copyright issues

More than half (10: 52.6%) of the respondents mentioned copyright issues as challenges to developing IRs in Nigeria. Studies have reported that the biggest barrier to self-archiving in IRs is concern about copyright (Baro, Tralagba & Ebiagbe, 2018). The greater the concerns about needing publisher permission or the fear of infringing copyright, the less likely faculty are to self-archive. Most of the universities allow authors to upload the author's own post-print version (the final version formatted by the author in a word-processed document that was accepted for publication by the journal following the review and revision process). In many journals, the uploading of post-prints often has to wait for lengthy embargo period, which in the social sciences tends to be 12-18 months (Rathemacher et al., 2016). That is why, the copyright agreements of each individual journal publisher need to be checked when self-archiving, particularly in relation to restrictions around post-print versions. So many publishers do not allow the final, publisher PDF to be posted.

Lack of mandatory self-archiving policy by institutions or funding bodies.

Almost half (9: 47.4%) of the respondents also mentioned absence of mandatory self-archiving policy by institutions or funding bodies is a challenge to the development of IRs in Nigeria. Authors who are aware and interested in open access hoped that the research they have worked so hard to publish is actually reaching readers and making a difference. This can only be achieved through self-archiving in platforms sure as IRs. Research conducted years ago indicated that most authors would comply with a mandate (Swan, 2005). In Covey's (2011) study, those who do not self-archive explained that either they did not know the publisher's policy, did not have time to check the policy, or knew the policy prohibited self-archiving.

Lack of interest from contributors to submit to IR

Regarding interest to submit, 8 (42.1%) out of the 19 respondents mentioned that contributors do not have the interest to submit. Many faculty members are not interested in IR. To this group of faculty members, IR implementations do not meet their needs (Salo, 2008). This calls for advocacy and sensitization efforts to make faculty members know about the importance of IR to the university, and the author.

Conclusion

The study brought to light some of the IR related policies to guide the implementation and management of contents in institutional repositories in Nigeria. Some challenges repository administrators/librarians encounter in the process of developing and implementing IRs in Nigerian universities were also identified. Some of the challenges are: lack of fund; inadequate facilities; absence of IR related policies; challenge of collecting contents from various contributors; considering copyright issues; lack of mandatory self-archiving policy; lack of interest from contributors to submit to IR. Therefore, the study called for universities intending to establish IR to consider making policy statements related to IRs such as access policy, content policy, submission policy, preservation policy to guide the successful development and management of IRs.

The study recommends implementing an OA mandatory policy, strengthening OA education and IR training programmes to improve faculty awareness, devising a reward system to recognize faculty members that were self-archiving, and concerted efforts from the government, research funders and universities on OA also needed.

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