



# Policy Challenges in Establishing Institutional Repository: Business Process Modeling of Universities in Uganda

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## **Abstract**

While many universities are establishing institutional repositories to improve their online presence, there are policy challenges associated with the implementation of this innovation across universities in Uganda. The paper examines policy challenges associated with institutional repositories in 6 universities in Uganda. The study used exploratory method, with simple random stratified snow balling method over google forms. The findings shows that the ownership debate of institutional repositories is far from conclusion in institutions of higher learning with over 50% of respondents asserting that the university as an institution should own all publication and research data. On the other hand, they also believe that authors should be the principal owners of contents of their repositories. Availing publication on repository is also unsettling matter with 89.4% of scholars claiming rights of distribution irrespective of publisher's restriction, while majority of scholars believe the Main Libraries in a university should take responsibility of dissemination, departments and individual authors are equally responsible for dissemination. Opinions are extremely divided on patent rights ownership across universities, faculties and departments. There is need for higher educational institutions to answer these unsettling questions by comprehensive stakeholders' engagement in formulating policies that govern institutional repositories.

**Keywords:** Institutional Repositories; Policies; Higher Educational Institutions; Universities

## **1.0 Introduction**

There is a general movement of university libraries to establish institutional repositories in their respective libraries for purpose of easy management, access, preservation and conservation of information resources. More importantly, universities would like to improve their webometric rankings which has become an important aspect of measuring web-presence of universities. Another dimension is looking at institutional repositories as a means of public accountability for resources from public funds (Armstrong, 2014). The establishment of an institutional repository has become commonplace activity within academic libraries in the recent past,

fueled by the ready availability and relatively simple implementation of a number of open source software platforms and operating systems (Robinson, 2009).

This interest has been fed by a realisation that institutional repositories can not only improve access to research related information, but at the same time they can serve to extend the influence of a library within a university (Carver, 2003). Fueled by the increasing internet scholarship, institutional repositories provides easy self-archiving for authors (Chan et al., 2005). Motivated by these external forces and internal budget crises, academic institutions are building institutional repositories (IR) to capture, disseminate, and preserve the scholarly output of their researchers on a free and interoperable basis in digital format (Genoni, 2004; Hockx-yu, 2006). The movement gained momentum with the release of two open source systems: Eprints, developed by the University of Southampton in late 2000, and MIT's DSpace in 2002. Both systems now have numerous installations (Chan et al., 2005). For the development of an institutional repository in Nigeria and other countries, free and open-source software are commonly used. The most commonly used softwares in the creation of repositories are Dspace; E-print and seldom Fedora, and Greenstone. These softwares makes online visibility and discoverability of institutional repositories possible (Eromosele et al., 2022).

The development of IR confers a changing landscape of work processes for librarians across universities. Libraries worldwide are moving from places to spaces; redesigning their services and information products; adding value to their services; and satisfying the changing information needs of the user community (Eromosele et al., 2022). Little studies have been done to demonstrate the new work process designs and services in universities in Uganda.

## **2.0 Objectives**

1. To determine work processes associated with establishing institutional repository in a university setting in Uganda
2. To determine policy challenges associated with implementation of repository

## **3.0 Literature**

The term institutional repository (IR) refers to research output digitally such as journal articles or research data, e-thesis, e-learning objects, and teaching materials, or any other scholarly work such as theses and dissertations created by the faculty, research staff, and students of an institution, and accessible for end users both within and outside of the institution with few, if any, barriers to access (Crow, 2002; Mezbah-ul-islam, 2014). There is rate at which universities are adopting institutional repository is high (Marsh, 2015), with many in developing countries. Based on the number of institutional repositories established over the past few years, the IR service appears to be quite attractive and compelling to institutions (Foster, Nancy Fried; Gibons, 2005). "A university-based institutional repository [IR] is a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members" (Lynch, 2003)".

### *Promotion of Open Access through Repositories*

A university-based digital asset management system is fast emerging as key component of the current debate on open access (OA) and reform of the scholarly communication process. Some proponents of the open access movement see the IR or open-access archive as the most cost effective and immediate route to providing maximal access to the results of publicly funded research, thereby maximizing the potential research impact of these publications (Chan, 2004).

### *IR Challenges*

While establishing an IR, many challenges arise in the course of implementation. Soohyung Joo identified challenges associated with IR such as limited resources, including insufficient budget and staff, as the major factor preventing the development and/or deployment of services. The sheer amount of data, institutional support for metadata creation and the sensitivity of data (Joo & Kim, 2019) are also a challenge to deal with. Open access for scholarly activity pose concerned about copyright, plagiarism and sustainability. Staffing and funding IR initiatives are important factors in sustaining the curation of scholarship in the digital environment (Sabharwal & Natal, 2017).

### *Process Modelling*

The role of business process models, as models in general, has been considerably changed from describing scenarios (contemplative models) towards actual coordinating activity execution (productive models) and from technical expert privilege to domain expert routine task (Ionita and Estublier, 2011). When driving any major change within an organization, strategy and execution are intrinsic to a project's success. Nevertheless, closing the gap between strategy and execution remains a challenge for many organizations (Iovan and Ionescu, 2011). Business processes are often messy, collaborative efforts that cross teams, departments and systems, making them difficult to manage within a hierarchical structure. Business process management (BPM) fills this gap by redefining an organization according to its end-to-end processes, so opportunities for improvement can be identified and processes streamlined for growth, revenue and transformation (Iovan and Ionescu, 2011).

## **4.0 Methodology**

In this research, *stratified purposive sampling* was used. This is because the research sought investigate staff with substantial experience i.e working experience of more than five years. Data was collected through snow balling method using online Google Forms questionnaire across staff of public and private universities in Uganda, namely; Gulu University, Makerere University, Busitema University, Mbarara University, Uganda Christian University and Uganda Martyrs University. The response were 35 staff across the universities. This is sufficient because all the six universities were represented.

Interviews were conducted with key informers about a repository for documenting the business processes in at Gulu University. The key informers are library staff who participated in institutional repository (IR) policy drafting as well as working with the repository.

Key policy documents associated with institutional repository were examined to establish coverage of work processes and procedures.

## **5.0 Results**

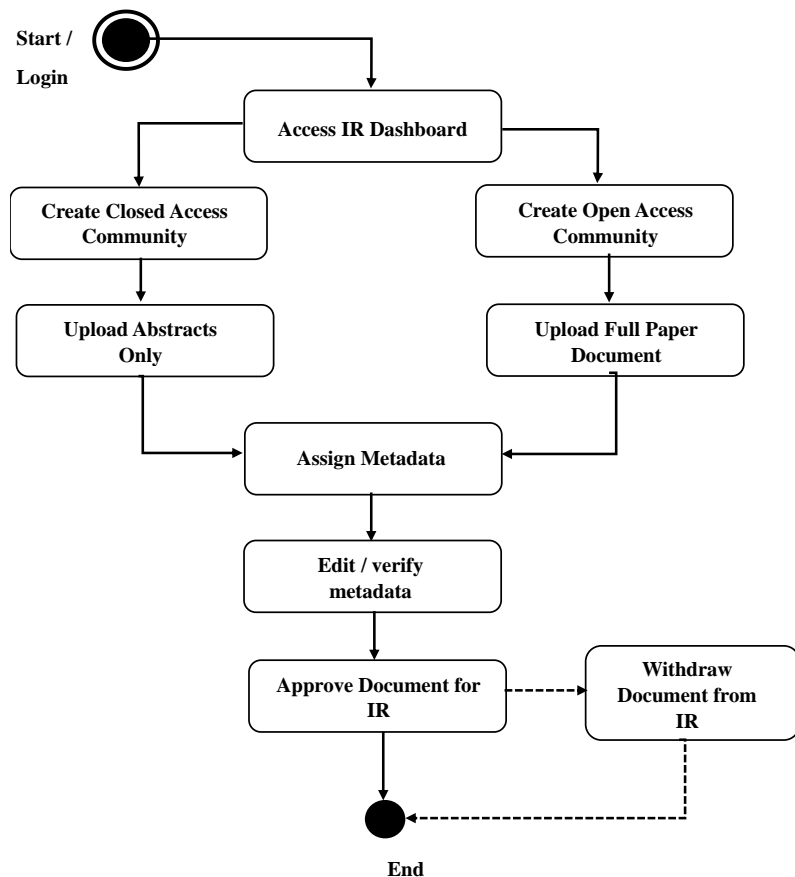
While many of the challenges associated with establishing institutional repositories are enumerated in literature, there are policy issues that needs to be addressed for an effective operation.

### **5.1 The Role of the Library in IR Implementation Process**

The first challenge is to determine the policy line of a university on open access or closed access. This helps to determine the software necessity of the university. In the case of Gulu University Library, the development of IR started with installation of DSpace software as the preferred software. This is because it is open source and therefore, can be modified as per institution's needs. There are a number of available expertise withing the country that can

support trouble shooting challenges associated with it. Secondly, the creation of communities; these are folders for organization of document submissions in the IR. Once documents are received, agreed-upon metadata would be assigned, the abstract uploaded as well as the document.

Thirdly, the approval process begins. Depending on the policy in place, uploading in an ideal situation should be done by individual authors. Often, the account created for them is call “submitters” or “E-people”. However, a designated staff can perform the task for submitters. This again is accordance to the university policy. For quality control of metadata and re-examining copyright issues associated with a given submission, often a designated super-user would perform the task of acceptance or rejection of a submission.



**Figure 1: The role of the library in implementation of IR**

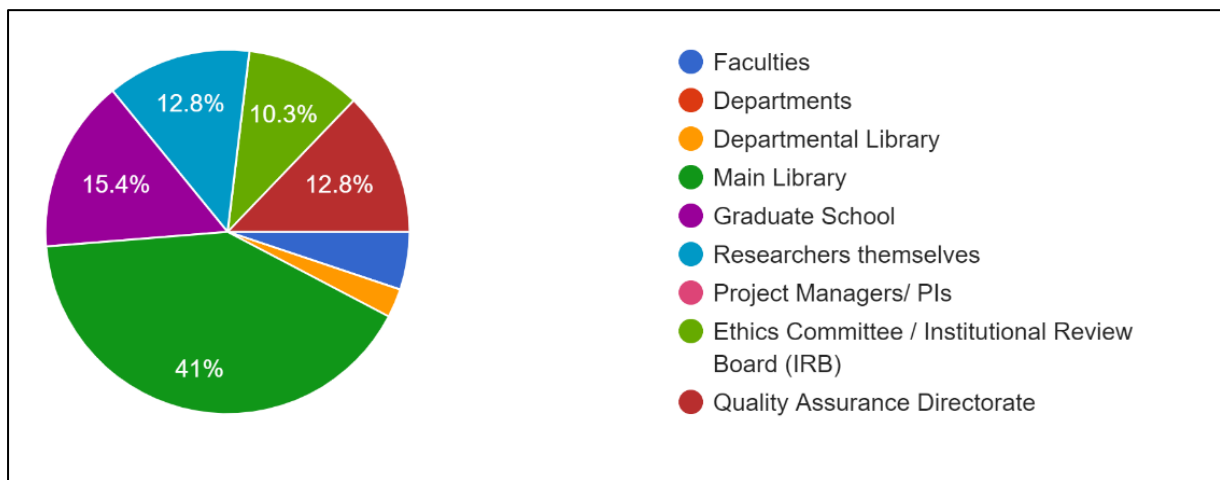
The withdrawal process is initiated ones it is discovered that there is a complain about a document availed through the repository. Complains may be because of sensitivity, copyright issues or request from the researcher, department or management about a specific document. Whenever there is a complain of a closed access journal in which a university staff is an author, access will be restricted and only the metadata be availed through the repository.

### 5.2 Access of Research Articles in the Repositories

In an educational context, a new mission of the university has emerged, supported by the transfer of open access knowledge through Institutional Repositories (IR). It is important to know the motivations and needs of the academic community to promote scientific dissemination using these platforms (Gonzalez-Perez, 2018). However, in this research the

survey shows that opinions are divided on which organ of the university should be responsible to authorize a research publication to be available through the repository.

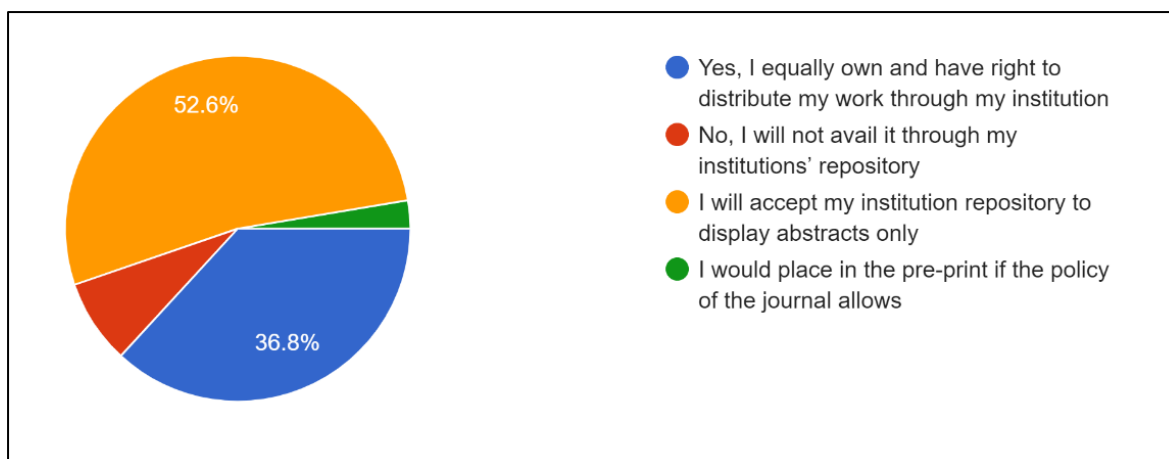
**Figure 2** Shows that majority represented by 41% of respondents in Ugandan universities support that the Main Library should be responsible for authorization of publication to be available through the repository. The respective graduate school was among the highly recommended departments to be responsible for authorization scoring 15.4% of the views of the respondents. 12.8% of respondents believe that access authorization should rest with the Quality Assurance Department and authors/researchers themselves respectively. The emergence of the ethics committee in the functions of a university is important with 10.3% of the respondents recommending that access authorization function should rest with the committee.



**Figure 2: Views of university staff on which organ of the university should be responsible to authorize research publication through the institution repository.**

Further, there are conflicting views about whether articles on closed access journals published by members of a given university should be available over IR without infringing on copyright of the journal that published the article. As we may note, in a mature and fully realized institutional repository will contain the intellectual works of faculty and students – both research and teaching materials – and also documentation of the activities of the institution in the form of records of events, performance and of the on-going intellectual life of the institution (Lynch, 2003; Smith II, 2008).

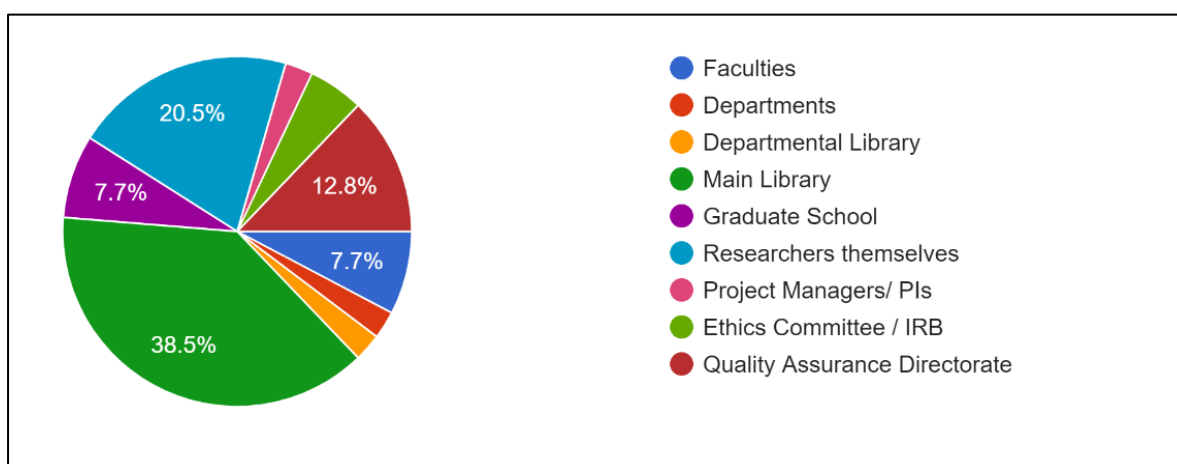
In this research, 52.6% of staff across the universities in Uganda believe that they have authority to authorize published works of a closed access journal which is of their own to be available through their institutional repository. With 36.8% emphasizing that they equally own the work, and the closed access publisher has no right to stop them from distributing their own works especially over the institutional repository of an organization where they work. A few of the respondents however, say they will only avail pre-print versions of their publications to avoid conflicts with journals publishers.



**Figure 3:** Pie chart showing views of university staff about published works that are subject to policies of individual journal / closed access journal being available through the institutional repository.

Repository comes with a lot of new work processes; redundancy with other modes of disseminating information, the learning curve, confusion with copyright, fear of plagiarism and having one's work scooped, associating one's work with inconsistent quality, and whether posting a manuscript constitutes "publishing" (Davis, 2007). In this research, the views of staff across 6 universities in Uganda were explored about. Who / which organ of the university should authorize retention, withdrawal, and restricting access of research articles from staff for availability through the institutional repository.

**Figure 4** that 38.5% of the respondents recommend the Main Library of their respective universities to be in charge of access control. While 20.5% of the response recommend that only the researchers should be responsible for access control. 12.8% of the responses place their trust in Quality Assurance Department to be in charge of access control. Further, some staff recommend Graduate School as well as faculties to be in charge of access control of their article availability through the repository.



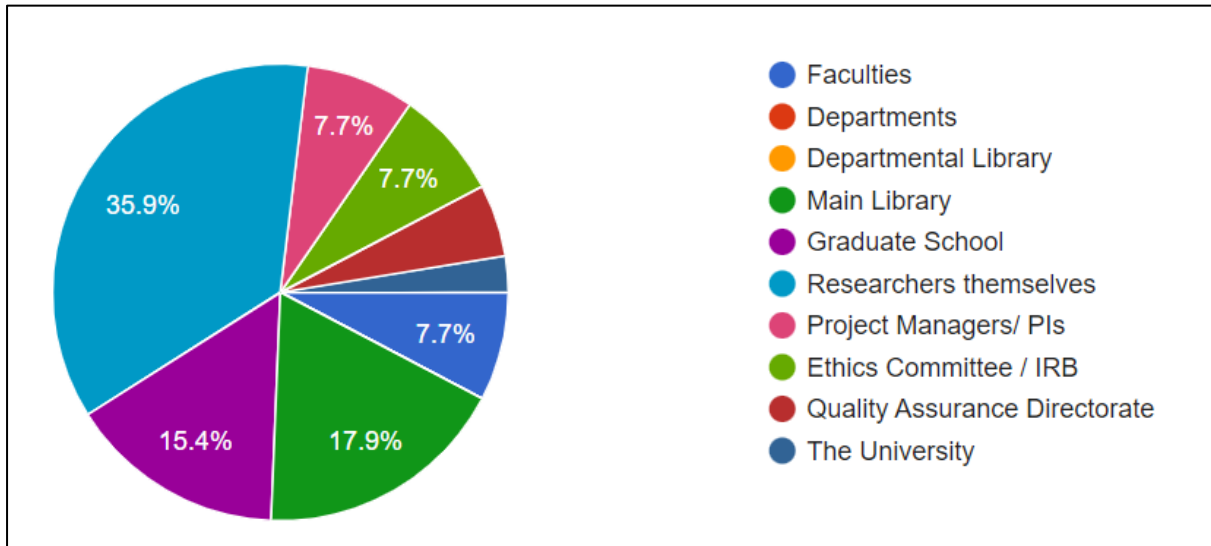
**Figure 4:** University staff views on who/which organ of the university should authorize retention, withdrawal, restriction of access of research publication available through the IR.

### 5.3 Patent Ownership in the Repository

The repository provides opportunity for not only research, but also innovations to be available through it. Whereas the journal publishers especially closed access journals claim copyright



ownership and even share benefits accrued from sale of research publication of authors, institutional repositories provide no such encumbrance to innovators. In this research, we explored views of university staff about who/which organ of the university should own patent rights, find potential funders, commercialize, provide legal service, share benefits of innovations availed through the repositories.



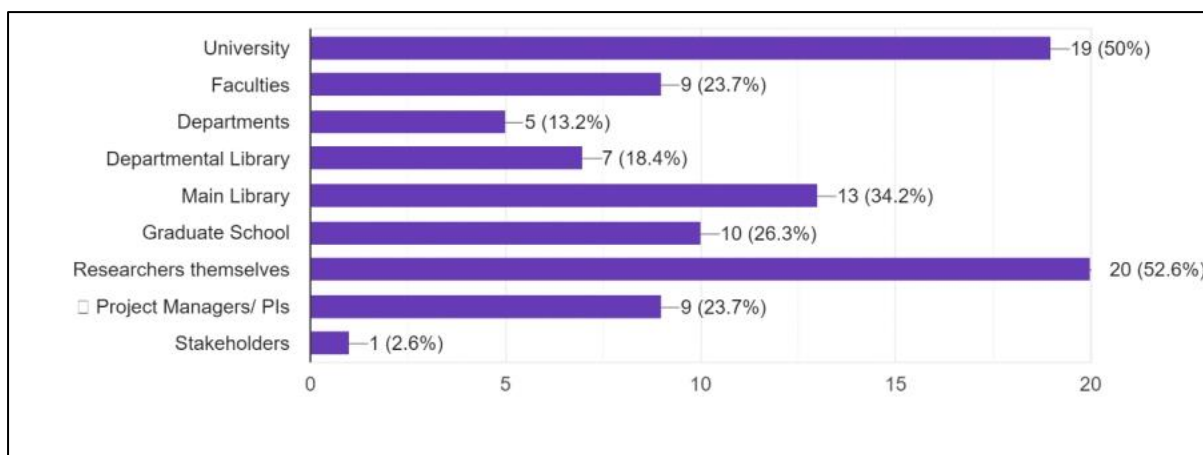
**Figure 5: Views of university staff about who/which organ of the university should own patent rights, find potential funders, commercialize, provide legal service, share benefits of innovations availed through the repositories.**

As we can observe, opinions are divided with 35.9% of responses are in favor of researchers owning patent rights, 15.4% in favor of graduate school, 17.9% in favor of the Main Library, and 7.7% of the responses in favor of project managers, principal investigators, and ethics committee respectively.

#### 5.4 Ownership of Research Data

The time which the researcher owns research data because of the fact that he/she generated the research data appears not to be the case in the contemporary research today. Data has become the new currency of both the global economy and the scholarly community (OECD, 2017). Thus, scientific, research, and scholarly communities around the globe are endeavouring for sound research data management and sharing practices (Downs and Li 2021).

In this survey **Figure 6**, the staff were asked; who they think should own research data? It was established that the opinions of the scholars equally varies across the spectrum of the functional units of the university, researchers and funders. Out of the 38 responses received, 50% believe that the university should own research data. And 9 respondents who comprised 23.7% believe the faculties should take ownership, with 13.2% believe departments, 18.4% departmental libraries, 34.2% attributes ownership to the main libraries, 26.3% recommends graduate school, 52.6% recommend ownership be left to individual researchers, 23.7% recommend that the research data be owned by project leaders and principal investigators, while 2.6% believe other stakeholders like the funders should own research data.



**Figure 6: Opinion survey on who should own research data in a university setting**

As observed, there is therefore, no consensus on who should own research data however, significant considerations were recommended to the university and the individual researchers.

## 6.0 Discussion

Work Process Modelling of IR processes are not very well documented in Universities in Uganda. For the case of Gulu University, some documentation is based on approved policy, but leaves out crucial issues such as access, preservation, authorization, abstracting, indexing, ownership of contents, quality assurance and staffing.

*Access Policy Challenges:* For some time now, the building of IR has been branded for the dissemination of research findings of scholars all over the world (Ezema, 2011). Establishing a repository means, all her contents can be available online and world-wide. A university should have clear policy on open access in-order not to disadvantage her scholars in a situation where a scholar has done novel research resulting to patentable innovation which would results to economic benefits. Availing such research and innovation over the repository is likely lead to leakage of trade secret, piracy, plagiarism and therefore, financial loss to the innovator.

*Preservation Challenges:* Repositories provides new interesting opportunities for digital preservation of documents (Mapulanga, 2013). Digital preservation is a complex process and there are still many unsolved issues which make it a challenging task for institutional repositories. However, the wide deployment of institutional repositories also provides new opportunities for digital preservation. Much could be done to consider digital preservation from the outset, to involve the authors and to embed digital preservation into repository workflow, which will ease the later preservation tasks (Hockx-yu, 2006).

*Acceptance and Rejection of Articles on IR:* The national and internal copyright laws continue to be in force despite development of IR across the world (Nath *et al.*, 2008). There should be a clear policy of acceptance and rejection of scholarly works in open and closed access journals respectively. This will ensure that a university repository does not violates the copyright policies of individual journals whose authors may be members of an institution.

*Metadata Management:* While traditional print media has known metadata standards guided by Anglo-American Cataloging Rules (AACR), there are no such standards for document deposits in the institutional repositories. Each individual institution should design mechanism agreeable between the professional staff on how their local standards should be like. Such local metadata standards can be in-cooperated to become institutional policy for operation of the repository.



*Abstracting and Indexing:* As we can observe, the advantages of IR are numerous, especially ease of access to information. However, as institutions maximize these leverages, the policies should succinctly explore what type of documents to be shared over the repositories. For instance, council documents, reports and special information that found their ways in the IR for purposes of preservation and conservation may require abstracts or indexes only. These should be detailed keenly in guiding policy of IR.

*Ownership of Contents:* In Ugandan Universities, as we can observe, opinions are divided with 35.9% of responses are in favor of researchers owning patent rights, 15.4% in favor of graduate school, 17.9% in favor of the Main Library, and 7.7% of the responses in favor of project managers, principal investigators, and ethics committee respectively.

*Quality Assurance:* Whereas most universities have fully fledged Quality Assurance Departments in respective universities, there are many technical and non-technical aspects of IR that need attention through corresponding policies. For instance; redundancy with other modes of disseminating information, the learning curve, confusion with copyright, fear of plagiarism and having one's work scooped, associating one's work with inconsistent quality, and whether posting a manuscript constitutes "publishing".

*Staffing:* Institutional repository is a new trend that has hardly made their ways into curriculum of schools for library science in Uganda. Many library staff therefore learn on the job. It is necessary for librarians to be conversant with digital collection management and open archive information system management skills of their institutional repository. Library staff and authors need to be trained to prepare documents in an acceptable format and to submit content to the repository using a simple interface (Chan et al., 2005).

## **7.0 Conclusion**

The paper established that work processes for IR are not well documented in the case of Gulu University. Some documentation is based on approved policy, but leaves out crucial issues such as access, preservation, authorization, abstracting, indexing, ownership of contents, quality assurance and staffing.

Although views on IR access are divided widely among scholars, majority of university staff, upto 41% of scholars in Ugandan universities support that the Main Library should be responsible for authorization of publication to be available through the repository. While others need that role to be executed by graduate schools as well as departments that originates the documents. In this research, 52.6% of staff across the universities in Uganda believe that they have authority to authorize published works of a closed access journal which is of their own to be available through their institutional repository.

Scholar's views are most divided when it comes to ownership of contents of the repository. As we can observe, opinions are divided with 35.9% of responses in favor of researchers owning patent rights, 15.4% in favor of graduate school, 17.9% in favor of the Main Library, and 7.7% of the responses in favor of project managers, principal investigators, and ethics committee respectively.

When it comes to research data management, staff did not agree on a single department being responsible. There is no consensus on who should own research data however, significant considerations were recommended to the university and the individual researchers to take control of research data.

## 8.0 Declaration

### 8.1 Funding

Funding for this research was provided by Gulu University.

### 8.2 Conflict of Interest

No potential conflict of interest was reported by the authors.

### 8.3 Availability of Data

Research data available for sharing on google forms

### 8.4 Author's Contributions

Ongaya, K. drafted the paper, Oyo, B. read through the draft and made corrections, Bagarukayo, E. Analyzed the figures, Okello-Owiny, D. made final editing.

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