

Demystifying teaching, learning and research through institutional repositories in higher learning institutions in Kenya

Higher
learning
institutions in
Kenya

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Received 30 June 2020
Revised 24 February 2021
Accepted 26 February 2021

Abstract

Purpose – The purpose of this paper is to provide an analysis of ways in which teaching, learning and research can be demystified in higher institutions of learning (HILs). Over the last decade, HILs around the world have faced various transformations to adapt to new opportunities for knowledge dissemination and utilization. Many benefits are gained from implementation of the platform including visibility, status and increased reputation. Despite the high uptake of institutional repositories (IRs) to guide teaching, learning and research of higher institutions learning's digital resources more effectively, little has been written on how IRs can be used for effective teaching, learning and research in higher institutions of learning.

Design/methodology/approach – Using analytical method, this paper analysed and presented various thematic issues on IRs in relation to its efficacy, while proposing solutions for its sustainability.

Findings – The paper found that most universities have embraced IRs as an option for increasing their visibility, status and researchers' relevance in the knowledge world. It is the conclusion of the study that IRs are currently recognized as an essential infrastructure to respond to the higher institutions of learning challenges in the digital world.

Practical implications – This paper provides higher institutions of learning an opportunity to prepare their IRs to demystify teaching, learning and research. Since IRs will make it possible to access variety of information at any time whenever required.

Social implications – Knowledge accessibility and utilization bring about social change in the society.

Originality/value – Little has been documented on how IRs can be used for effective teaching, learning and research in HILs. This paper provides an analysis of ways in which teaching, learning and research can be demystified in these institutions. Thus, it contributes new knowledge on demystifying teaching, learning and research through IRs in HILs.

Keywords Effectiveness, Higher institutions of learning, Institutional repositories

Paper type Research paper

1. Introduction

Over the last decade, higher institutions of learning (HILs) around the world have undergone various transformations especially on knowledge generation and dissemination. These institutions have increasingly adopted institutional repository (IR) for teaching, learning and research (Sharif, 2013). IR is a digital collection of intellectual products initiated by HILs and are accessible to end-users both within and outside of their institution (Farhana *et al.*, 2010). It offers a more stable environment for journals' easy accessibility and useable (McIntyre *et al.*, 2013). Crow *et al.* (2012) reiterated the need to develop metrics to evaluate the effectiveness and value of IRs. In Kenya, the right to information is enshrined in the Kenya Constitution of 2010 Bill of Rights Article 35 where the state has the duty and responsibility to publish and publicize any important information affecting the nation (Koutras and Bottis, 2013). By storing in digital form of academic materials, such as dissertations and research articles, IRs help to disseminate materials that would otherwise have existed only in print format and secreted in basements. Vrana (2011) pointed out the diverse content of IRs represents rich



resources for teaching, learning and research, which could be pertinent in universities in fostering students' research, teaching and learning. Despite this recommendation, however, little focus has been on ascertaining how teaching learning and research are demystified by IRs in higher learning institutions. This is the focus of this paper.

The global focus on generating knowledge and innovation to drive economic and social progress has created challenges for universities and other equivalent institutions. [Frieda and Yule \(2019\)](#) note that the technological advances in recent years have made it possible to think and package significant knowledge of the human population in a digital form for reference and utilization. In many countries of the world, government funding and policy guidelines are placing pressure on universities to increase their research impact. An important element in the equation is improving the quality of graduate students, especially those who may progress to become early career researchers ([McCord, 2003](#)). Many academic HILs including those teaching and researching on law ([Moruf and Adeleke, 2018](#)), are building digital IRs for easy and timely access to information resources.

Institutional repositories will make it possible to access information over thousands of miles away through the internet. This will have huge potential for collaboration and workflow accomplishment which cannot be ignored by researchers ([Nakitare and Chege, 2017](#)). In HILs learning, management systems have either provided their own internal storage capacity or have offered a third-party solution for storing learning objects. However, neither solution has been particularly effective in promoting discoverability or reuse. As [Anenene et al. \(2017\)](#) argue, there is a push to have publicly funded research available through open access (OA). It is OA which has driven the creation of IRs.

The model perspective, intellectual output is freely made available for others to access and in some cases for re-use. [Crow \(2002\)](#) avers that the use of OA model reduces costs and increases access. It is typically considered to be the most effective as a result of an increasing number of repositories that allow authors to archive their work. This actually increases visibility of the institution and facilitate scholarly information and knowledge management communication. [Jones et al. \(2006\)](#) reveal that repositories are important for universities in helping to manage and capture intellectual assets as a part of their information strategy.

A study conducted by [Nykanen \(2011\)](#) in USA universities on determining faculty members using the repository revealed that senior researchers or academics demonstrated a general low level of knowledge and motivation to use the IR. Another IR study on the South African research community by [Fullard \(2007\)](#), on awareness, concerns and research studies in South Africa found that within the prevailing framework, there was little prospect that academics would choose to deposit scholarly materials in the IR. With the current situation at the University of Namibia's IR, its impact was not clear from its inception in 2010.

For HILs in this case universities, IRs provide link to other repositories and also provide platform for processing data to address knowledge challenges ([Lynch, 2003](#)), while offering university members the ability to management and dissemination digital materials ([Adeyemi et al., 2017](#)). [Campbell-Meier \(2011\)](#) and [Ammarukleart \(2017\)](#) aver that IRs have significantly increased academic communication and software development. However, in Kenya, IRs are still under development and are not yet at the level at which one can fully utilize them.

In the country, the number of IRs listed in the Directory of Open Access Institutional Repositories has risen from two in 2009 to twelve in 2014 and currently 22. Despite this improvement however, the demystification of the created IRs in supporting teaching, learning and research in universities particularly has not been adequately documented and justified. It is noted that constraints such as adoption of new technologies, funding and the necessity to improve governance are considered as major stumbling block. Only a few universities in Kenya have fully embraced IR. These include, Moi University, Masinde Muliro University of Science and Technology, Maseno University and most recently, Kisii University.

[Achieng \(2016\)](#) analysed the usage of digital repositories by various groups at the University of Nairobi (UoN) from the perspective of effectiveness, efficiency, satisfaction and awareness. The researcher found that students lacked awareness and information about IRs and infrequently utilised them. [Salo \(2008\)](#) argues that librarians may be ineffective in enhancing IRs as OA tools because the collection-development model of a repository is completely alien to librarians, who are used to choosing from already vetted book and journal lists provided by traditional publishers.

[Tenopir et al. \(2013\)](#) highlighted the emerging role academic librarians' play enhancing the effectiveness of IR through data management and creation of metadata for research reports. The authors argue that librarians need to move quickly and learn new information technologies to affect IR. However, [Mutula \(2012\)](#) finds that, most librarians do not understand how or why they should promote IRs, and when required to archive their own content, they shy away. As a result of little deposition, repository managers fear not meeting lofty performance standards, hence, starved of resources and refuse to enhance the capacity of potential users. On academic authors, [Richard \(2002\)](#) reports that they opt out of IR since they rarely receive direct compensation for the research articles they publish online. From the forgoing, the digitization of materials and setting up of IRs face constraints for their sustainability ([Mapulanga, 2012](#)). In this paper, the researcher presents how teaching, learning and research through IRs is critical to students' achievement in knowledge acquisition and mastery, and thus needs to be demystified.

1.1 Statement of the problem

IRs have received considerable attention from learners and scholars, across disciplines and around the globe. This paper uses a critical literature review to provide an analysis of ways in which teaching, learning and research can be demystified in these institutions. Despite the high uptake of IRs to guide teaching, learning and research of higher learning's digital resources more effectively, little has been documented on how IRs can be used for effective teaching, learning and research in HILs. In this regard, few of these institutions have adopted and applied it. This paper provides an analysis of ways in which teaching, learning and research can be demystified for adoption.

2. Methodology

This paper uses a systematic literature review and analytical method, to present various thematic issues on IRs in relation to teaching, learning and research, while proposing solutions for its sustainability. The paper also analyses how IRs have become a critical tool for learning, research and innovations in HILs. Despite the high uptake of IRs to guide teaching, learning and research of higher learning's digital resources more effectively, little has been written on how IRs can be used for effective teaching, learning and research in higher learning institutions.

3. Findings and discussions

3.1 The extent of development of IRs by higher learning institutions

Freedom to access and use of information is a human right as enshrined in the [Berlin Declaration \(2003\)](#) on OA to knowledge which states that, authors should allow all users free, irrevocable, worldwide, right of access to information. The United Nation General Assembly in Resolution 59 (1) recognized the importance of this right and resolved that freedom of information is a fundamental human right, which is an implication that people have right to access information. IRs assist in building research network, visibility and promote institution research. The current system of scholarly publishing is undergoing pressure from the

dramatic increase in journal prices, explosion in the volume of information and increasing cost of storing printed material (Vrana, 2011).

Lippincott (2005) asserts that in the USA, over 80% of universities have put their own IR systems in operation, whereas 12% of the remaining universities are planning to construct IRs. Similarly in Africa, South African University libraries are currently the leaders in Africa on enhanced adequately developed IRs. The evidence is supported by Van Deventer and Piennar (2008) who emphasized that currently Pretoria University tops in producing and depositing scholarly materials in the IR.

In Asia, India leads with 16 functional IRs developed by research and academic institutions of national and international importance such as Indian Institute of Science and Indian Institute of Management. These repositories accept scholarly publications from any professional or researcher whose interest is the respective field (Sawant, 2012).

In Japan, the Ministry of Education, Culture, Sports, Science and Technology encouraged Japanese university libraries to develop IRs to promote sharing of knowledge throughout Japan and internationally (Cullen and Nagata, 2008). In Pakistan, librarians were not prepared to embrace changes forced by new technologies because of little knowledge of benefits it would bring forth; thus, the country lags behind in the use of IRs.

In Africa, South Africa universities lead amongst African universities in the development of IRs growing from the total of 14 registered and active repositories in 2009 to the current 54 repositories out of 100 repositories in Africa (OpenDOAR, 2014). In Botswana the adoption and use of open source systems in both public and private organizations is high (Mutula, 2012). Successful implementation of library automation and IRs is attributed to expansive and extensive involvement of academic and research departments at all levels of automation and capacity building. Adekunle *et al.* (2007) observed that in Nigeria, universities have positive attitude towards the use and implementation of OA system because they have skills, knowledge and understand advantages of information and communications technology.

Stanton and Liew (2012) examined doctoral students' awareness and attitudes towards OA publication, IRs and mandatory submission of their theses to the IR in Newland. The study found that only a small number of students used repositories and open journals in their own research, despite the existence of research services like Kiwi Research Information Service, EthOS and Australasian Digital Theses. Nevertheless, almost every student used Google Scholar, leading the study to conclude that the students could inadvertently be accessing OA materials from IRs.

In an exploratory study, Jean *et al.* (2011), interviewed 20 end-users on their perceptions and experiences using IRs. The study found that users hoped to find journal articles, conference papers, theses and dissertations, raw data, lectures, presentations and newsletters in IRs. They also wanted to access course content for use in their work, access raw data for use in research projects, and identify colleagues and research students interested in collaboration. Others wanted to use IRs to find out if particular research studies were ongoing at related universities, access content they could use as models of their work and for fun and general enjoyment. The study concluded that IRs still lack visibility and transparency.

Bangani (2018), Lynch (2016), Lynch (2003), Crow (2002) and Harnad (1995) have bemoaned the fact that publishers who are usually business people control the process of scholarly publishing rather than academics themselves. Crow (2002) argues that although the academy provides the bulk of direct labour involved in scholarly publishing, it also bears much of the cost through subscription fees. In addition, with the evolution of digital publishing and distribution over the Internet, the cost of print production and distribution has declined and yet publishers have not reduced the price of journals commensurately.

In Nigeria, Ukwoma and Dike (2017) found that academic staff members and students can use IRs to access articles and other information resources for research and learning. IRs can supplement and increase the knowledge that scholars have in the subject area of interest.

Academic staff members and students can download freely published articles from the repositories and review the literature to identify gaps in knowledge or new findings. Individually, academics could also use IRs to archive their own published works. This will help to increase their visibility, increase their global networks and allow for collaboration with other academics all over the world.

3.2 Institutional repositories in higher learning institutions in Kenya

IRs provide different scholarly materials depending on interests of the universities or research institutions which encompass materials such as peer reviewed journal articles, sometimes free permitting users to access freely, print or link to the full texts of materials (Frieda and Yule, 2019). Studies conducted in Kenya indicate that, development and implementation of IRs is increasingly gaining momentum in institutions of higher learning. Milimo (2012) points out that research output should be available, accessible and applicable as the only way to impact on the lives of the millions of Kenyans, and contribute to global innovation systems. In particular, one of the pathways being used to enhance the visibility and accessibility of content is through OA to information resources stored in digital IRs.

Xia (2009) suggests that libraries should consider the degree of sustainability and scalability of library-based published journal as these will help substantiate the capacity of journal hosting venture to survive and grow in longer term. Crow *et al.* (2012), on the other hand, proposed that library publishing activities should be assessed and evaluated on value proposition of the publishing venture and the income streams set up to generate income from the publishing service.

Correspondingly, Makori (2009) avers that academic libraries in Kenya need to integrate technological solutions into mainstream information products and services such as integrated information systems, digital information systems, computing, local area and wide area networks. Several initiatives are underway in universities and research organizations although institutions face several challenges such as lack of motivation and incentives, absence of institutional policies and strategies to support enhancement for IRs. Several institutions of higher learning in Kenya including UoN, Strathmore University, Kenyatta University, Pwani University and Jomo Kenyatta University of Agriculture and Technology have established IRs (OpenDOAR, 2014).

3.3 Benefits of institutional repositories to higher learning institutions

In institutions of higher learning, IRs are very crucial in academic institutions in increasing visibility and prestige of the university. IRs can be used to support marketing activities to attract high-quality staff members and funding from potential funding organizations. Ashby *et al.* (2011) carried out a study at Loughborough University on researchers and academic perception on IR. The study focussed on how researchers and academics respond to the usage of IR in order to best support teaching, learning and research. The study revealed that academic differences in perceptions of the IR where 40% of how academics and researchers perceived the IR as being unimportant or could not assess its level of importance.

Makori *et al.* (2015) aver that the repository can raise the visibility of research, help preserve the intellectual output of the institution and particularly for public institutions, can be an effective way to share research with their constituencies. In the information environment, repositories are seen as one way to address some of the economic challenges of obtaining access to scholarly works. As subscription costs increase at rates higher than inflation, and libraries and information systems face continuing budget reductions and challenges, OA repositories help provide access to research findings. The challenge, however, is still how to identify articles that are available full-text from the IR (Sawant, 2012). These include benefits to the researcher, institution and individual disciplines. Academic libraries

benefit from being involved in IR initiatives, and there are implications for scholarly communication.

In South Africa Macha and De Jager (2011) identified various factors to be considered when setting up IRs. This included; identifying important role players, addressing issues of resources, evaluating software, formulating policies for the institutional repository, restructuring the library to accommodate change and licencing. Campbell-Meier (2011) pointed out that, repository implementers in various case studies mainly involved librarians.

For repositories to survive and become more than just holding places for local, institutional research, systems need to be developed that will help link or network individual repositories. Exchanging information between institutional, subject and funder repositories can lead to a systematic view of an integrated network of research (Darby *et al.*, 2008). The changes needed in approach, standards and workflows to make repositories successful will likely be evolutionary rather than revolutionary as repositories reach critical mass and institutions determine how best to integrate a repository into their services.

Overall, IRs include more open scholarship and demonstrate cultural diversity of institutions through the collections. Nabe (2010) avers that IRs break free the traditional boundaries of scholarly information access, which is common in universities, provides easy access to information, enhances visibility and the ability to cite publications and also underscores institution's research growth.

For instance, the UoN's IRs made its intellectual output visible both nationally and internationally and as a result, the institution has been ranked as one of the best performing universities in Africa and the best in Kenya (Webometrics Ranking, 2014). The more downloads, it becomes evident that the IR is being used effectively. To the researchers whose papers are downloaded, it may mean that they are likely to receive more citations.

Quinn (2010) approached the question of how to demystify IRs for increased faculty participation in a repository by examining psychological resistance to digital repositories. He notes that faculty members did not see value in depositing articles in IR, did not feel they had the time to deposit articles, and were reluctant to learn and re-learn yet another technology system that they would not use very often. Quinn suggests that looking at the psychology of resistance can help librarians develop more effective strategies for encouraging faculty members to deposit articles in a repository. Kurtz (2010) compared Dublin Core data in three IRs that use DSpace software and found that contributor generated metadata such as subject headings, description or abstract, publisher and even language was either missing or inaccurate. This inconsistency in the metadata complicates the process of searching the repository for information. She concluded that the review of metadata by librarians is a more effective process for ensuring accuracy in the record creation process than leaving metadata creation solely to the contributor.

3.4 The integration and use of institutional repositories

The institution planning for the development and implementation of IR must fundamentally ensure successful implementation, adoption, accessibility, visibility and sustainability. This is vital because, the information in this IRs can be easily accessed by large audiences. In the case of HILs, they do not have adequate learning materials in the libraries for research and learning, hence HILs give a better alternative. The integration and use of IRs may be influenced by senior management commitment and support, effective communication, comprehensive user education and training, and identifying responsibilities for IR management to ensure sustainability as discussed below.

3.4.1 Management and support. Walter (2007) confers that institutional repository is a technical service. It acts as a conduit through which collecting, disseminating, preserving and

collaborating with other organizations occur. This can develop the single voice and vision needed to articulate the myriad possibilities for scholarly communications, promoting new services and developing and explaining new processes. The above is possible when there is management support.

Nabe (2010) avers that senior management commitment and support are considered the most important factors in planning, development, implementation and adoption of IRs projects. In addition, commitment and support of IR projects impact on the institutions, “effectiveness in transforming information technology (IT) investments into useful outputs”. It is therefore paramount that, senior management has to ensure that the constant flow of resources is adequate and timely. Finally, senior management creates positive attitudes amongst other managers and users towards the new IR project. These two points ensure sustainability of the IR and inspire users to adopt the new innovation. Lack of management commitment and support on the other hand could result in deliberate resistance by the developers and users, which might result in the abandonment of the IR project.

In addition, commitment and support of IRs projects impact on the institutions, effectiveness in transforming IT investments into useful outputs (Nabe, 2010). Asamoah-Hassan (2009) argues that it is difficult to convince the management of research institutions that it is necessary to have IR and get them to agree to plan and support it on a long-term basis. Funding, reliable electricity supply and reliable Internet connectivity are major issues.

3.4.2 Effective communication. For the new IR to come into being and actually be used, the institution has to play the lead in fostering excellent communication amongst all individuals involved in the development process, particularly between analysts and users. The success of the eventual system implementation rests on the capability of analysts, users and managers to communicate in meaningful ways due to different interests and expectations from the system (Ntini-Kounoudes and Zervas, 2012). Effective channels of communication should exist to overcome any differences. Negotiation more explicitly recognizes the durability of the differences and achieves solutions through bargaining. Organizations should encourage effective communication between stakeholders (managers, IR developers and users) throughout the systems development process.

3.4.3 Education and training. Chware (2007) also identified training of librarians for digital era as another challenge in building of IRs in Africa. According to Chware, most librarians who are crucial in the digitization of local contents have not yet acquired the necessary training in order to obtain the required skills for IR development and management. Adequate training needs sufficient financial and time support in addition to being the responsibility of the institution to ensure clients and staff members are educated on the new technology to enhance its adoption and use.

Lynch (2003) expressed fear that without commitment from universities to teach staff members and students to use IRs, the repository will not achieve sufficient usage to warrant existence. Regarding the role of reference librarians in IRs, Bailey (2005) pointed out that, the amount of support required for IRs is often underestimated and the need to provide user education, promotion, metadata creation and preservation is often overlooked. Allard *et al.* (2005) believed that even though librarians are not necessary for the IR to function, they are needed to educate users about how to access the material in IRs.

Jean *et al.* (2011) also suggest that apart from skills, team-building exercises to help members of staff work in the new structures and adapt to the new working practices are important. Gray (2009) suggests that, subject librarians are in a prime position to educate users about the value of IRs, and promote the information resource. Makori (2009) submits that information professionals in academic libraries in Kenya can master the use of ICT systems and other competencies through motivation, encouragement and additional training.

[Commission for University Education \(2012\)](#) emphasized that university libraries should have adequate space for computers, equipment necessary for training librarian as well as provision of information services as well as staff working space. However, despite the need to have adequate space for the success of development and management of IRs, this has not been the case. [Iwhiwhu and Eyekpegaha \(2009\)](#) reveal that inadequate space to accommodate IRs facilities is one of the hindrances in digitization for preservation and dissemination of scholarly outputs.

3.4.4 User perception of institutional repositories. IRs are created to encourage scholarly communication outside traditional publishing models. According to [Cullen and Chawner \(2010\)](#), IRs have been established both in the developing and in the developed countries under the support from academic libraries. Hence, end users are encouraged on availing their academic material and also published works to the IRs making them readily available as well as preserved for a long duration.

However, in Kenya, development of IRs and utilization is very low compared to other continents. Therefore, since IRs have a national imperative, implying that to get a Kenyan research article in the international scene is difficult, and therefore development of IRs in the Kenya context should really be emphasized. Currently, there are 18 African repositories of which 13 are maintained in South African institutions while others are distributed in Kenya, Zimbabwe, Egypt, Namibia and Uganda. Based on this information, University of Pretoria is the only university that is well developed with more than 2000 item records. This slow growth in IR initiative and its implementation could be attributed to the inadequacy of resources ([Jain et al., 2009](#)).

Besides, amongst the user communities, the meaning of IRs is quite diverse. Many are confused about whether library databases such as Emerald and JSTOR, faculty and departmental web pages, Open Courseware sites and/or space on university servers would count as IRs ([Jean et al., 2011](#)). [Chandra and Halder \(2012\)](#) in investigations done on Indian IRs identified that, the humanities and social science researchers are found to have low levels of awareness of the IR but are interested in contributing research work to university IRs and have positive attitudes towards providing free access to scholarly research results of their universities. To encourage broader support and generate awareness both inside and outside the library, countries have adopted marketing strategies including; branding and then promoting internally and externally. IRs developers hold meetings within the library and alert the campus community through press releases about the IR.

3.4.5 Marketing and promotion strategies. The marketing of new library resources or services is always essential to spread the word of value-added tools to enrich the academic lives of the university community. Faculty involvement is critical to ensure that the system meets the scholarly needs of dissemination and visibility of the present and future generations. Additionally, it is imperative for reference librarians to engage faculty members in a change agent role by garnering IR buy-in. Massachusetts Institute of Technology (MIT) DSpace study showed that faculty members needed to see information regarding an IR at least five times and according to the California Digital Library study, seven times before the IR registers as a technology worthwhile to pursue ([Branschofsky, 2004](#)). Given these baseline studies and anecdotal evidence, librarians must realize that perseverance in pursuing contact with faculty members within the IR context is essential to populate the archive.

3.5 Challenges of developing and using institutional repositories

This paper borrows from social exchange theory by [Homans \(1958\)](#) and [Thibaut and Kelley \(1959\)](#) who explained social behaviour as a process of exchange between two or more individuals within a community who are in a position to influence each other. Social exchange

theorists propose that individuals engage in social exchange – that is, sharing of knowledge in this paper, this refers to open information sharing behaviour in professional environments working with the wider community through an IR.

In many African countries, the digitization of materials and setting up of IRs 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 (Mapulanga, 2012). Generally, major problems that affect integration and use of IRs are explained as follows:

3.5.1 Copyright issues. Campbell-Meier (2011) in comparative study of various IRs found out that copyright is one of the biggest challenges facing the IR developers in Canada. After digitization of paper-based content, developers are mandated to seek for permission from individual authors before the projects are moved to the repository. Not only is the author's permission needed for submission but also in some cases, require the permission of the authors quoted within the materials. Campbell further notes that first, Canadian copyright law does not allow for the "fair use" of materials for study and criticism and limits the amount of text that can be cited. Second, there are quantitative guidelines in the copyright law, and the librarian working with the theses often requires students to ask for permission to use the content in print format and electronic format. Finally, while the librarians figure out how to populate and run the repository more efficiently, there is still need for financial support from the university. Additional resources are needed for marketing and securing copyright permissions.

3.5.2 Document submission. As academic institutions implement IRs, faculty members are reluctant to contribute. In a survey of directors at the Association of Research Libraries, two-thirds responded that the majority of faculty members at the institutions were not contributing (Casey, 2012). Furthermore, Schonfeld and Houseright (2010) discovered that less than 30% of faculty members in US colleges and universities were contributing to IRs. In addition, studies of IRs in several institutions such as New Zealand's eight universities (Cullen and Chawner, 2011) also reveal some reluctance on the part of faculty members to contribute.

The other challenge on the part of document submission as argued by Giesecke (2011) is that faculty members and other researchers may post files that do not meet quality standards. These files need to be corrected and improved if the institution has to ensure quality repository that others will use. In addition, as identified by Giesecke, the faculty members may not know how to describe work in a way that will increase the chances of the article being discovered by search engines such as Google. Providing correct key words and expressive abstract can increase the chances of users identifying and then citing or using the faculty research. Faculty cites a variety of reasons for hesitation to contribute to IRs (Casey, 2012).

3.5.3 Costs of institutional repositories. Establishing the IR is not cost free. Factors that impact costs include the number and type of staff members, type of technology chosen for the repository, services provided and cost of preservation of data. One of the first decisions for an institution is to choose the type of hardware and software for the project. Open source software systems provide the institution with the ability to customize the program and develop facilities that meet local needs. To the contrary, it does mean that the institution needs programming and systems staff to run the system. Choosing the commercial software program limits the amount of technical staff needed and may limit the amount of customization to be done. Other technology costs include digitizing content or hardware and software needed for such services, charges for backup systems and digital storage (McKay, 2007). Once the software platform is solved, the institution can determine the staffing needed to run the repository.

3.6 Conclusion

From the foregoing, IRs are recognized as an essential infrastructure to respond the higher education challenges in the digital world. Universities generate plenty of scholarly information from research conducted by the faculty, staff members and students but unfortunately, most of the scholarly production is only accessible by university community and authorized members. The researchers believe that universities need to invest aggressively, but where they also need to implement thoughtfully and carefully, with broad consultation and collaboration with an understanding that if they succeed they will sustainably change the landscape of 21st century's higher education.

In Kenya like other African institutions of higher learning, the use of IR could also be attributed to lack of incentives and technological challenges amongst academics. The researcher argues that the accessibility of IRs and utilization for teaching in HILs can motivate users to influence public policy for development as well as contribute to the body of knowledge.

3.7 Recommendations

The paper recommends that academic libraries need to take positive initiation in developing IRs in order to properly and widely disseminate the intellectual output of researchers in those institutions. This is for the reason that IRs provide a platform on which a university can showcase its scholarly competence. The researcher further recommends creation of user friendly IR platform for academics which can make life easier for them in retrieving, disseminating and depositing research materials. As well, training is needed for faculty academics on how to deposit, and retrieval of scholarly materials in IRs.

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