

**THE ROLE OF AN INSTITUTIONAL REPOSITORY IN THE CREATION AND
USE OF LOCAL CONTENT BY STAFF AND STUDENTS AT LILONGWE
UNIVERSITY OF AGRICULTURE AND NATURAL RESOURCES (LUANAR),
MALAWI**

BY

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**A THESIS SUBMITTED TO THE SCHOOL OF INFORMATION SCIENCES IN
PARTIAL FUFILMENT OF THE REQUIREMENT FOR THE DEGREE OF
MASTER OF SCIENCE IN LIBRARY AND INFORMATION STUDIES**

**MOI UNIVERSITY
ELDORET, KENYA**

SEPTEMBER 2016

DECLARATION

DECLARATION BY THE CANDIDATE:

This thesis is my original work and has not been presented to any university or college for academic or any other purpose.

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DEDICATION

To my family; the only wonder in my world

ABSTRACT

Institutional repositories have become an essential platform for the collocation of local content created and used by a university community, making such local content more visible and accessible. Yet despite the availability of local content created at Lilongwe University of Agriculture and Natural Resources (LUANAR) in Malawi, there has been little or poor visibility of the content which has translated into its underutilization. The aim of the study was therefore to investigate the role of an institutional repository in the creation and use of local content by staff and students at LUANAR with a view to propose strategies that would promote the wider visibility and usage of its local content. The objectives of the study were to; examine the extent to which the institutional repository at LUANAR supports the creation and usage of local content; establish the types of local content found in the institutional repository at LUANAR; assess the infrastructure that has been put in place in order to promote the creation and use of local content at LUANAR; establish the opportunities and challenges in using the institutional repository to promote the creation and use of local content at LUANAR; propose strategies that would promote the creation and usage of local content in the institutional repository at LUANAR. The study was informed by the Rogers Diffusion of Innovation (DIO) theory and the Social Exchange Theory (SET). The target population (3, 206) constituted the university's academic staff, library administrative staff and students at LUANAR. The study used a survey research method; purposive sampling was used on library Administrative staff and stratified random sampling was used on both faculty staff and students yielding a sample of 561. Qualitative data was analyzed through thematic analysis and quantitative data was analyzed through the use of graphs and tables to depict values. Some of the findings were that the institutional repository at LUANAR depended on library staff for content recruitment and uploads; content contribution to the repository by the user community was generally a challenge; although there was some level of institutional repository awareness amongst academic staff and researchers, there was a generally low levels of awareness amongst student respondents; and there was fear of plagiarism as digital content was seen to be more susceptible to copying. The study therefore provides the following recommendations: an effective advocacy and promotion campaign be made to raise awareness of the institutional repository existence to all stakeholders; the LUANAR institutional repository be made accessible beyond the Local Area Network (LAN) and LUANAR develops a mandatory contribution policy in order to add weight and create an obligation towards institutional repository contribution. The study concludes that for maximum utilization and creation of local content there must be clear policies and effective advocacy on the use of institutional repository at LUANAR.

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ACKNOWLEDGEMENT

I would like to express my deepest gratitude to the CABMACC project through the Lilongwe University of Agriculture and Natural Resources (LUANAR) for sponsoring my studies. I would also like to thank my supervisors Dr. Emily Bosire and Ms Emily Ng'eno who immensely helped to make this thesis worthwhile. My gratitude would however, be incomplete if I were not to mention the help and support that I got from Professor Cephass Odini and Mr. Duncan Amoth; thank you for being there, I will always be grateful. Last but not least, I would like to thank my closest colleagues who tried to make my stay in Kenya, a little pleasant. Asante sana!

Finally, I would like to thank my family for always being there for me; always.

LIST OF ACRONYMS AND ABBREVIATIONS

ADLSN	African Digital Library Support Network
ARL	Association of Research Libraries
BCA	Bunda College of Agriculture
DOI	Diffusion of Innovation
ICT	Information and Communications Technology
IR	Institutional Repository
LUANAR	Lilongwe University of Agriculture and Natural Resources
MSc	Master of Science
OA	Open Access
PhD	Doctor of Philosophy
SA	Systems Administrator
SAL	Senior Assistant Librarian
SET	Social Exchange Theory
UL	University Librarian
UNIMA	University of Malawi

CHAPTER ONE

INTRODUCTION AND BACKGROUND INFORMATION

1.1 Introduction

The creation and use of new knowledge through research and scholarship lies at the very heart of a university's mission, and yet, without effective dissemination and transfer of the generated research findings, the effort of researchers and scholars is seemingly laboured in vain. Indeed, Africa as a continent is rich with local content that is critical in propelling national development agenda. However, the greatest challenge is the inability of information professionals to bring together these abundant local information resources and make them accessible to the local and indeed the global scholarly community (Ezema, 2013). Moseti (2012) therefore rightly argues that local content contribution to national development can only be done when universities and all institutions of higher learning, effectively manage their local content, avoid fragmentation of the same due to poor strategies of collecting, capturing and disseminating content; a scenario which is common in most African universities. It therefore becomes imperative for our universities to identify and deploy effective ways and strategies for capturing and managing these intellectual assets alongside other types of information that they interact with. Traditionally, universities have relied largely on formal publication systems to ensure research dissemination and their critical function of vetting new scholarship (Armstrong, 2014).

However, with owing to several factors that range from the development of ICTs to the lack of accessibility and visibility of local content especially from developing countries, the traditional scholarly communication's dominance has been discredited and has since faced a continuing evolution of scholarly publishing brought about by among others, the library dissatisfaction with the monopolistic effects of the traditional and still pervasive journal publishing system (Crow, 2002).

1.1.1 Institutional Repository (IR)

Information and Communications Technologies (ICTs) have brought about revolutionary changes in the way scholarly communication is created, used and managed in institutions of higher learning. At the same time, ICTs have opened doors to newer and broader range of research dissemination possibilities, and in so doing generating entirely new forms of digital content that can make information more easily accessible and shared. This shift therefore demands that universities take on a much more active role in ensuring dissemination of their local content both now and in the future (Association of Research Libraries et al., 2009). Most universities have therefore established institutional repositories (IRs) as a platform for access to intellectual materials 'born' within their institution (Wong, 2009). But what are institutional repositories? In a basic definition, an institutional repository is an electronic system that captures, disseminates and preserves intellectual output of an academic institution or university (Murugathas & Balasooriya, 2014). Lynch (2003) defines an institutional repository as 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 further believes that an institutional repository is most essentially, an organizational commitment to the stewardship of these digital materials including long-term preservation where appropriate, as well as organization and access or distribution. The emergence of institutional repositories in academic institutions therefore offers a new paradigm shift of managing local content at universities and with it, expectations that local content even at LUANAR, Malawi could be efficiently managed through the institutional repository platform and thereby given the wider readership it lacks. According to Mark and Shearer (2006) institutional repositories have the potential to even contribute to the 'repatriation' of a country's local content published outside of its borders. Underlying this concept of an institutional repository is a growing awareness that the traditional publishing model no longer meets the needs of those who seek to disseminate or access scholarly output (Boss, 2006).

1.2 Background Information of LUANAR

LUANAR was established through an Act of Parliament in 2011. The university was formerly an agricultural constituent college of the University of Malawi (UNIMA). It was however delinked from the University of Malawi in 2011. According to the Lilongwe University of Agriculture and Natural Resources Strategic Plan (2012-17) when Malawi attained its independence in 1964, few nationals had any training in agriculture, with most agricultural management positions in Government and the private sector held by expatriate staff. Therefore, Government decided to create a college specifically to train Malawians in the field of agriculture. The inception of Bunda College of Agriculture (BCA) was meant to fulfill this policy.

By the end of 2014, the former College had expanded from the initial 15 students and 3 academic staff, to a population of 3,046 students and 157 academic staff. Lilongwe University of Agriculture and Natural Resources now has four faculties of Agriculture, Development Studies, Environmental Science and Food and Human Science. The university is currently offering 25 Bachelor of Science degrees, 19 MSc degrees and 6 PhD degrees. The University is located about 35 kilometers South West of the Capital City, Lilongwe.

1.2.1 LUANAR's Vision

LUANAR's vision is to be a world class University

1.2.2 LUANAR's Mission Statement

To advance knowledge and produce relevant graduates with entrepreneurship skills for agricultural growth, food security, wealth creation and sustainable natural resources management, through teaching, training, research, outreach and sound management.

1.2.3 Aims and Objectives of LUANAR

The aims and objectives of the University include:-

- ✓ To provide quality education and training in agricultural and natural resources sciences, engineering and irrigation technologies, agro-processing, entrepreneurship, trade, climate change adaptation, sustainable utilization of natural resources and environmental preservation for socio-economic development;
- ✓ To encourage the advancement, dissemination and commercialization of research;

- ✓ To promote industrial growth through research and dissemination of knowledge and skills;
- ✓ To establish and support science and technology innovation centres of excellence for industrial production and manufacturing of value-added agricultural and natural resource products;
- ✓ To develop partnerships with relevant industries for the generation, transfer, adoption and application of technologies;
- ✓ To develop into an institution of excellence in teaching, learning, training, Information Communication Technology (ICT), e-learning and research in science, technology and biotechnology;
- ✓ To promote practical University education, research and training so as to respond to the needs of Malawi, Africa and the World;
- ✓ To demonstrate and promote entrepreneurship among its students;
- ✓ To provide specialist training in such subjects as may be found desirable by the University Council and the nation; and
- ✓ To provide opportunities and facilities for accessing information in support of the programmes of the University.

1.2.4 Institutional Repositories in Malawi

Christian (2008) argues that the establishment of institutional repositories in academic and research institutions in Africa is a serious developmental issue that requires urgent attention even by top university management.

There must be no doubt therefore that institutional repositories are potentially a very useful tool for many aspects of an institution's knowledge management, from offering a method for collating all the output of the institution, to disseminating scholarly communication. Yet, despite the attention that institutional repositories generally deserve in institutions of higher learning, Global Open Access (2013) observes that universities in Malawi have been slow in recognizing institutional repositories as a viable platform for scholarly communication. It therefore comes with no surprise that Malawi's recently documented history of institutional repositories in public university is attached to the African Digital Library Support Network (ADLSN) initiative which was formerly a University of Waikato project on Greenstone User Support in Southern Africa which began in May 2007 (Rose, 2007). Public university libraries in Malawi have since heavily benefitted from such internationally initiated programmes and opportunities (Salanje, 2012). According to Salanje, there are now about 12 digital library collections created by Malawi Libraries. However, the road to an institutional repository ready environment in Malawi has generally been marred by an over dependency on donor driven projects which has even heavily impacted on choices of institutional repository software, and a lack of policy on the same, has not helped the situation either.

1.2.5 Institutional Repository at LUANAR

With a history that dates back from 1967, LUANAR has a one of the longest post-independence histories for an academic institution in Malawi. Despite its humble beginnings as constituent college of the University of Malawi (UNIMA), LUANAR has always been at the centre of generating agricultural related local content.

This could be rightly attributed to the fact that research is made compulsory for both teaching staff and graduate students either by job description or by prescribed academic program of study (Egwunyenga, 2008). However, the history of institutional repository at LUANAR is relatively new. Through the African Digital Library Support Network (ADLSN), the university which was by then called Bunda College of Agriculture (BCA) was chosen as a national coordination centre for Greenstone, an institutional repository software, in Malawi. As a coordinating centre, the campus was given the mandate of developing its own initial digital library applications and organizing basic Greenstone training to support the development of a national Greenstone network in Malawi and neighboring countries (Witten, 2009). The mandate to deploy the institutional repository at the university at that time was therefore left in the hands of the library, perhaps because the ICT unit at LUANAR actually evolved from the library department (Salanje, 2012).

1.2.6 Relevance of Institutional Repository at LUANAR

The majority of the local content at Lilongwe University of Agriculture and Natural Resources can be regarded as a print-based institutional repository. However, this print-based collection has had its fair share of operational challenges. For example, the local collection at Lilongwe University of Agriculture and Natural Resources library is kept in a closed-access setup, accessible to library staff only, and library patrons therefore make requests for publications, and library personnel look for the requested items. This existing arrangement is due to security concerns for the collection among others. Yet despite having such measures to keep the local content collection under closed access for

improved security at Lilongwe University of Agriculture and Natural Resources and other libraries elsewhere, the library at LUANAR has experienced cases of disappearance, misplacement, pilferage and even sheer vandalism of some of the cream of its local content. Again, another problem on print based local content usage is that most publications like theses or dissertations are in single copies. This not only makes a patron wait until an incumbent user is through with a particular publication before the waiting patron gets their turn but also makes the original copies susceptible to wear and tear due to heavy and long term usage. Another aspect is that most local content in print format like dissertations are created on campus and once lost cannot be replaced. The digital institutional repository at LUANAR has therefore a capacity to ease some of these problems and the ability to 'make more visible' its local content and increase the visibility, status and public value of the institution itself (Crow, 2002). An institutional repository at LUANAR offers the perfect platform to contribute LUANAR's generated local content to global knowledge. It is indeed no longer arguable that a lot of local content from Africa including Malawi has found itself in international journals inadvertently rendering itself inaccessible to its local communities (OECD/ISOC/UNESCO, 2013). An institutional repository therefore offers an opportunity for African academic institutions like LUANAR a chance, not only to increase its local content visibility but also a chance to repatriate and collocate such local content published outside its borders.

1.3 Statement of the Problem

Academic and research institutions, as centres for intellectual and scholarly research, must have interest in the creation, dissemination, use, as well as preservation of knowledge from their university community (Uzuegbu, 2012).

Key to achieving this challenging responsibility is the ability of these universities to harness the content created by the members of their university communities, making the content easily accessible for usage. According to Association of American Universities (AAU) et al. (2009) faculty research and student scholarship represent an invaluable intellectual capital of a university but the value of that capital lies in its effective dissemination and usage by its possible present and future audiences. Research has effectively not happened until it has been communicated (Hahn, 2008). According to Christian (2008) institutional repositories are fast becoming one of the best tools utilized by institutions in making their research knowledge or local content widely available and accessible to their user community. The University is therefore obliged to facilitate transfer of any such new knowledge or technology to its user community. Yet, despite the availability of such local content, in-house statistics show that there has been poor accessibility of local content and that has also translated to its poor usage. This observation also resonates with OECD (2011) observation that local content remains inaccessible even to the local population, not to mention at a broader level. It is against this backdrop that the current study will be carried out to investigate the role of an institutional repository in the creation and usage of local content by staff and students at Lilongwe University of Agriculture and Natural Resources in Malawi.

1.4 Aim of the Study

The aim of the study was to investigate the role of an institutional repository in the creation and usage of local content at Lilongwe University of Agriculture and Natural Resources (LUANAR) in Malawi, with a view to propose strategies that would promote the wider visibility and usage of its local content

1.5 Objectives of the Study

The objectives that guided the study were:

- (i) To find out the extent to which the institutional repository at LUANAR supports the creation and usage of local content.
- (ii) To establish the types of local content found in the institutional repository at LUANAR;
- (iii) To assess the infrastructure that has been put in place in order to promote the creation and use of local content at LUANAR;
- (iv) To establish the opportunities and challenges in using the institutional repository to promote the creation and use of local content at LUANAR;
- (v) To propose strategies that would promote the creation and usage of local content in Institutional Repository at LUANAR.

1.6 Research Questions

The study was guided by the following research questions;

- (i) To what extent does the institutional repository support the creation and use of local content?

- (ii) What are the types of local content found in the institutional repository at Lilongwe University of Agriculture and Natural Resources?
- (iii) What type of infrastructure has been put in place at LUANAR in order to promote the creation and use of local content?
- (iv) What are the opportunities and challenges of using the campus institutional repository at LUANAR to promote the use of local content?
- (v) What strategies would promote the creation and usage of local content in institutional repository at LUANAR?

1.7 Study Assumptions

This study was guided by the following assumptions:

- i) There is local content that is created at LUANAR however its poor visibility has affected its usage.
- ii) The LUANAR institutional repository must contribute to the increased visibility and utilization of its local content.

1.8 Significance of the Study

This study is significant in the following ways:-

1.8.1 Practical Significance

The study has revealed some gaps and shortfalls in the way the Lilongwe University of Agriculture and Natural Resources IR is managed. The study will undoubtedly bring about more awareness of the existence of an institutional repository at LUANAR in Malawi and indeed the role the IR can play in promoting local content creation, visibility and usage to its local user community.

1.8.2 Policy Related Significance

The study would be used for institutional repository advocacy to top LUANAR management to help in the urgent development of an institutional repository policy which LUANAR currently does not have. An institution repository policy could be helpful in populating the repository because it adds legitimacy and authority when contacting authors for their papers.

1.8.3 Theoretical Significance

The study findings will also contribute to the existing body of knowledge in the field of institutional repositories, knowledge management and knowledge sharing.

1.9 Scope and Limitation of the Study

1.9.1 Scope of the Study

This study was conducted at LUANAR main campus in Malawi. The campus is located about 35 Kilometres South-west of the Capital City, Lilongwe. At the time of study, the main campus was the only campus for the relatively new university. The target population in this study included academic staff and researchers at LUANAR who are involved in local content creation; library administrative staff who are involved in the deployment and organization of the content created, and students who are the major users of the content. LUANAR was chosen as the area of study because it was one of the pioneer institutions in Malawi to have successfully created an institutional repository and made accessible to its user community.

1.9.2 Limitations of the Study

Despite the fact that LUANAR has for years used Greenstone as the platform for its institutional repository, it has recently (2014) migrated to DSpace and this is one challenge that might affect the results of the study. Another limitation was that the researcher relied heavily on Internet resource material as there were few print materials to consult. However, the researcher made an effort that verifiability implies.

1.10 Definition of Terms

Institutional Repository (IR): An institutional repository is a set of services that can be offered by university to members of its community for the management and dissemination of digital materials created by the institution and its community members.

Digital Content: Digital content is any content that is published and distributed in a digital form, including text, data, sound recordings, photographs and images, motion pictures, and software .

Local Content: The term ‘Local Content’ designates any scholarly work that has been created by Lilongwe University of Agriculture and Natural Resources community members during the course of learning and teaching. It therefore does not matter whether the content is created within or outside the institution.

Open Access (OA): Is a concept that promotes the use of digital content, scholarly or software, free of charge and free of most copyright and licensing restrictions.

Open Access Repository: An online database on a network which makes full text (complete files) of content it contains freely and immediately available without much access restrictions.

Open Source: It commonly refers to a program or software which has its source code available to the general public for use and/or modification from its original design free of charge.

Scholarly Communication: Scholarly communication is a broader term reflecting various processes through which scholars exchange information with one another in the course of knowledge creation.

Self-Archiving: It is the practice of placing digital versions of scientific literature online by their own creator making it freely available to anyone on Internet.

1.11 Summary

This chapter has provided background information to the study, statement of the problem, the aim and objectives of the study, research questions, and significance of the study, scope and limitations of the study. The chapter specifically discussed the concept of institutional repositories, its relevance and place in managing information in academic institutions and the Lilongwe University of Agriculture and Natural Resources (LUANAR) as an institution.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the theoretical framework upon which the study was based. It also reviews the literature related to the study. MacFarlane, Veach, and LeRoy (2014) point out that research is a collaborative effort and it is never done in isolation, and collaborations make for better studies. This is where literature review comes in; according to Creswell (2003) a good literature review shares with the reader the results of other studies that are closely related to the study being reported. SSDS (2010) expressed it a little differently by saying that literature review identifies ‘the gap’ in the research that one’s study is attempting to address, positioning one’s work in the context of previous research and creating a ‘research space’ for one’s work. Good literature review therefore gives a researcher the credibility of having done a thorough evaluation of all work related to the study.

2.2 Theoretical Framework

Theories and models which support the adoption of technology are an important focus of this chapter. According to Kombo and Tromp (2007) theoretical framework is a collection of interrelated ideas based on theories. It is also defined as a reasoned set of prepositions which is derived from and supported by data or evidence, Kombo and Tromp (2007). Theories therefore enable researchers to draw new conclusions, improve action and even generate new theories that appropriately explain the subject even better. The theoretical framework for this study was therefore derived from two theories. The first theory was the Diffusion of Innovations (DOI) theory; a concept that was first

studied by French sociologist Gabriel Tarde in the late 19th century but was further propagated by an American professor of rural sociology Everett Rogers in 1962. The second theory was the Social Exchange Theory (SET) which was introduced in 1958 by the sociologist George Homans with the publication of his work "Social Behavior as Exchange". The Social Exchange Theory was also considered an integral part of the research study as the impact of cost and benefit analysis becomes a huge factor in any form of sharing including knowledge sharing.

2.2.1 Diffusion of Innovations (DOI) Theory

Diffusion of Innovation Theory (DOI) was developed originally as a rural sociology theory to explain farmers' adoption of hybrid maize seed (Ryan & Gross, 1943) and was later expanded upon by Everett Rogers in 1962 as a way of explaining the diffusion of a wide variety of innovations (Rogers, Singhal & Quinlan, 2009). The theory explains how over time, an idea or product gains momentum and diffuses (spreads) through a specific population or social system. The Rogers' theory of diffusion was chosen and is particularly important because it has influenced numerous other theories of adoption and diffusion (Straub, 2009). The theory of diffusion of innovations therefore seeks to explain how innovations are taken up in a population. According to Rogers (1995) diffusion refers to the process by which an innovation is communicated through certain channels over time among members of a social system. An innovation is therefore an idea, behaviour, or object that is perceived as new by its audience, Robson (2009). In this study, the institutional repository itself was considered as an innovation although used or seen as a service by its user community; and considering the fact that there has been poor accessibility of local content that also translated to its poor usage, the existence and role

of an institutional repository at LUANAR came into focus, and with it the process of technology-adoption was considered to be of relevance in the study. In a similar study, Revell and Dorner (2009) also used the Roger's Diffusion of Innovation theory for its conceptual framework for an exploratory study of nine New Zealand academic subject librarians' perceptions of the institutional repository (IR) as an information source for their clients. Swanepoel (2005) also used the Roger's Diffusion of Innovation theory to investigate the extent to which institutional repositories have been accepted as a method of communicating scientific and scholarly information.

2.2.1.1 Stages in the Innovation –Decision Process

Diffusion of innovations theory clearly explains that adoption of an innovation is not a single, baseless act, but a continuous process that can be examined, facilitated, and promoted, (Keese & Shepard, 2011). Knowledge of such stages in the innovation-decision process can arguably help entities introducing a new innovation to intervene through promotional activities in order to encourage the adoption of such new innovations like an institutional repository and through it the prolific creation and use of local content. The innovation - decision process is therefore the mental process through which an individual (or other decision making units) pass through from first knowledge of an innovation to forming an attitude toward the innovation, to adopt or reject, to implementation of the new idea, and to confirm of this decision (Rogers, 2003). Rogers (2003) also described the innovation-decision process as “an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation”.

The process is shown in Figure 2.1 below:



Knowledge: In this stage, an individual learns about the existence of an innovation or service and seeks more information about it. During this phase, the individual attempts to determine “what the innovation is and how and why it works”. People or users cannot realize they have a use for an innovation until they become aware of the new development and the benefit it provides (Rogers, 2003). At this point, library personnel can work in a position as change agents in support of the adoption of the repository as a tool for local content usage by bringing awareness.

Persuasion: In this stage the individual has either a negative or positive attitude toward the innovation. However, “the formation of a favorable or unfavorable attitude towards the innovation does not always lead directly or indirectly to an adoption or rejection” (Rogers, 2003). During this phase, subjective evaluations of the innovation that reduce uncertainty about the innovation outcomes are usually more credible to the individual.

According to Revell and Dorner (2009) one responsibility that library personnel have is to show academic staff and students in their university how to find and use information or indeed information tools like repositories.

Decision: In this stage, the individual takes the concept of the change and weighs the advantages/disadvantages of using the innovation and decides whether to adopt or reject the innovation. Due to the individualistic nature of this stage, Rogers notes that it is the most difficult stage on which to acquire empirical evidence.

Implementation: At the implementation stage, an innovation is put into practice. However, uncertainty about the outcomes of the innovation can still be a problem at this stage. Thus, the implementer may need technical assistance from change agents and others to reduce the degree of uncertainty about the technology.

Confirmation: In this stage the individual makes the decision to continue using the innovation. This stage is both intrapersonal (may cause cognitive dissonance) and interpersonal, confirmation the group has made the right decision. Depending on the support for adoption of the innovation that may involve strategies encouraging the innovation usage and the attitude of the individual, later adoption or discontinuance happens during this stage.

2.2.1.2 Five key Attributes of Innovations that Affect Adoption

Individuals do not automatically adopt new products. They make a conscious decision of whether to use a particular innovation or not. Diffusion of Innovation (DOI) theory therefore identifies five key attributes of an innovation that affect its rate of adoption including the intensity of promotion by individuals, known as change agents (Revell & Dorner, 2009). These factors include characteristics of the innovation, characteristics of

adopters, and the means by which adopters learn about and are persuaded to adopt the technology (Rogers, 2003). These attributes are relative advantage, compatibility, trial ability, observability and complexity.

Relative Advantage

This is the degree to which an innovation is perceived as better than the idea it supersedes by a particular group of users, measured in terms that matter to those users, like economic advantage, social prestige, convenience, or satisfaction (Robinson, 2009). The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption is likely to be. There are no absolute rules for what constitutes “relative advantage”. Robinson further points out that relative advantage therefore depends on the particular perceptions and needs of that particular user group. As an innovation, institutional repositories are a relatively new idea, product or service that is increasingly being deployed in academic institutions as a service that universities offer to members of its community for the management and dissemination of digital materials created by the institution and its community members (Lynch, 2003). At the centre of the institutional repository movement is an attempt to increase the visibility and usage of an institution’s research output by making it Open Access (Allen, 2005). In addition to authors, who gain visibility, and users, who find information more easily, the potential benefits of institutional repositories extend to institutions, which increase their research profile, and funders, who see wider dissemination of research outputs (Hockx-Yu, 2007).

Compatibility with Existing Values and Practices

This is the degree to which an innovation is perceived as being consistent with the values, past experiences, and needs of potential adopters. An idea that is incompatible with their values, norms or practices will not be adopted as rapidly as an innovation that is seen to be compatible. According to Anbu (2006) the fundamental principle of research is that wide dissemination of research results is vital for validating these results and advancing the field of knowledge. A campus institutional repository is therefore compatible to the existing values and practices as it offers a platform for increased visibility and use of an institution's scholarship.

Complexity

This is the degree to which an innovation or service is perceived as difficult to understand and use. New ideas that are simpler to understand are adopted more rapidly than innovations or services that require the adopter to develop new skills and understandings (Robinson, 2009). Ndegwa (2011) observes that information systems adoption and usage are inhibited by the difficulty of information systems applications. Therefore for an innovation like an institutional repository to be adopted more easily, it must become more user-centred by "shifting the effort burden from the user to the system itself in order to make it easy to use (Dimitroff in Preater, 2010). The availability of a number of free open access IR software also offers institutions opportunity to choose and deploy a system or platform that is at least more user-centric and thus less complex to the users.

Trialability

This is the degree to which an innovation can be experimented with, on a limited basis (Robinson, 2009). An innovation that is trialable represents less uncertainty to the individual who is considering it (Rogers, 2003). It is without doubt therefore that an innovation is affected by the degree of trialability. In this regard, it becomes very important to note at this point that the availability of an adequate platform (more computer access points, in the case of institutional repositories) to try such an innovation, becomes pivotal.

Observable Results

Observability is characterized by how available and visible an innovation is to the individual, Roger (2003). According to Rogers the easier it is for individuals to see the results of an innovation, the more likely they are to adopt it. Visible results therefore lower uncertainty and also stimulate peer discussion of a new idea, as friends and neighbours of an adopter often request information about it. The impact of proper trials or pilot studies would be felt here, and unless the targeted users of the IR as an innovation are subjected to proper orientation or training, its absorption and diffusion, as a communication tool will likely be subverted. A good institutional repository system setup must not only have a user friendly interface but also offer training to its user community. Kuhlthau cited in Preater (2010) puts it in a better language a good 'institutional repository system' should support and accommodate its users beyond simply returning results. As a result, this researcher feels that the usefulness of any campus institutional repository as an innovation could be more visible if its existence is sustainable beyond a mere 'project life'. In spite of the suitability of the Rogers diffusion theory in this

research study, this researcher felt that a gap still existed that warranted another theory to be used to look at factors that affect knowledge sharing as it is pivotal to an institutional repository's very existence and sustainability.

2.2.2 The Social Exchange Theory

Willingness to share Knowledge or research content ought to be at centre stage for any institution repository to be a success story (Casey, 2012). This researcher therefore felt the need to include the use of the Social Exchange Theory to aid understanding and interpretation of factors that influence content sharing. Among several theories, Social Exchange Theory has been the most popular in explaining knowledge sharing. The Social Exchange Theory (SET) was first introduced by the sociologist George Homans. The theory emerged within the family sciences in the latter part of the twentieth century and was first considered in a meaningful way in the early 1960s. At its most basic, Social Exchange Theory may be viewed as providing an economic metaphor to social relationships (Chibucos, Leite & Weis, 2005). The theory's fundamental principle is that humans in social situations choose behaviours that maximize their likelihood of meeting self-interests in those situations. According to Blau, in Chih-Chung Liu (2011) Social Exchange Theory is a commonly used theoretical base for investigating individual's knowledge-sharing behavior. Stanton and Liew (2011) observe that social exchange theorists strongly argue that individuals engage in social exchange like the sharing of knowledge or contributing their local content to an institutional repository and other social goods for four key reasons:

- ✓ Anticipated reciprocity,
- ✓ Expected gains in reputation and influence on others,

- ✓ Feelings of altruism and/or perceptions of self-efficacy and self-worth,
- ✓ Direct reward (social, professional/career, or financial).

Bock et al. (2005) argued that people share what they know when their interests outweigh the costs of knowledge contribution. In the absence of the above variables, knowledge sharing becomes unnatural because people think that their knowledge is too valuable and important to be shared. Ting-Peng Liang (2008) echoes the same by saying that generally, people who possess great amounts of knowledge are unwilling to share it.

2.2.2.1 Social Exchange Theory (SET) and Cost and Benefit Analysis (CBA)

Social Exchange Theory operates on the assumption that individuals are generally rational and engage in calculations of costs and benefits in social exchanges. The theory therefore proposes that when the risks (costs) outweigh the rewards or benefits there is a negative relationship and the relationship is simply terminated or abandoned (Cherry, 2014).

2.2.2.2 Social Exchange Theory and IR Contribution

It is important to note that in an institutional repository environment, an academic staff or researcher wears two hats that of author (creator/contributor) and that of reader (user). An institutional repository might therefore mean different things depending on the hat an academic staff or researcher could be wearing at a particular point in-time. Motivating academic staff to institutional repository contribution may be totally different from just adopting or embracing the IR as a technology or service. IR contribution might therefore be dependent on the benefits or perceived benefits that may influence such behavior. From this perspective, IR contribution may be positively affected when an individual

expects to obtain some future benefits, (Cabrera & Cabrera, 2005). In a similar study, Kim (2007) investigated factors that affect faculty contribution to institutional repositories by applying Social Exchange Theory. The study suggested that there must be some extrinsic and intrinsic benefits for one to contribute to an institutional repository. In another similar case, Stanton and Liew (2012) using the social exchange theory framework, found that respondents' expressed willingness to deposit their work in institutional repository demonstrated altruistic motives for sharing their research freely with others, in appreciation for the reciprocity of gaining access to others' research, and awareness of the potential direct reward of having their work cited more often. It must therefore be highlighted at this point that institutions of higher learning have a responsibility of providing incentives to their faculty members or academic staff and researchers in order to positively shape their behavior towards IR contribution.

2.3 Institutional Repositories

According to Armstrong (2014) universities have a responsibility to ensure that the scholarship created at their institutions is both accessible and used by the greatest number of people, at least, in their user communities. In response to these growing expectations, libraries have developed new tools and services to meet this need. Despite the fact that institutional repositories are a relatively recent innovation they are increasingly being deployed in institutions of higher learning to meet these growing expectations. Lynch (2003) therefore regards a university-based institutional repository as 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. Crow (2002) goes further by arguing that institutional repositories as an innovation

represent the logical convergence of faculty-driven self-archiving initiatives, library dissatisfaction with the monopolistic effects of the traditional and still pervasive journal publishing system, and the availability of digital networks and publishing technologies. IR as an innovation has been accepted by some users because it has been perceived as better than the idea it supersedes (local content in print form). Diffusion of Innovation Theory has therefore been used by early adopters of institutional repositories to support the advocacy for and population of institutional repositories (Revell & Dorner 2009). As much of information is born digital in this information age, institutional repositories have been established for a variety of reasons that may include the following:

- (i) To provide open access to the institution's intellectual content;
- (ii) To provide access to public funded research;
- (iii) To support open access movement;
- (iv) To support digital preservation

According to Popoola (2008) university libraries by their very nature are expected to acquire, process into retrievable form, and make available the much needed local content to their academic community and indeed the public at large who may need the content for their various teaching and research needs. Institutional repositories have therefore emerged as a new strategy that allows universities to apply serious, systematic leverage to accelerate changes taking place in scholarship and scholarly communication (Alemayehu, 2010). Traditionally, scholarly communication has been through publication in print in books, journals, and conference proceedings but with the advent of the internet and other digital technologies, disseminating faculty work electronically has gained prominence (Casey, 2012). The creation of an institutional repository is more often than not

motivated by the existence of content that requires some form of management and curation (Sarker, Davis & Tiropanis, 2010). The deployment of institutional repositories in institutions of higher learning also comes at a time when there exists a culture of publishing outside the traditional platforms of publishing. Johnson (2004) points out that institutional repositories may build on a growing grassroots faculty practice of self-posting research online.

2.3.1 The Institutional Repository (IR) Rationale

Christian (2008) defines an institutional repository as an electronic archive that may contain post-published articles, pre-published articles, theses, teaching materials or other documents that the authors or their institutions wish to make publicly available without financial or other access barriers. Ezema (2010) argues that since other channels of communicating research findings have been saddled with access barriers, institutional repositories have come to provide an alternative channel of publishing scholarly research works which is free to the entire scholarly community. Another underlying principle is based on the increased demands by funding agencies seeking an improved return on their investment in research (Simons & Richardson, 2012). This view is also shared by Taylor (2009) who observed that many results of publicly funded research are inaccessible to the vast majority of those who could make use of and build on it. As the trend worldwide has been to establish institutional repositories in order to collocate and make scholarly content more visible and accessible, Gibbons (2004) presented other compelling reasons why an organization should have an institutional repository that includes lowering the barrier to document distribution; creating a centralized digital archive in which research, teaching and scholarship can be highlighted; facilitating wider distribution and providing

an infrastructure for preservation of digital content. An institutional repository is also able to support grey literature that would otherwise be lost by organizations, and an IR also reduces photocopying costs, journal publishing lag times, and interlibrary loan services associated with traditional print output can be significantly diminished (Buehler, 2011).

2.3.2 The Benefits of an Institutional Repository

According to Abrizah (2011) the development of the institutional repositories is closely related to the Open Access movement which seeks to make research outputs openly available by encouraging academics to place their publications into repositories thereby enhancing their availability, visibility and usage by their user community and indeed the global academic community. Institutional repositories therefore have a range of projected benefits that have been suggested in literature. These include benefits to the researcher, to the institution, and to the user community.

2.3.2.1 Benefits of an Institutional Repository to the Researcher

The benefits to the researcher include:

- ✓ A wider visibility and usage of one's work.
- ✓ Enhances a researcher's profile as one's publications are cited more frequently.
- ✓ Improved impact brought about by ease of access.
- ✓ Better promotional prospects or career advancement.
- ✓ Rapid communication of research findings.
- ✓ Peer recognition.
- ✓ Better and long-term preservation for one's intellectual output.

2.3.2.2 Benefits of an Institutional Repository to the Institution

The benefits to the institution include:

- ✓ Capturing and collocating the intellectual capital of the institution.
- ✓ Increasing the visibility of the institution's intellectual output thereby boosting its prestige and even world university ranking.
- ✓ Storing and preserving other institutional outputs, including unpublished or otherwise easily lost "grey" literature (Watson, 2007).
- ✓ Offering longtime preservation of the institution's digital output.
- ✓ Improved research knowledge management.
- ✓ Offers potential in supporting distance learning and teaching.
- ✓ Encourages Cross-Disciplinary and Cross-Institutional Research

2.3.2.3 Benefits of an Institutional Repository to the User community

The benefits to the user community include:

- ✓ Maximize access to local research or the results of publicly funded research and in turn maximizes its (research) visibility, usage and impact.
- ✓ Open the door to new computational research techniques and pathways, such as text mining when online.
- ✓ Easier institutional intellectual output discovery.
- ✓ Timeliness in disseminating scholarly works

2.3.2.4 Costs of IR Contribution

The costs, borne by content contributors in institutional repository often times receive only rudimentary attention in institutional repository literature. However, faculty members may consider costs and benefits implicitly in terms of IR contribution (Kim, 2007). Chawner and Cullen (2009) observe that faculty members could be concerned about the set of risks or barriers associated with repository deposits or contribution. According to the Social Exchange theory (SET), individuals may share or may not share their knowledge because of their perception of the benefit or lack thereof. Jihyun Kim's study also identified risks or barriers to institutional repository contribution. The biggest barrier was concern about copyright; the greater the concerns about needing publisher permission or the fear of infringing copyright, the less likely faculty are to contribute to an institutional repository. Hence, IR parent organizations must indeed strive to provide an environment that is supportive to knowledge creation and sharing if at all the campus institutional repository can be easily adopted by the user community.

2.4 Local Content

Okunoye and Karsten (2002) argue that local content is not only relevant to African scholars but also to other researchers across the globe. University libraries should therefore look at making accessible these local information resources and also preserve them for the wider scholarly community as one of its social responsibility to the immediate community and beyond. But what is local content? Uzuegbu, (2012) points out that local content found in a university community is primarily borne out of scholarly research. One can therefore define local content as all locally generated or published scholarly literature in a particular institution. Digitization of dissertations or other local scholarly content for inclusion in institutional repositories can also serves as an excellent

recruitment strategy for the institutional repository and helps build local content collections (Piorun & Palmer, 2008).

2.4.1 Types of Local Content

Gray (2007) observes that access to the knowledge generated by local research in Africa is of vital importance particularly in a continent with development needs so urgent that the effective dissemination of such knowledge can quite literally be a matter of life and death. There is therefore an overdue need for all institutions of higher learning to create, collect, digitize, organize, preserve and disseminate its local content. There exists a number of local content types that can be created and used at institutions of higher learning including LUANAR which may include the following:-

Conference papers

Dissertations or theses

Lecture notes

Past Exam papers

Post-prints-journal articles accepted for publication

Pre-prints of articles or research reports submitted for publication

Public lecture notes

Research projects

Research proceedings

2.4.2 Local Content Creation

Mwirigi and Kinyajui (2012) describe local content as a collection of bibliographic materials originating from a community or society. Mutula (2008) points out that local

content provides the means of satisfying internal needs, enhances self-reliance, helps bridge intra and extra digital divide, enhances community access to content, and in general, gives a community identity as it mirrors real life situations and operations. But how is local content created? University communities create and use local content that is useful to local needs as a result of their core activities. Uzuegbu (2012) shares this point by pointing out that a university community, as a result of its broad focus on teaching, research and learning, creates knowledge and vital information that is useful to humanity. Scholarly local content may either be born digital or made digital through digitization. This view resonates with Okede and Udumuku (2014) who define local contents as materials which require organization by professional librarians through digitization and made accessible to the global community. Local content creation is there an integral part of global knowledge.

2.4.3 Visibility of African Content

Universities have a responsibility to ensure that scholarship created at their institution is both accessible and used by the greatest number of people. However, the application and use of this scholarship (local content) can only become a reality when the created information is collected, processed, promoted and made visible for accessibility and usage. However, according to the World University Rankings, generally African universities like LUANAR (except for those in South Africa) are ranked lowest in terms of research output due to absence or poor visibility of their research output (Moahi, 2009). This observation only adds credence to Jain (2011) who argues that the university system across sub-Saharan Africa simply does not generate publications or disseminate research findings effectively enough to reach the audiences that need to make use of

development-focused research from within the continent. Sietmann (2008) therefore rightly states that any hindrance to the access and sharing of knowledge directly affects new insights, discoveries and developments. It must therefore stand that best research practices come with a responsibility to circulate created or published work as widely as possible.

2.4.4 Digital Content

Moahi, (2009) again observes that much of the knowledge that is produced at institutions of higher learning is usually in digital content given the proliferation of ICTs in many universities and research institutions. Lynch (2003) shares the same point by stating that at the most basic and fundamental level, intellectual life and scholarship of our universities will increasingly be represented, documented, and shared in digital content. But what is digital content? Digital content is any content that is published and distributed in a digital form, including text, data, sound recordings, photographs and images, motion pictures, and software (IT Law Wiki, 2013). Digital content could be local or otherwise.

2.5 ICT Infrastructure

Institutional repositories are proliferating as they become an indispensable component for information and knowledge sharing in the scholarly world (Lynch & Lippincott, 2005). According to Schmitz (2008) developing nations including those in Africa's use of the web and Internet search services among students and faculty at academic institutions is now common despite technological and infrastructure barriers that exist in many places. Institutional repositories require fast and reliable network connection as well as

deployment of adequate information and communication technology infrastructure as there can never be digital content without such an infrastructure. Infrastructure may also include the type of staff, the type of technology chosen for the repository and services provided. It also remains the sole duty of parent organization like universities providing institutional repository services to provide adequate bandwidth for their network services. In more recent past, it was also the sole obligation of the university libraries to provide the infrastructure for accessing content to their user community as university computer labs were the only access points on campus. Christian (2008) supports this point of view by stating that the major point of internet access to students and staff at universities was through internet cafes. However, the proliferation of portable and mobile devices amongst staff and students has mitigated the demand for universities to provide more access points but has increased demands for more robust wireless network coverage on campuses to accommodate these gadgets.

According to Kukulska-Hulme et al. (2005) mobile gadgets and phones could add a completely new dimension to the teaching and learning process due to a wide range of attributes, such as being portable, ubiquitous, pervasiveness and the functions such as voice, video and data services, camera, video, radio, and the internet connectivity.

2.6 Personnel Training

Most institutional repositories are generally managed within the library setup. However, institutional repository staff require different skills and knowledge compared with traditional library roles. Finding appropriate or specialized staff for such a task can therefore be a challenge. Simons and Richardson (2012) rightly observe that working on

an institutional repository requires a specific set of job skills and knowledge that is largely acquired through informal training rather than through formal training courses or academic curriculum. Although most institutional repository personnel get some in-house training, the need to identifying more suitable training programs for institutional repository personnel to best prepare, and support, the repository staff becomes vital to the success of repository services as they continue to evolve and mature. There is clearly a need for more and varied training opportunities for repository professionals, Simons and Richardson (2012).

2.7 Public Awareness or Marketing

Libraries have long recognized the value of promoting library collections and services to its potential user community. Indeed, even academic libraries have been known to adopt and implement marketing strategies that were once thought to be outside the non-profit domain (Ramirez & Miller, 2011).

Institutional repositories as a relatively new service offered by libraries are therefore no exception in their need for marketing tools. Why then market an institutional repository? Despite the benefits that institutional repositories can deliver, institutional repositories have not been readily adopted without the aid of promotional tools that target the needs of its potential users (Foster & Gibbons, 2005). The other reason is that despite the fact that the scholarly content of institutional repositories largely depends on faculty work and contributions from individual faculty and students, studies have shown that actual faculty participation and awareness of, the development of institutional repositories is extremely low.

2.8 Institutional Support

Establishing an institutional repository is not a cost free proposition, and according to Giesecke (2011) factors that impact costs include the number and type of staff, the type of technology chosen for the repository and the nature of services provided. It therefore becomes paramount that top management becomes ‘cheerleaders’ of such a project like institutional repository. According to Otando (2011) libraries must involve senior level management to gain their support. This institutional support by management may not be better demonstrated than offering support and commitment to the development of a mandatory institutional repository policy among others. A mandatory institutional repository policy becomes helpful in populating the repository because it adds legitimacy and authority when contacting authors for their papers. The institution should also help in the retention of trained staff as it is the key challenge to sustainability. This is also in agreement with Rosenberg (2006) who observed that lack of funding and lack of retention of trained staff is the key challenge for the future.

2.9 Challenges of Institutional Repositories

Despite the laudable benefits that come with institutional repositories, global trends indicate that there exist challenges to the realization of the full potential of these institutional repositories (Bamigbola, 2014). The summarized below were seen to be barriers to the success of institutional repositories by (Pickton & Barwick, 2006).

2.9.1 Content Contribution

A survey of Association of Research Libraries (ARL) identified content recruitment as the number one challenge in implementing an institutional repository (Bailey et al.,

2006). Jain, Bentley and Oladiran (2009) point out that a successful institutional repository is dependent on the willingness of authors or contributors to deposit their work voluntarily and there may be local barriers and hindrances to overcome; and unless the value of an institutional repository can be demonstrated quickly, the organization's long-term commitment to the project may begin to wane. This also resonates with Van Wyk and Mostert (2012) who point out that there is reluctance on the part of researchers to share research or entrust the library with their research.

2.9.2 Copyright Issues

Sometimes researchers are apprehensive about infringing publishers' copyright and lack adequate awareness about their own intellectual property rights (Jain, Bentley & Oladiran, 2009). They may be uncertain about making their work available online before it is published by a traditional publisher.

The issue of copyright can therefore be a major challenge as regards to depositing or publishing of scholarly work on an institutional repository. Many authors who publish in journals usually sign copyright transfer forms that transfer copyright from the author to the publisher and although publishers allow depositing of pre-prints or even the final print while many authors are never really aware of their rights and do not have the time to check what rights they have on their published papers (Majawa, 2009).

2.9.3 Institutional Repository Policy

Experiences suggest that an institutional repository will only function to its capacity when a mandate is in place to populate it (Jain, Bentley & Oladiran, 2009). Lynch (2003) has however, cautioned that an institutional repository should not become a tool for

enforcing administrative control over academic work. In any case, the most effective strategy for content recruitment is to implement an institutional policy requiring the archiving of research publications into institutional repositories (Mark & Shearer, 2006). According to Mostafa, Begum and Mezbah-ul-Islam (2015) institutional repository policy in particular, should address issues such as copyright; self-archiving; submission of content, withdrawal policies; and types of materials to be deposited. Calhoun (2013) also argues that incentivizing data sharing through a repository infrastructure for data identification, management, preservation, re-use, discovery and visibility might contribute more to institutional repository success.

2.9.4 Lack of Incentives:

In the absence of any incentive, academics feel reluctant to provide even bibliographic details of their scholarly output especially when they know that incentives are available in other institutions (Jain, Bentley & Oladiran, 2009).

Dini-Kounoudes and Zervas (n.d.) therefore recommended that academics be given incentives to encourage them to publish their work in the institutional repository. Sarker, Davis and Tiropanis (2010) share this view by saying that data publication needs to offer authors an incentive to publish data through long-term repositories.

2.9.5 Plagiarism Fears

According to Moahi (2009) there exists fear of plagiarism and having ones ideas stolen. However, Hubbard (2005) dispels the argument that if articles are easily available in electronic format, then plagiarism will be made easier. Hubbard argues that in fact,

plagiarism is diminished as a problem as it is far easy to detect plagiarism if the original material is freely accessible to all, rather than being hidden in an obscure journal.

2.9.6 Lack of IR awareness

Another common problem that most IR user communities have is low or lack of awareness of the institutional repository existence around campuses (Arndt, 2012). A lack of institutional repository existence awareness would certainly lead to no content contribution, there is therefore, a need for awareness and effective publicity in order to inform and educate the scholars who are major contributors about the benefits and impact of IR to an academic institution (Omeluzor, 2014). The success of institutional repository is very much dependent on the contribution of researchers and faculty members (Alemayehu, 2010).

2.10 IR Challenges in Creation and Use of Local Content

Africa lacks access not only to content that is outside the region but also content that is created locally as reported by SARUA (2008).

Institutional repositories have therefore become the indispensable infrastructure needed to accelerate creation and usage of local content in institutions of higher learning. However, institutional repositories face a lot of challenges in the creation and use of local content which may include the following:-

- ✓ Digitalization process being expensive
- ✓ Lack of awareness of the existence of institutional repositories.
- ✓ Lack of perceived incentives for institutional repository contribution.
- ✓ Limited ICT skills in creation, access and use of digital information.

- ✓ Attracting content (even already existing ones) to the repository.
- ✓ Fear of plagiarism and having one's work scooped.
- ✓ Copyright and intellectual property issues (authors are concerned that they may be violating the copyright agreements they have signed with their publishers by depositing their papers into an institutional repository).
- ✓ The wrong perception that the value of institutional repositories is only to the reader, rather than the depositing author
- ✓ Some publishers' policies do not allow posting pre-or-post refereed articles on publicly accessible IR.

2.11 Solutions

Based on literature on institutional repositories, the following have been suggested as potential solutions to challenges facing institutional repositories.

- ✓ Advocacy to improve institutional repository awareness and publisher Open Access policies.
- ✓ More training for staff and students in creation, access and use of digital information.
- ✓ Motivate staff to create and contribute local content to the institutional repository
- ✓ Building of institutional capacity to create local content.
- ✓ Mandatory IR policy can be a highly effective and sustainable content recruitment strategy.

2.12 Summary

This chapter has discussed the theoretical framework upon which the study is based. The study also discussed issues related to concepts of institutional repositories, local and digital content in the context of their creation and usage. The reviewed literature reveals that institutional repositories are deployed in order to collocate and make scholarly content more visible, accessible and used by their user communities.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the procedures that have been used in conducting the study. According to Collis and Hussey (2003) the term methodology refers to the overall approaches and perspectives to the research process as a whole. Research methodology is therefore a way to systematically solve a research problem (Kumar, 2008). Research methodology can also be defined as the steps and actions that can be taken to ensure that data is obtained from adequate representative sample with minimal bias.

3.2 Research Design

According to Bhattacharjee (2012) research design is a comprehensive plan for data collection in an empirical research project. Trochim (2006) also refer to research design as the glue that holds the research project together. O’Leary (2004) points out that a good research design must seek representation from all those that research wishes to speak for or about. This study therefore adopted a survey research approach. The approach therefore enabled the researcher to collect and analyze data using both qualitative and quantitative methods. The use of multiple approaches can capitalize on the strengths of each approach and offset their different weaknesses (Spratt, Walker and Robinson, 2004). Spratt, Walker and Robinson further suggested that a mixed approach could also provide more comprehensive answers to research questions, going beyond the limitations of a single approach. The research design was then actualized using a survey approach. The survey method was chosen because it allows the collection of data from a much large

number of people, and when the research is done properly, it can give a reasonably accurate picture.

3.3 Target Population

O’Leary (2004) describes a population as the total membership of a defined class of people, objects, or events. A population in a research study is therefore a group from whom some information is sought. The target population in this study included academic staff and researchers at LUANAR who are involved in local content creation and use; library administrative staff who are involved in the deployment and organization of the content created, and students who are the avid users of the content. The population profile was therefore as follows:-

Table 3.1: Composition of Study Population

CATEGORY	POPULATION
Academic staff/ Researchers	157
Library Administrative staff	3
Postgraduate students	79
Undergraduate students	2, 967
Total Population	3,206

The sample (561) was chosen because it was believed it would be able to give the right information on local content creation and use. This is because most academic staff and researchers are primarily involved in local content creation and hypothetically must be able to contribute local content to the IR and again, they may also be engaged in

repository informational retrieval thus usage .The targeted administrative staff are those involved in the creation of local content through digitization and deployment of the same on the campus IR itself; whereas students are the ardent users of local content. It is however, also possible to have students contribute to the institutional repository through their research project work.

3.4 Sampling Technique

According to O'Leary (2004) our inability to access every element of a population does little to suppress our desire to understand and speak for a population. O'Leary further observes that regardless of any quest for representativeness, the process of sampling will still involve: naming the population; determining sample size; and employing an appropriate sampling strategy. Cohen, Manion and Morrison (2013) say that the quality of a piece of research stands or falls not only by the appropriateness of the methodology and instruments used but also by the suitability of the sampling strategy that has been adopted. This research therefore used purposive sampling on administrative library staff who are the personnel involved in the organization, deployment and management of the created local content, as they were considered an information rich source.

Paton (2002) agrees with this point of view by stating that the logic and power of purposive sampling lies in selecting information-rich cases for in-depth study.

Information-rich cases are therefore those from which one can learn a great deal about issues of central importance to the purpose of the research. The researcher used stratified random sampling on both academic staff/researchers, and students and then took a simple random sample within each group. This was because the two groups despite having a

shared attribute of being institutional repository users still had their unique requirements such as: academic staff and researchers were considered the main contributors to the repository and students were considered the main beneficiaries of the contributed content.

3.5 Sample Size

Table: 3.2: Composition of Sample

Target Population Name	Target Population Size	Sample Size
Academic staff/Researchers	157	113
Library Administrative Staff	3	3
Postgraduate Students	79	66
Undergraduate Students	2, 967	379
Total	3, 206	561

The sample size for this study was determined by using the Krejcie and Morgan Sample Size Determination Table. According to Krejcie and Morgan (1970) no calculations or formula may be needed when one wishes to know the sample size required to be representative of a particular population as long as the table is followed. However, the number of library administrative staff which was deemed as information rich source was purposively arrived at.

3.6 Data Collection Instruments

Myers (2011) observes that the choice of a research method influences the way in which the researcher collects data and ultimately, his data collection instruments. The study therefore employed the use of both questionnaires and interview guides towards data collection.

3.6.1 Questionnaires

A questionnaire is defined as a document containing questions and other types of items designed to solicit information appropriate for analysis (Rubin & Babbie, 2009). Questionnaires can either be structured or unstructured. Structured questionnaires also known as closed-ended questionnaires are those questionnaires in which there are definite, concrete and pre-determined questions. The questions are presented with exactly the same wording and in the same order to all respondents. According to Kothari (2004) resort is taken to this sort of standardization to ensure that all respondents reply to the same set of questions. Unstructured questionnaires are also known as open-ended questionnaires; questionnaires are generally used in qualitative research although some researchers quantify the answers during the analysis stage.

Unstructured questionnaires do not contain boxes to tick, but instead leave blank sections for the respondent to write in answers whereas structured questionnaires contain only closed-ended questions. This research used both structured and unstructured questionnaire. According to Dawson (2002) a combination of the two approaches can be desirable as it enables one to overcome the different weaknesses inherent in the two different methods. Questionnaires were therefore deployed to collect data on academic

staff or researchers and to both undergraduate and postgraduate students at LUANAR. The questionnaire, in general, was chosen as a data collection tool because it enhances anonymity of respondents and uniformity of questions, thus, allowing comparability. It was also the instrument of choice because academic staff and students form the largest stratum of the target population. This also resonates with Kothari (2004) who highlights that questionnaires allow data collection from a larger number of people and are relatively cheap to deploy. A questionnaire also diminishes bias on the side of the researcher and the respondents, in that way promote validity (Kombo & Tromp, 2006).

3.6.2 Interview Guide

Interview guides were also used in this study. According to Mason (2004) an interview guide is also called an aide memoire; it is therefore a list of topics, themes, or areas to be covered in an interview. The interview method was chosen in context of this particular study as it targeted a small group of individuals in the population strata (library administrative staff) and was also considered to be a flexible and adaptive way of finding things out. All library administrative staff that were purposively selected as key informants were interviewed. These included, the University Librarian, the Senior Assistant Librarian responsible for Technical Services and the Systems Administrator. Data was collected through hand-written notes during the interviews.

3.7 Validity and Reliability

Cohen, Manion and Morrison (2007) observe that threats to validity and reliability can never be erased completely; rather, the effects of these threats can be made less severe by attention to validity and reliability throughout a piece of research. This research therefore

tested the validity and reliability of data collection instruments by carrying out a pilot study to improve on the effectiveness of the questionnaire that was used. This was pretested on a small group of undergraduate students at Moi University. Following their responses, there was a rewording of some of the questions. For example the word digital was added to the term institutional repository to bring a better understanding of the concept. Another problem encountered was that some respondents appeared to be confused by the concept of publishing on an institutional repository; apparently the understanding was that publishing was only confined to the traditional scholarly journals. However, the term was still retained due its technical nature although the phrase ‘contributing or sharing ones work on the institutional repository’ was introduced to bring more clarity to IR publishing.

3.8 Data Collection Procedures

Permission or consent to conduct the study at LUANAR was sought and granted by the office of the University Registrar. A list of all students and staff on campus was therefore provided. Legal and ethical issues pertaining to the study were also strictly observed. The researcher fully explained the study to the subjects involved in advance.

The subjects were also informed about the aim and objectives of the study and their decision to participate in it was purely voluntary. Questionnaires were physically distributed and collected from them. Interviews were conducted face to face with library administrative staff.

3.9 Data Presentation, Analysis and Interpretation

Robson (2002) states that analysis of data in research is necessary because generally speaking data in their raw form do not speak for themselves. Data analysis is therefore the process of bringing orderly structure and meaning to the huge mass of information collected. Qualitative data was subjected to thematic analysis in which the main themes that emerged from the responses were identified and compared to determine patterns of association. Quantitative data was analyzed using charts, bar charts and other quantitative techniques.

3.10 Ethical Considerations

Major ethical issues of concern for this study were informed consent, privacy and confidentiality or respondent anonymity. This study respected the values of respondents in an effort to encourage voluntary participation. Respondents were informed about the purpose of the study and any data collected on individuals was solely used for academic purposes.

3.11 Summary

This chapter has presented the methodology and methods that were used in carrying out this study. It has also provided the research design and described the study settings. The study has also discussed the study population and sampling procedures and data collection methods. Data presentation, analysis and interpretation have also been discussed.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

This chapter introduces analysis, and interpretation of the data collected from the study. The aim of the study was to investigate the role of an institutional repository in the creation and usage of local content at LUANAR in Malawi, with a view to propose strategies that would promote the wider visibility and usage of its local content. The objectives of the study were to; examine the extent in which the institutional repository at LUANAR supports the creation and usage of local content; establish the types of local content found in the institutional repository at LUANAR; assess the infrastructure that has been put in place in order to promote the creation and use of local content at LUANAR; establish the opportunities and challenges in using the institutional repository to promote the creation and use of local content at LUANAR; propose strategies that would promote the creation and usage of local content in institutional repository at LUANAR. Data was collected through questionnaires and face-to-face interviews with key informants. Qualitative data was analyzed through thematic analysis and quantitative data was analyzed through the use of graphs and tables to depict values.

4.2 Response Rate

The data was collected from 57 (50.4%) academic staff / researchers, all 3 (100%) library administrative staff, 33 (50%) postgraduate students and 336 (88.7%) undergraduate students.

Out of the total sample of 561, 3 respondents were interviewed and 426 (75.9%) of those that were sent questionnaires responded. The response rate was considered reliable enough to draw conclusions upon as response rates approximating 60% for most research should be the goal of researchers (Fincham, 2009).

Table 4:1: Respondents Response Rate

Respondent Category	Sample Size	Response Rate	Percentage %
Academic staff/Researchers	113	57	50.4
Library and Academic Staff	3	3	100
Postgraduate	66	33	50
Undergraduate	379	336	88.7
Total	561	429	74.5

As earlier indicated the study selected these three groups of respondents because academic staff/Researchers are generally the creators and contributors of institutional repository content, students are the ardent users of the same, and library administrative staff are generally the personnel that organize, deploy and manage the LUANAR institutional Repository.

4.2.1 Respondent Demographics

It was necessary to find out the characteristics of the respondents because the characteristics of respondents had a direct bearing to the context in which the respondents interacted with the institutional repository.

According to McKay (2007) institutional repository users can therefore be divided into three main groups: authors, information seekers, and data creators or maintainers.

4.3 IR Support for Local Content Creation

Respondents indicated that a high level awareness of institutional repository existence has the potential to spur local content creation and use as an IR can even publish (post) grey literature. One respondent indicated that institutional repositories have provided a platform for digitization and dissemination of scholarly communications that were previously not accessible online. This resonates with Schopfel, Prost and Le Bescond (2013) who believe that institutional repositories can be a fertile and profitable encounter for scientific communities. Ndegwa and Murumba (2013) point out that institutional repositories are indeed a catalyst to research within universities. Siegel (2010) argues that the advent of institutional repository has developed a sudden interest in local content that was earlier seen as just grey literature, and it (the IR) has become a new tool for managing, disseminating, and increasing the visibility of this literature. Another respondent also indicated that the institutional repository not only disseminates born digital local content but also create an environment where previously printed local content such as theses, past exam papers, and other course materials are digitized for institutional repository upload. It was also indicated that an institutional mandate for e-copies of research projects, theses and dissertations goes a long way in supporting the creation and use and indeed visibility of local content. One respondent who was interviewed also mentioned that the institutional repository eases accessibility challenges for local content, making the repository a powerful tool for creation, disseminating and use of local content.

4.3.1 Institutional Repository Usage by Staff and Students

The study also sought to find out from respondents who had expressed awareness of the LUANAR institutional repository existence on campus if they had used the institutional repository before, and indeed, for what purpose they had used the repository. The findings indicated that few 12 (21%) academic staff and researchers had contributed content to the institutional repository. There was also a low usage of the IR amongst postgraduate students as only 5 (15%) postgraduate respondents had indicated that they had also used the institutional repository for information retrieval. Seventy-four (22%) undergraduates indicated that they had used the institutional repository for information retrieval. The study findings also revealed that despite a reasonable awareness level of the institutional repository existence amongst academic staff / researchers, knowledge of the IR existence did not necessarily translate into IR contribution. The findings underscore Chawner and Cullen (2009) observation that content recruit and indeed persuading academics to deposit their research output in an institutional repository, continues to be an uphill task. This low contribution rate might partly be as a result of the present archiving strategy (mediated deposits) at LUANAR IR where library personnel do the uploading of the institutional repository content. As a result some academic staff might not be aware of the existence of some of their work in the repository due to the fact that their work could have been digitized and uploaded by library staff. The findings also give credence to Chawner and Cullen (2009) observation that some members of the academic and research community do not see institutional repositories as a part of the publication process.

It therefore becomes obvious that IR adoption without the aid of promotional tools or advocacy that targets its different audiences can be an uphill task. This also entails that there is need for effective awareness campaign about the benefits and positive impact of IR (Omeluzor, 2014).

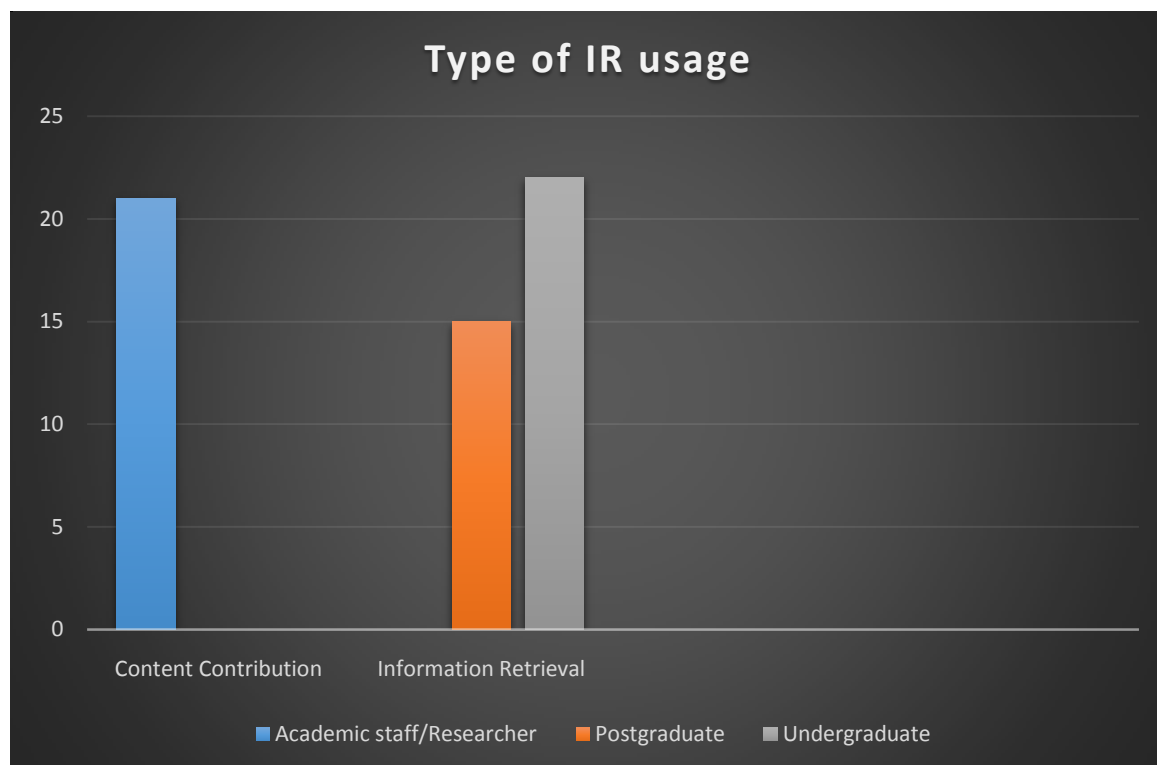


Figure 4.1: Institutional Repository (IR) Usage by Staff and Students

The study findings also showed that students, both undergraduate and postgraduate, had only used the institutional repository for information retrieval. These findings underline the need for institutional repositories administrators to come up with an IR policy that could clearly spell out who can deposit or submit and what type of materials could be submitted. Such a policy could clarify on whether or not student produced content was eligible for institutional repository publishing.

An IR policy generally defines who can submit content, what that content shall be and who can access it. In addition, the policy would cover versioning, approval process, and other key functions of a repository (Gibbons, 2004).

4.3.2 Institutional Repository Publishing Interest

The survey also dealt with the question of possible interest by respondents in publishing or disseminating or sharing their work on LUANAR institutional repository. Majority of academic staff / researchers 34 (60%) expressed extreme interest. Again, the majority of postgraduate respondents 25 (76%) also indicated extreme interest. However, only 128 (38%) undergraduate respondents registered their extreme interest in institutional repository publishing. The remaining academic staff / research respondents 23 (40%) also expressed interest in IR publishing. While the remaining 8 (24%) postgraduate respondents also expressed interest in IR publishing. A few undergraduate respondents 28 (8%) indicated no interest at all in IR publishing. The study findings revealed a huge interest by respondents in contributing to the IR. The interest alone shown in IR publishing by academic staff / researchers including postgraduate students which was found to be high was considered pivotal to the success of an institutional repository as it could spur the creation of even more local content. The findings also seem to suggest that if more information were provided regarding the institutional repository, a majority of staff and student would actively be involved in the creation and usage of local content. Low levels of interest in IR publishing on the part of undergraduates may also underscore on the need for an IR policy to clearly state who would be eligible for IR publishing at LUANAR.

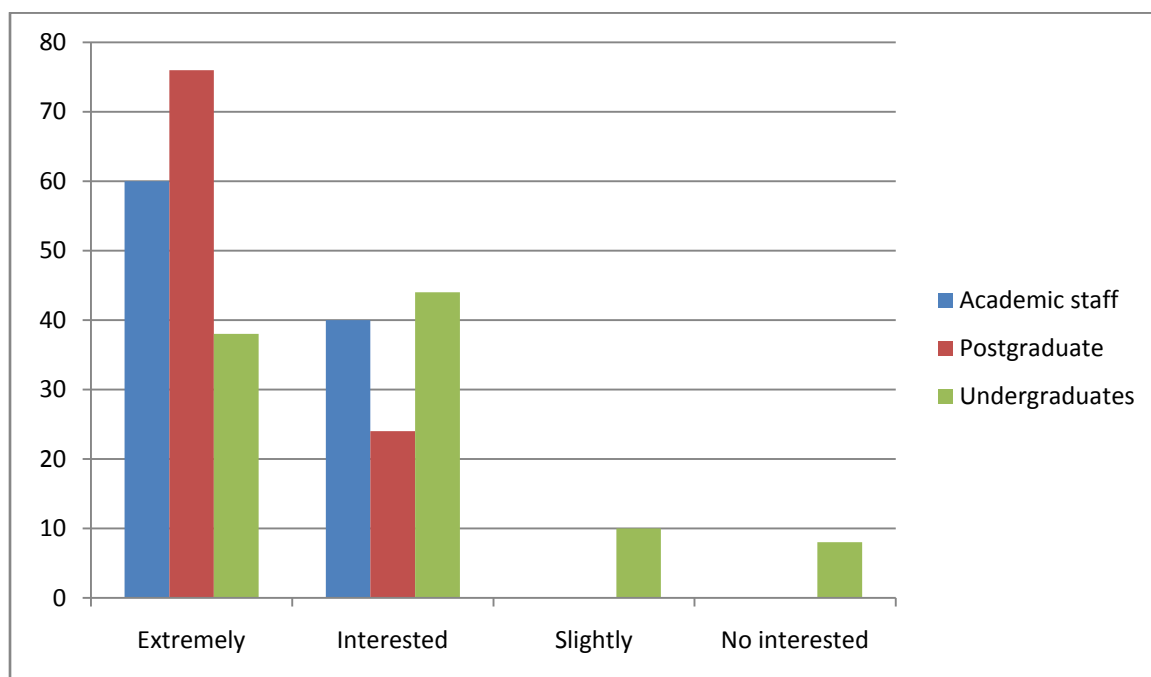


Figure 4.2: IR Publishing Interest

4.3.3 Institutional Repository Deposits

Respondents were asked how created local content is deposited or uploaded on LUANAR IR. It was revealed that currently library staff are primarily responsible for depositing or uploading content on the institutional repository. It was also revealed that DSpace offer contributors or creators the chance to personally upload their work on the IR. However, no respondent indicated any knowledge or experience of self-archiving to the institutional repository. The issue of IR deposits was seen to be interlinked to the issue of policy guiding the running of the repository. The administrators of the repository must make it clear to all potential content creators or contributors how self-archiving could be done and how it could also be in the interest of their own research and standing, maximizing the visibility, accessibility, usage and impact of their work.

It would also be imperative to have specialized and trained repository staff who would offer help in depositing into the IR or uploading content on behalf of any content creator who would feel that they are personally unable (too busy or technically incapable) to self-archive for themselves. This resonates with Covey (2011) who points out that some faculty members appear to be either unaware of or unconcerned about deposits or perhaps too busy to be bothered with such details.

4.4 Type of Local Content that can be created or contributed to the IR

The study also sought the opinion of respondents on the types of local content that they thought could be created or used or indeed made available for the institutional repository (IR) at LUANAR; multiple answers were allowed. The study revealed a spectrum of preferences. All the 57 (100%) academic staff and researchers indicated priority preferences in conference papers, dissertations or theses, and research projects. Majority of academic staff / researchers 46 (81%) also indicated preference for public lecture papers and technical papers. Another majority of academic staff and researchers 34(60%) indicated lecture notes as preferred institutional repository content. However, students generally showed an overwhelming interest in lecture notes as a preferred institutional repository content; a majority of postgraduate respondents 23 (70%), and undergraduates 252 (75%) registered this.

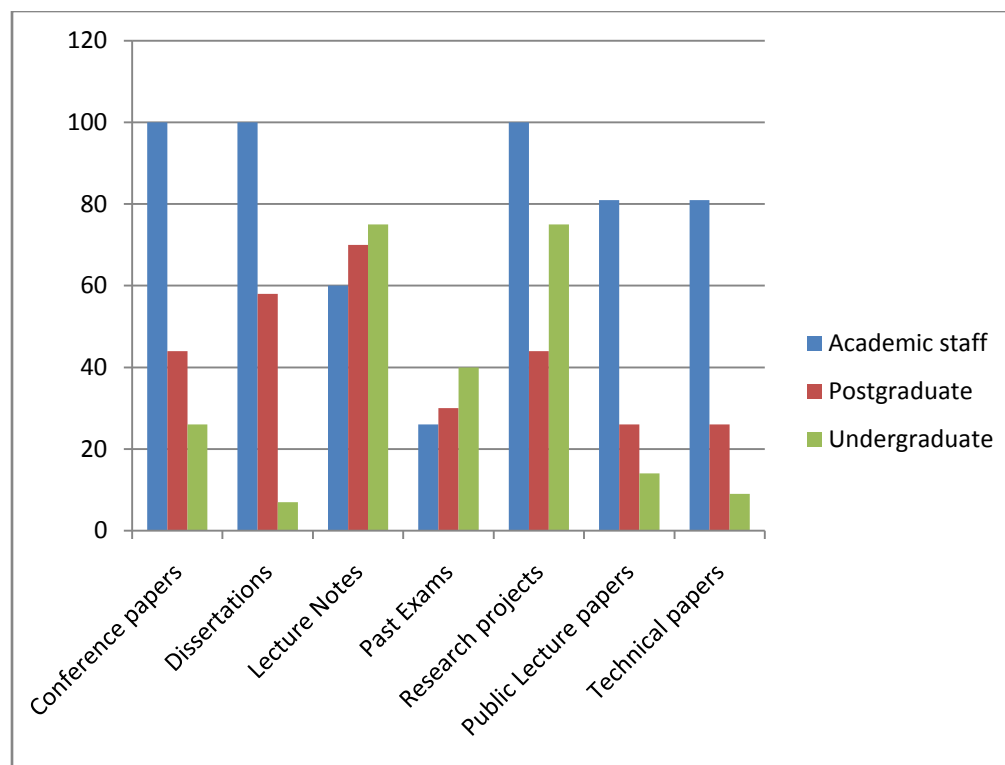


Figure 4.3: Preferred Institutional Repository Content

The other institutional repository content that was also highly preferred by postgraduate students was dissertations or theses indicating 19 (58%). An average number of undergraduates 134 (40%) indicated preference for past exams. The study showed that lecture notes was the local content type that was highly regarded by all categories of respondents. It was however noted that content preferences tended to lean towards respondents' core activities. For example, lecture notes and research projects were considered highly by undergraduates. Comparatively, dissertations or theses were considered highly by both academic staff and postgraduate students. During face to face interviews, a similar question was asked about the type of local content institutional repository administrators thought would be ideal for the institutional repository; multiple answers were also obtained.

All 3(100%) interviewed respondents said that theses or dissertations were the most ideal form of local content that could be created, used or contributed into a repository. Other types of local content preferred included conference papers, past exam papers, public lecture papers, research papers and technical papers. The findings affirm that there indeed exists a variety of local content that is already generated in our institutions of higher learning and its contribution to national development can only be done when universities and all institutions of higher learning, effectively manage their local content, avoid fragmentation of the same due to poor strategies of collecting, capturing and disseminating content; a scenario which is common in most African universities (Moseti, 2012).

4.4.1 Type of Local Content Respondents Indicated Had

The survey also wanted to find out if respondents had local content in their possession they could readily contribute or have disseminated, published or shared on the institutional repository. Most academic staff and researchers indicated they had research papers, technical papers, dissertations, lecture notes and public lecture papers in that order. Both postgraduate and undergraduate respondents indicated research projects and dissertations. Despite some significant differences in the type of content, the study showed that there was a lot of local content that indeed already existed in some staff personal drawers or repositories, inaccessible to the majority public. This add credence to Taylor (2009) who points out that many results of publicly funded research are inaccessible to the vast majority of those who could make use of and build on it.

The findings also confirmed that interest in content contribution in institutional repositories may depend on IR awareness.

4.5 Infrastructure put in Place to Promote Local Content Creation and Usage

This research also sought to find out the infrastructure that was put in place in order to promote local content creation and usage by both academic staff / Researchers and students at LUANAR.

4.5.1 Access

All 57 (100%) academic staff / researchers, majority of postgraduate students 27 (82%) indicated library visits as a platform or means for local content access. Majority of undergraduates 235 (70%) also preferred library visits as a mode of accessing local content. The findings also revealed that 34 (60%) academic staff and researchers used the Local Area Network (LAN) as a means of accessing local content. This was followed by 141 (42%) undergraduates who also indicated that they had used the Local Area Network (LAN) to access local content. The study findings imply that despite LUANAR campus being networked, library visits remain an integral part of as of accessing local content at LUANAR. It also revealed that the campus local area network offers a serious alternative to personal library visits which without doubt, is convenient as it saves time and energy for library users. The findings might also imply that that the LUANAR institutional repository still requires more advocacy. However, with more and more students, and indeed staff living out of campus due to 'widening of access to tertiary education program' in Malawi, there is a need to make online access to local content or the institutional repository, a priority.

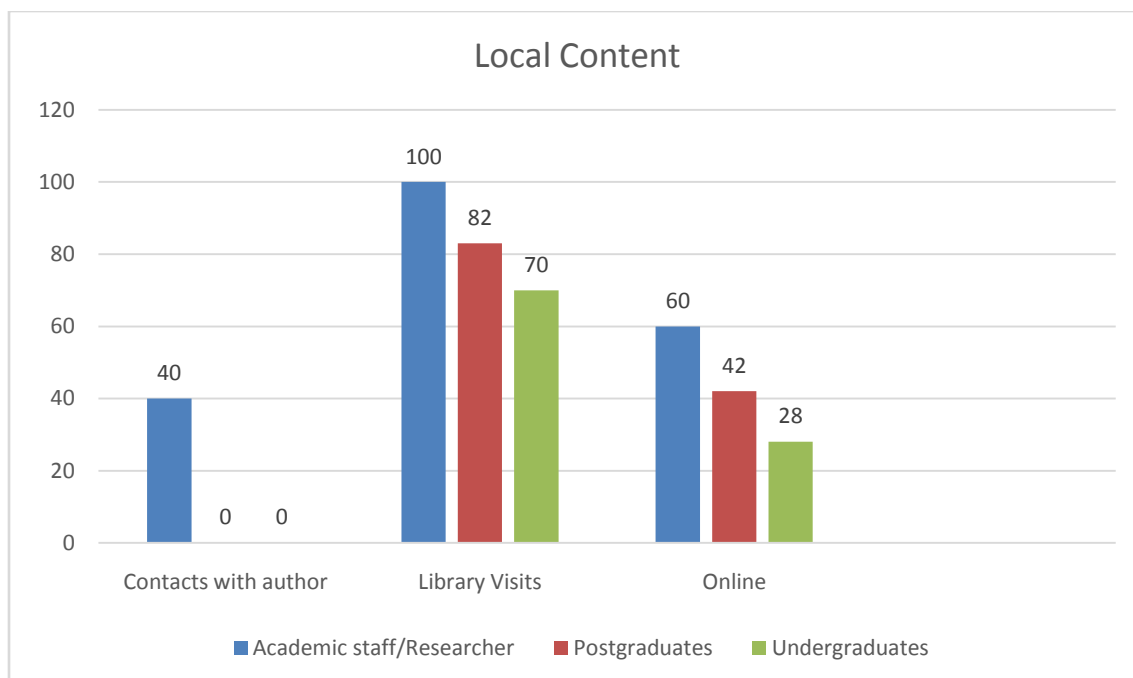


Figure 4.4: Access to Local Content.

4.5.2 LUANAR Institutional Repository Software

At Lilongwe University of Agriculture and Natural Resources like in most universities, the library is responsible for the implementation, management and maintenance of the institutional repository (IR). However, the library does get support from the ICT unit for other aspects. Implementation, management and maintenance of an institutional repository requires the support and involvement of IT/ICT units or departments, faculty and even administration to succeed (Campbell-Meier, 2008). It was also noted that the institutional repository runs on DSpace. It was however noted from the interviews that the LUANAR IR had recently migrated to the current DSpace software after having had a long history of running on Greenstone software. Respondents were also asked to explain the justification for the chosen institutional repository platform.

All respondents indicated that the software was mainly chosen because it was Open Access and easily accessible. Indeed, the uptake of IRs in many institutions has been largely the result of the availability of open source software that can be used to build the IR (Van Westerijnen and Lynch cited in Moahi 2009). One respondent explained that one shortcoming observed on Greenstone which was the initial platform for the LUANAR IR, and that without doubt led to DSpace migration, was the almost too frequent releases of new Greenstone software updates, which necessitated continual upgrades of the Institutional Repository platform and was found to be involving. It was also revealed that DSpace software also supports, self and next-generation digital archiving that is more permanent and shareable than current analog archives. DSpace also supports a wide variety of artifacts, including books, theses, and 3D digital scans of objects, photographs film, video, research data sets and other forms of digital content (Thakuria, 2012).

4.5.3 Institutional Repository Advocacy

Respondents were asked if they knew that LUANAR had an institutional repository on campus and 34 (60%) academic staff and researchers indicated that they were aware of the existence of the institutional repository. An average 18 (55%) postgraduate respondents indicated that they were aware that the university had an institutional repository. However, 218 (65%) undergraduates indicated that they were not aware that the university had an institutional repository. The findings indicate that the academic staff / researchers stratum was more aware of the institutional repository existence than students in general. It might also imply that current promotion strategies for the institutional repository seem to have targeted staff more than students and need revisiting

if high levels of awareness might be achieved at LUANAR. It also implies that awareness of the institutional repository existence may not necessarily guarantee institutional repository contribution. This interpretation gives credence to Stanton and Liew (2011) findings that indicated that awareness of IR existence did not necessarily indicate an understanding of open access. This lack of awareness of IR presence by a large number of one particular stratum on campus indicates that alternative approaches to promotion are needed for undergraduates if they are to play their rightful role as the biggest stratum of potential IR users. Covey (2011) points out that recruiting a critical mass of content for the institutional repository is contingent on increasing awareness.

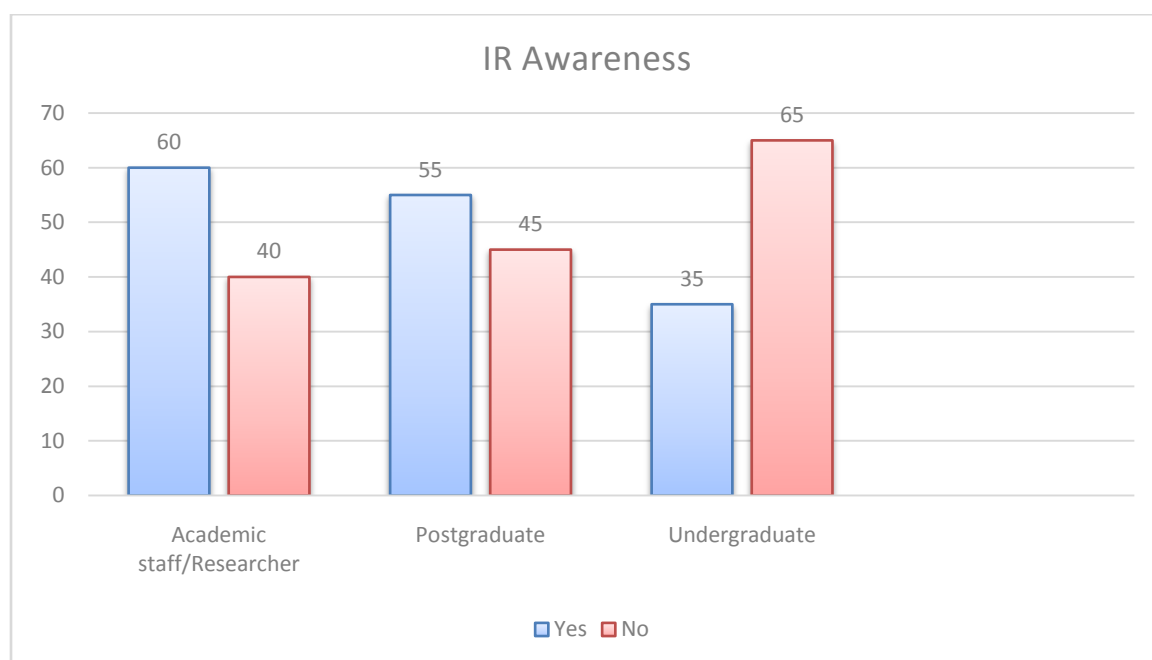


Figure 4.5: IR Awareness

4.5.4 Institutional Repository Policy

During the interviews, the role of institutional repository policy in advocacy and content contribution stood out. All the three library administrative staff interviewed agreed that an institutional repository policy is crucial for setting the parameters of the system. An institutional repository (IR) policy is important because it directs the operations of an Institutional Repository including the guidelines for authors that wish to contribute deposit or upload their scholarly content to the institutional repository. An IR policy is therefore an important tool because it defines the terms and conditions of submission of items deposited in the IR depending on the IR policy (Gibbons, 2004). Interviewed participants were consequently asked if the University had such a policy. The study revealed that it does not have an institutional repository (IR) policy to date. However, Mapulanga (2013) observed that although policy statements were not drawn for the IR, instead an insertion was done in the research and publications rules and regulations on issues related to the repository. Jain, Bentley & Oladiran (2009) therefore rightly state that an institutional repository will only function to its capacity when a mandate is in place to populate it.

4.5.5 Institutional Repository Marketing Platform

Respondents who expressed awareness of the institutional repository existence were also asked how they had learnt of the IR existence. The majority of academic staff and researchers³⁴ (60%) indicated that they had known about the IR existence through the library news (brochure). A few postgraduate respondents 25 (38%) indicated that they had learnt of the existence of institutional repository through library orientation classes. The majority of undergraduate respondents 68 (18%) indicated that they had learnt about

the institutional repository existence through library orientation. A small percentage of undergraduate respondents also indicated that they had learnt of the IR existence through word of mouth. The study findings also revealed that there was a glaring absence of the Institutional Repository existence on LUANAR homepage. This meant that the IR was unreachable from LUANAR homepage. This also implies that Lilongwe University of Agriculture and Natural Resources efforts towards creating IR awareness among the university's user community needed to be improved. A clear and direct Institutional Repository link from the Lilongwe University Agriculture Natural Resources homepage could be a major first step towards visibility of an IR service, and consequently its local content. Indeed, there appears to be more room to make the institutional repository and local content visible online on LUANAR local area network (LAN) as only a few respondents (less than 30%) indicated that they had learnt the institutional repository existence through online means. The study also found out through interviews that other strategies that promoted the institutional repository, and consequently the use of local content were through library user orientation classes, the library website and through some committee meetings. Unless one is aware of the existence of a certain information resource, one cannot access, retrieve and use the resource (Kamau, 2014).

4.5.5.1 Library Website

The interviews established that LUANAR library has a working website which provides a link to the campus institutional Repository through the library homepage. This website also plays a role in promoting the Institutional Repository. The study revealed that the library website has a link to the repository. The LUANAR institutional repository is also promoted through the listserv (mailman) and the library Facebook page.

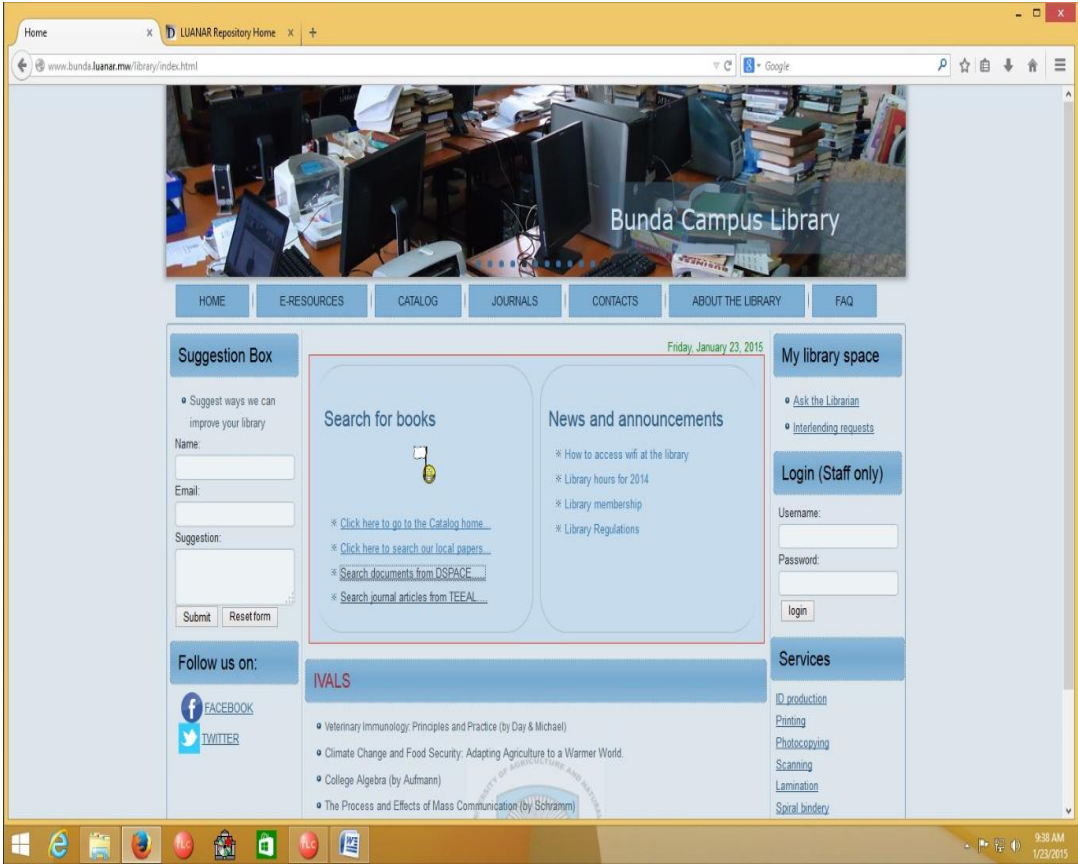


Figure 4.6: LUANAR Library Website

It can be seen in figure 4.6 that the LUANAR library does have homepage

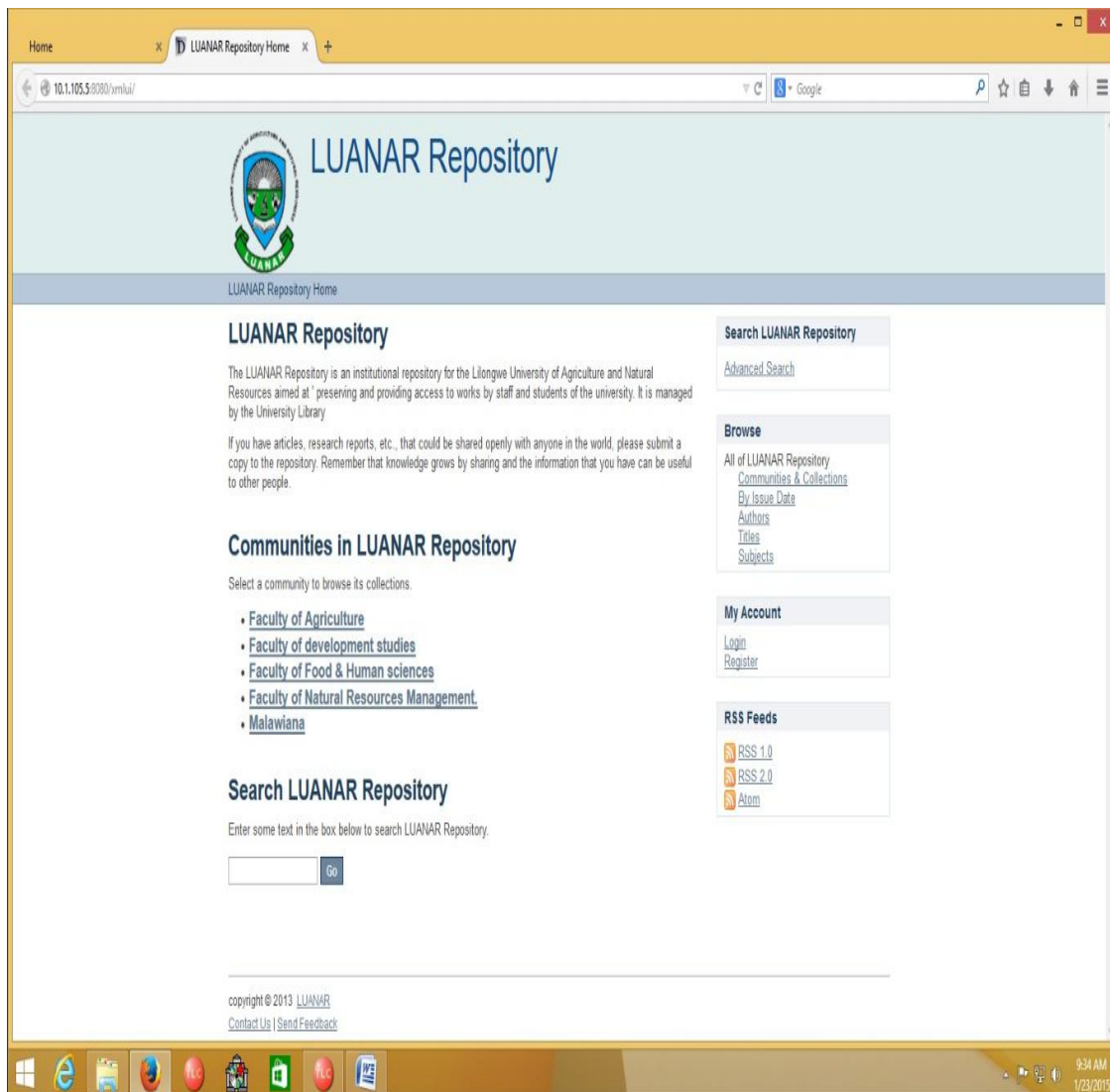


Figure 4.7: LUANAR IR Homepage

It can be seen in figure 4.7 that LUANAR has a working Institutional repository

The screenshot displays the LUANAR Repository interface. At the top, the logo and name 'LUANAR Repository' are visible. Below the header, a breadcrumb trail reads: 'LUANAR Repository Home → Faculty of Natural Resources Management → Undergraduate degree Projects → View Item'. The main content area features the title 'Wild life conservation in Malawi' by 'Hayes, G.D.'. It provides the URI: <http://localhost:8080/xmlui/handle/123456789/10> and the date: 2013-07-16. A link for 'Show full item record' is present. Under the 'Files in this item' section, a PDF file is listed with the name 'Wildlife conservation ...', size '321.0Kb', and format 'PDF'. A 'View/Open' link is provided for this file. The 'This item appears in the following Collection(s)' section lists 'Undergraduate degree Projects' with a description: 'A Collection of Project reports submitted in partial fulfillment of the requirements for the award of Bachelors degree.'. On the right side, there are sections for 'Search LUANAR Repository' (with an 'Advanced Search' link), 'Browse' (with links for 'All of LUANAR Repository', 'Communities & Collections', 'By Issue Date', 'Authors', 'Titles', 'Subjects', and 'This Collection'), and 'My Account' (with 'Login' and 'Register' links). The footer contains copyright information: 'copyright © 2013 LUANAR' and links for 'Contact Us' and 'Send Feedback'. The Windows taskbar at the bottom shows the time as 9:40 AM on 1/23/2015.

Figure 4.8: LUANAR Repository Search

It can be seen in figure 4.8 that the LUANAR repository does have local content.

The screenshot displays the LUANAR Repository website interface. At the top, there is a navigation bar with the LUANAR logo and the text 'LUANAR Repository'. Below this, a breadcrumb trail reads: 'LUANAR Repository Home → Faculty of Agriculture → Thesis and Dissertations → View Item'. The main content area features the title 'Determination of optimal conditions of the Vascular Puncture Inoculation (VPI) for mechanical transmission of Maize Streak Virus (MSV)' and the author 'Matewele, Macpherson, Baxtone'. The URL is 'http://localhost:8080/xmlui/handle/123456789/96' and the date is '2015-01-23'. An abstract follows, detailing a study conducted at Chitedze Research Station between 1999 and 2001, focusing on determining optimal conditions for VPI. The abstract mentions variables like water temperature, soaking duration, and inoculum amount, and states that the optimal conditions for MSV transmission were: 1) 12 hours of soaking duration, 2) 2°C and 4°C for water temperature, 3) 24 hours of post-inoculation duration, 4) 2°C of post-inoculation incubation temperature, 5) inoculum placement position was close to the embryo, 6) 0.01 potassium phosphate buffer at pH 7.0 for buffer solution concentration, 7) best transmission rates were obtained when 10 punctures were made on seed, 8) 24(μl of inoculum amount and 9) KH₂PO₄ or a combination of KH₂PO₄ + NaH₂PO₄ as buffer type. A 'Show full item record' link is provided at the bottom of the abstract. On the right side, there are several utility boxes: 'Search LUANAR Repository' with an 'Advanced Search' link; 'Browse' with links for 'All of LUANAR Repository', 'Communities & Collections', 'By Issue Date', 'Authors', 'Titles', 'Subjects', and 'This Collection'; 'My Account' with links for 'Logout', 'Profile', and 'Submissions'; 'Context' with links for 'Edit this item', 'Export Item', and 'Export Metadata'; and 'Administrative' with links for 'Access Control', 'People', and 'Groups'. The Windows taskbar at the bottom shows the system clock as 10:13 AM on 1/23/2015.

Figure 4.9: LUANAR Thesis Search

It can be seen in figure 4.9 that theses are a part of the local content found in LUANAR repository.

4.5.6 Channel for Publishing, Disseminating or Sharing Scholarly Work

Respondents were asked on whether or not they had published before and where if yes, they had published and multiple answers were obtained. Majority of academic staff and researchers⁴⁶ (81%) indicated that they had published both in print and online. However, only postgraduate respondents 5 (15%) indicated that they had published in print journals and 3 (9%) postgraduate also indicated that they had published online and ResearchGate in particular. A few undergraduate respondents indicated that they had not published before but most of them just left the question unanswered. The study findings imply that there exist some form of publishing culture at LUANAR that can be easily directed to an IR publishing culture. It is however clear, that LUANAR still needs to actively market the concept of the Institutional Repository within the institution. The research also revealed that some members of the academic and research respondents did not see repositories as part of the publication process. Davis and Connolly (2007) also noted that there existed some confusion amongst faculty as to whether posting work on the Institutional Repository could be considered publishing. Some notable responses from academic and researchers were:

But what do you mean by publishing, you can't publish in a repository and if the word 'publish' means sharing or making available certain scholarly work why use publishing?

However, this resonates with Cullen and Chawner (2009) who point out that it is apparent that members of the academic and research community do not see repositories as part of the publication process.

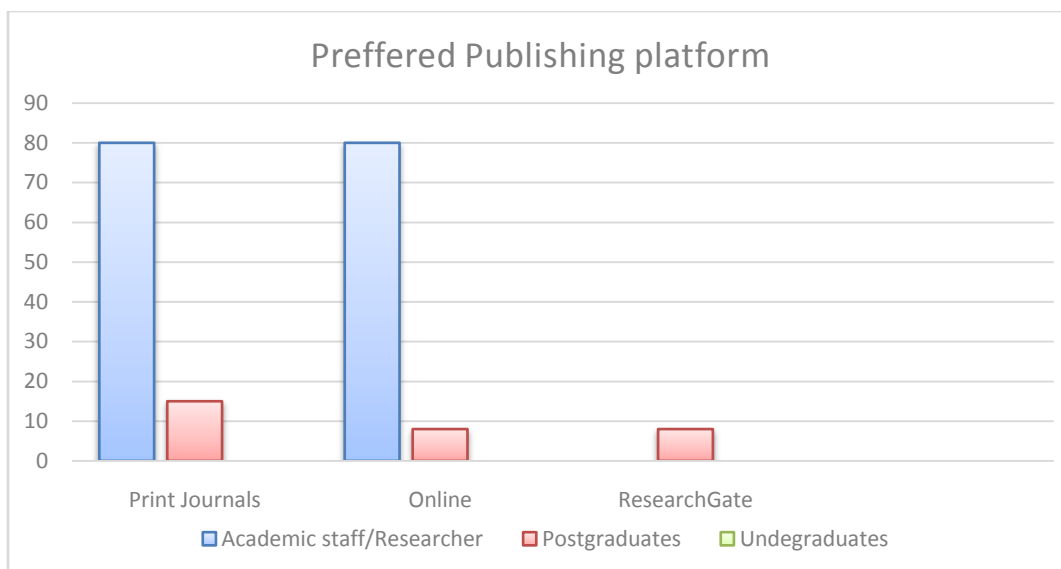


Figure 4.10: Preferred Publishing Platform

4.5.7 Motivation for Publishing

The survey also sought to find out what motivated the dissemination, publishing or disseminating and sharing of scholarly work from the respondents and multiple answers were obtained. All 57 (100%) academic staff and researchers response indicated that they had published, disseminated or shared their work in order to gain professional advancement. There was also some 46 (82%) academic staff and researchers responses that indicated that communicating with colleagues was one motive for publishing. There were also 34 (60%) academic staff and researchers responses that expressed professional recognition as the other motive to publish. Twelve (21%) academic staff and researchers responses specified that ‘contribution to the body of knowledge’ was another motive for publishing. An average of 16 (48%) postgraduate responses indicated that ‘professional advancement’ was a motive in their publishing. This was followed also by 14 (42%) postgraduate responses indicated that ‘communication with colleagues’ was the

motivation. Despite an almost nonexistent interest in publishing for undergraduates, a few responses indicated that communication with colleagues and professional advancement could be motives for publishing. However, this stratum included ‘influence of co-authors’ who are mainly faculty members being a motive for publishing. The study therefore revealed that there existed different motivations that push individuals to publish or share their work. The findings give credence to the Social Exchange theory’s fundamental principle that humans in social situations choose behaviours that maximize their likelihood of meeting self-interests in those situations. Stanton and Liew (2011) also observed that individuals engage in social exchange like the sharing of knowledge or contributing their local content to an institutional repository and other social goods for the following four key reasons: anticipated reciprocity; expected gains in reputation and influence on others; feelings of altruism and/or perceptions of self-efficacy and self-worth, and direct reward i.e. social, professional/career, or financial. From the foregoing, it can be concluded that different motivations push individuals to publish or share their work.

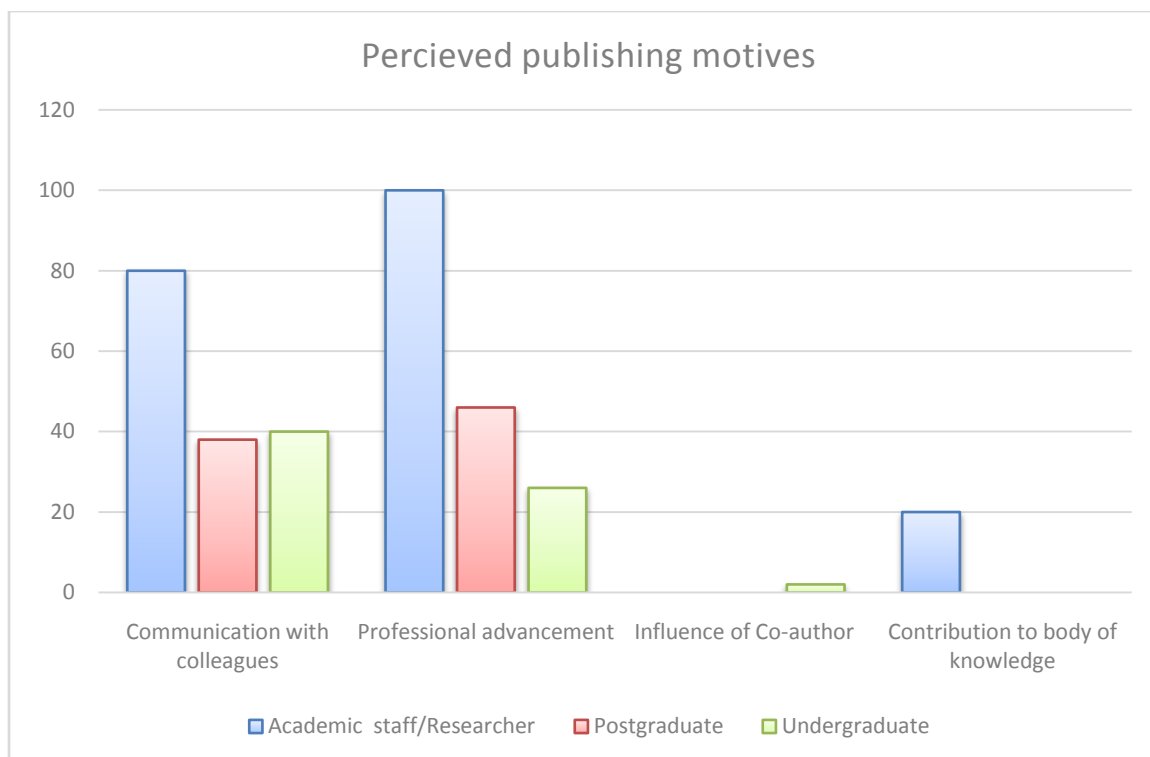


Figure 4.11: Publishing Motives

4.5.8 Local Content Promotion

Respondents were asked to make suggestions on what the LUANAR Repository could be doing to promote the creation, visibility and indeed the use of local content through the IR.

The following suggestions in Table 4.2 were notable suggestions from staff and students:-

Table 4:2: Promotion Suggestions

Number of Suggestion	Suggestion
1	Create posters publicizing the IR existence on campus
2	Make IR user education a gradable course
3	Improve coverage of Local Area Network (LAN)
4	Institutional Repository should be accessible beyond campus (available on Internet)
5	Intensify Local Content sourcing
6	Make the IR part of LUANAR webpage
7	More sensitization on IR existence to new students in orientation classes
8	Need for special IR awareness programme on campus
9	One on one orientation by staff (User orientation be a continuous process and not a one off arrangement)
10	Orientation Classes should be used more to promote the Institutional Repository
11	Provision of more access to computers
12	Provision of Short Message alert service in the academic fraternity to inform users of new additions to the Institutional Repository
13	The IR should be enhanced by being accessible even outside campus network
14	Send e-messages on IR to all new library users

The study findings revealed that despite the many benefits that an institutional repository can deliver, the institutional repository cannot be readily adopted without the aid of promotional tools (Ramirez & Miller, 2010). The study also exposed an overdue need for an IR link from the LUANAR homepage to make local content more visible and accessible, and not just from the library page.

It also revealed that a lot needed to be done on the part of IR administrators at LUNAR to increase more awareness of the institutional repository.

4.6 Opportunities and Challenges of using IR to promote Local Content use and Creation

The survey sought to find out from respondents what they perceived to be existing opportunities and challenges of using an institutional repository in promoting local content creation and use.

4.6.1 Existing Opportunities in Using the Institutional Repository

The following were therefore perceived as opportunities in using the institutional repository for promoting the creation and use of local content at LUANAR:-

- ✓ The already established Local Area Network infrastructure at the university provides an adequate framework for the promotion of the use of local content through the institutional repository at LUANAR. It is well documented that the deployment of IRs can be expensive but with an already existing ICT infrastructure it reduces the cost.
- ✓ An increase in the wireless coverage in some areas around the campus, increases possible potential access points for the institutional repository and was therefore considered as an opportunity at LUANAR for promoting local content creation and use.
- ✓ Faculty apathy in institutional repository contribution is considered another big challenge to an institutional repository success story, however, the general willingness showed by respondents and academic staff and researchers in particular to contribute to the institutional repository should be considered as an opportunity for the LUANAR.

- ✓ Staff training in the use of some open source IR software including DSpace

4.6.1.1 Perceived Benefits of Having Vibrant IR on Campus

Respondents were asked their opinion on what could be considered as possible benefits of having a vibrant digital institutional repository at LUANAR campus. The following responses were considered notable:-

Table 4:3: Perceived Benefits Suggestions

No. of Comment	Comment
1	Could potentially impact on general student output (better grades)
2	Easy access of information improves the quality of research work and therefore the knowledge pool
3	Ease of access to local content
4	Easy facilitation of research collaboration
5	Enhance knowledge sharing, improves access and therefore promotion of new thinking and creativity
6	Enhance or improve quest for the generation of new ideas or research
7	Enhanced author exposure
8	Improved and ease of information dissemination
9	Improves institutional status
10	Increased visibility of LUANAR
11	It aids professional advancement
12	It could make plagiarism a little more easily traceable on campus
13	It can highlight work done by fellow students
14	It reduces research duplication
15	Potential help to open and distance learning (ODL)
16	It offers an alternative platform for publishing especially for new researchers
17	Promotes research
18	Saves time for copying and putting notes in order

Respondents were almost unanimous in indicating that an institutional repository brought with it a varying number of benefits and none of the respondents saw institutional repository as being unimportant.

4.6.2 Existing Challenges in Using the Institutional Repository

The study also sought to find out from respondents interviewed the challenges the University faced in promoting the institutional repository in the creation and use of local content. The following were responses:-

- ✓ The study found out that the lack of an institutional repository mandatory policy on depositing of local content was a glaring challenge. There was a need for the LUANAR to have a mandatory contribution policy for Institutional Repository.
- ✓ The study found that institutional repository contribution was indeed a big challenge. The findings revealed that only 12 (21%) academic staff and researchers had indicated that they had contributed local content to the institutional repository. The findings reflect Chawner & Cullen (2009) observations that content recruitment continues to be a major issue in institutional repository contribution literature.
- ✓ Twenty-three (40%) academic staff and research respondents indicated that copyright issues or concerns that journal publishers will not want their work once deposited in 'Open Access' could be a serious impediment to their contribution to the institutional repository. 8 (24%) postgraduate respondents also indicated copyright issues as a challenge to institutional repository contribution.
- ✓ Twelve (21%) academic staff and research respondents indicated that both plagiarism and lack of personal benefits could be a cause for lukewarm interest in institutional repository contribution. Plagiarism fears was another challenge that was raised by 5 (15%) postgraduate respondents

- ✓ Ten (18%) academic staff and researchers indicated that poor internet and/or accessibility could be perceived as a challenge to the institutional repository. However, a good number of undergraduate respondents, 91 (27%) felt ‘lack of personal benefit’ as the greatest institutional repository contribution challenge. One respondent’s comment that stood out was:

Lack of awareness on IR existence was in itself a challenge to IR contribution.

Soong (2007) agrees with this point by suggesting that the main reasons are because some faculty members lack awareness of the repository existence and also because there are no incentives for the institutional repository contributions.

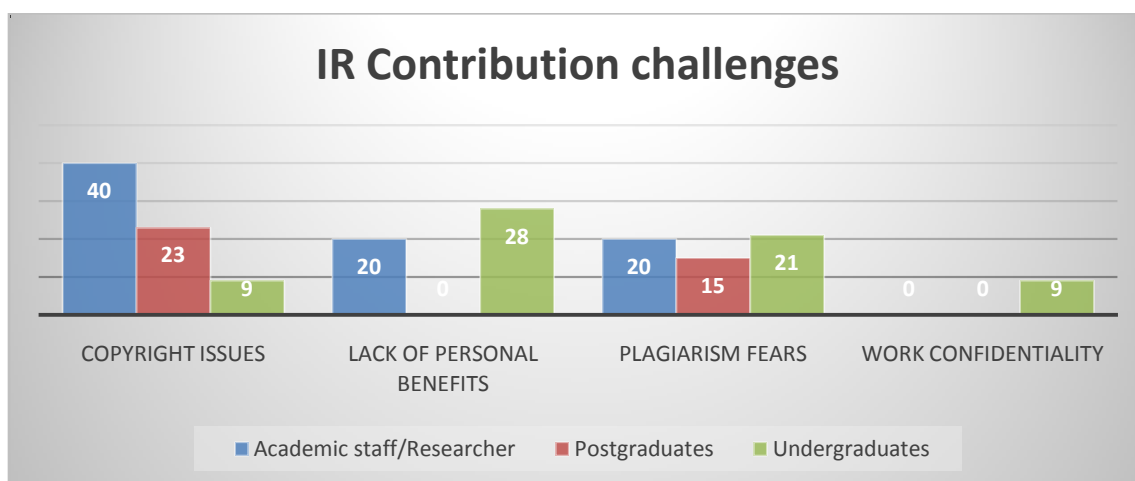


Figure 4.12: Perceived IR Contribution Challenges

The study also established that the institutional repository at the University is only accessible on local Area Network (LAN). This challenge is more pronounced now because over half of the staff and student population stay out of campus and are therefore inaccessible to the LUANAR network campus thereby inaccessible to the IR.

4.7 Proposed Strategies to Promote Creation and Use of LC

The study wanted to find out from respondents any proposed strategies that Lilongwe University of Agriculture and Natural Resources could deploy in order to promote the creation and use of local content. The study revealed the following:-

- ✓ Expansion of the network coverage and an increase on the internet bandwidth for LUANAR so that the institutional repository could be accessible by the wider campus community.
- ✓ The institutional repository should be accessible beyond the Local Area Network (LAN) in order to reach its user community outside the campus network.
- ✓ More institutional repository advocacy in order to counter ignorance or lack of awareness of the institutional repository on campus.
- ✓ More digitization of local content in print format making it institutional repository accessible.
- ✓ Mandatory institutional repository policy that makes institutional repository contribution an obligation on the part of the university community. Mark and Shearer (2006) reinforce this argument by pointing out that a mandatory institutional repository policy is helpful in populating a repository because it adds an extra legitimacy and authority when contacting authors or creators for their local content.
- ✓ Need for more or better training for personnel responsible for the LUANAR institutional repository. According to Chiware (2007) many of the library personnel who are usually at the centre of digitization of the local content

materials are yet to obtain the requisite training for the skills required. Ezeani and Ezema (2009) add weight to this argument by stating that librarians lack some essential skills in the digitization of library materials.

4.8 Summary

This chapter has presented, analyzed and provide interpretation of the research findings. The aim of the study was to investigate the role of an institutional repository in the creation and usage of local content at LUANAR in Malawi, with a view to propose strategies that would promote the wider visibility and usage of its local content. The objectives of the study were; examine the extent in which the institutional repository at LUANAR supports the creation and usage of local content; establish the types of local content found in the institutional repository at LUANAR; assess the infrastructure that has been put in place in order to promote the creation and use of local content at LUANAR; establish the opportunities and challenges in using the institutional repository to promote the creation and use of local content at LUANAR; propose strategies that would promote the wider visibility and usage of its local content. Some of the findings were that content contribution to the repository by the user community was generally a challenge; although there was some level of institutional repository awareness amongst academic staff and researchers, there was a generally low levels of awareness amongst student respondents; and there was fear of plagiarism as digital content was seen to be more susceptible to copying.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter highlights the major findings, based on the research questions, provides a conclusion derived from data presented in chapter four and makes recommendations based on the conclusions drawn. The study focused on the role of an institutional repository in the creation and use of local content by staff and students at LUANAR with a view to propose strategies that would promote their wider visibility and usage of its local content.

5.2 Summary of the Findings

5.2.1 Institutional Repository Support for Local Content Creation and Usage at LUANAR

The study established that the institutional repository as a platform for scholarly communication has the potential to spur local content creation. This concurs with Schopfel, Prost and Le Bescond (2013) who believe that institutional repositories can become a fertile and profitable encounter for scientific communities. Ndegwa and Murumba (2013) point out that institutional repositories are indeed a catalyst to research within universities. There was indeed evidence that the institutional repository encouraged the creation and use of local content through among others digitization process and subsequent upload of born digital content.

The study also revealed that only 12 (21%) academic and researchers indicated that they had contributed content to the institutional repository. The findings imply that despite a reasonable level of awareness of the institutional repository existence amongst academic staff and researchers, institutional repository contribution was a challenge. This however, resonates with Schonfeld and Houseright (2010) who discovered in a 2009 survey that only less than 30% of faculty staff in US colleges and universities were contributing to institutional repositories. This also implies that one of the main challenges for institutional repository administrators is to impress on their user community, especially faculty, that institutional repositories offer them new dissemination opportunities in reaching a much broader audience than what is available through other formal means of publishing (Tmava & Alemneh, 2013). Promotion interventions for the institutional repositories at this stage by LUANAR would affect and make a big difference in accelerating the adoption and use of the repository by late adopters. This therefore adds credence to the diffusion of innovation theory that clearly explains that adoption of an innovation is not a single, baseless act, but a continuous process that can be examined, facilitated, and indeed promoted (Keese & Shepard, 2011). It would also be imperative at this stage for LUANAR to consider incentives that could motivate institutional repositories contribution as incentives have been paid to speed up the diffusion of innovations in a variety of fields (Rogers, 1995). The issue of incentives also resonates with the Social Exchange Theory (SET) that views sharing behavior from the angle that people do it with an expectation of return benefits (Chih-Chung Liu, 2011). As sharing may be seen to be unnatural, incentives become the necessary catalyst to local content creation and consequent sharing and its subsequent usage.

5.2.2 Types of Local Content at LUANAR

The Survey sought to find out the type of local content respondents would readily contribute or have that could be disseminated, published or shared on the institutional repository. The study revealed the availability of a wide spectrum of local content. However, preferences tended to lean towards the core activities of a particular stratum. For example, lecture notes and past exams papers were considered highly by undergraduates. Comparatively, dissertations or theses were considered highly by postgraduate students. Interestingly, academic staff and research respondents were also more interested in contributing dissertations or theses and conference papers than they were in past examination papers. This might be indicative that currently there indeed exists no consensus on the content type that could be contributed into the institutional repository at Lilongwe University Agriculture Natural Resources. This is a direct consequent of having no institutional repository policy as Lilongwe University Agriculture Natural Resources is yet to come up with a policy document for the institutional repository. Again, the ability of the Lilongwe University Agriculture Natural Resources institutional repository to make available different types of local content and in different formats with ease creates an opportunity for the institutional repository users to easily adopt the IR as an innovation. According to Rogers's diffusion of innovation theory, relative advantage are the tangible benefits gained from the adoption of a new innovation that decreases discomfort than the ideas or processes it supersedes.

5.2.3 Infrastructure Promoting Local Content Creation and Usage

The survey sought to find out the type of infrastructure that has been put in place in order to promote the creation and use of local content. The study revealed that despite an initial

adoption of Greenstone as the platform for LUANAR repository, LUANAR is currently using DSpace which also offers self-archiving capability. The University also has a working website with a link to the institutional repository through the library website. Wireless network has also been installed to cover newly built structures and areas that may have been left out in the initial fibre network configuration. This also includes premises outside the library and even hostels for both undergraduates and postgraduate students. The study also revealed that the institutional repository was largely promoted through library user orientation classes, the library website, and through some committee meetings. LUANAR institutional repository is also promoted through the listserv (mailman) and the library Facebook page. However, the Lilongwe University Agriculture Natural Resources homepage as the first “online port of call” of the institution was identified as having no direct institutional repository link which made it not only a poor technical layout but also a lost opportunity to be used for institutional repository promotion. Without doubt, a clear, visible and direct institutional repository link from the LUANAR homepage could easily accelerate the rate of IR adoption and use of local content by any stratum of the population at LUANAR as the study revealed that most respondents had access to the local network.

5.2.4 Opportunities and Challenges in Using the Institutional Repository for Local Content promotion

5.2.4.1 Opportunities

The study established that the following opportunities existed at LUANAR that could easily promote the creation and use of local content for the institutional repository.

- ✓ The already-established LAN infrastructure in the university provides an adequate framework for the promotion of the use of local content through the IR at LUANAR.
- ✓ An increase in wireless coverage in some areas around the campus, thereby increasing possible potential access points for the IR was considered as an opportunity at LUANAR.
- ✓ Faculty apathy in IR contribution is considered the greatest challenge to an institutional repository success story however, the willingness showed by academic staff and research respondents (more than sixty (60) percent) to contribute to the IR was considered as an opportunity for the LUANAR institutional repository (IR).
- ✓ Staff training in the use of some open source software including DSpace

5.2.4.1.1 Institutional Repository Success Story

The study established that despite some challenges the LUANAR IR was basically a success story because of the following:-

- ✓ The IR was accessible on the campus Local Area Network (LAN).
- ✓ There is a dedicated server for the institutional repository on campus.
- ✓ A substantial number of printed local content has been digitized for institutional repository upload.
- ✓ LUANAR top management was supportive to all efforts by the library in the establishing and running of a vibrant IR.

5.2.4.1.2 Perceived Benefits for LUANAR IR

The following were perceived to be the benefits from the IR by the research respondents.

- ✓ Better and long-term preservation for one's scholarly output.
- ✓ Capturing and collocating the local content of LUANAR.
- ✓ Expanding local content circulation, increasing potential impact and in turn, maximizing local content and publicly funded research visibility and usage.
- ✓ Increasing the visibility of the institution's local content thereby boosting LUANAR prestige and indeed even its world university ranking.
- ✓ Making available different formats of content that have not been made available through the traditional publishing process.
- ✓ Making research available faster than the traditional publishing process.
- ✓ Peer recognition.
- ✓ Potential to store and preserve other institutional outputs, including unpublished or otherwise easily lost "grey" literature.
- ✓ Potential role in supporting the newly established Open and Distance Learning (ODL)
- ✓ Reduction of unnecessary duplication of research

5.2.4.2 Existing Challenges

Respondents singled out a few challenges that were deemed as serious to the promotion of an Institutional repository in the creation and use of local content. These included the following:

- ✓ The study established that copyright issues or 'concerns that journal publishers might not want respondents work, once deposited in Open Access' was

considered a serious impediment to their contribution to the institutional repository (IR). However, the findings also revealed a willingness to comply with any possible mandate from the employer or research funder to deposit local content in the Institutional Repository.

- ✓ The study also revealed fear of plagiarism as local content in digital format was seen to be more susceptible to copying. However, there seemed to be an underlying concern that perhaps potential contributors could open their work up to too much criticism by placing it in the public domain. In any case, Open Access serves to reduce plagiarism.
- ✓ The study also established that there existed a lack of awareness on the IR existence by a sizeable section of the LUANAR IR user community. However, a lack of knowledge or awareness of an institutional repository is not peculiar to the respondents at LUANAR only, as this echoes with Christian (2008) findings that pointed out that lack of knowledge or awareness of open access publishing like institutional repository is also responsible for the slow uptake of open access publishing and scholarly communication.
- ✓ Another interviewed respondent also identified the lack of a well-defined mandatory institutional repository policy for depositing content in the institutional repository. This observation collaborates with Ezema (2011) findings that one major problem for most institutional repositories (especially in Africa) is their lack of policy guidelines.
- ✓ Another respondent indicated that local content recruitment at LUANAR was considered one of the greatest challenges that affected the use of local content for the institutional repository. It was also observed that this situation at LUANAR

was worsened by the fact that the IR only depends on library staff for local content recruitment and uploads (mediated archiving); the LUANAR IR has not yet sanctioned self-archiving by possible IR contributors.

- ✓ Inadequate advocacy: Majority of undergraduates indicated that they were not aware that the university had an institutional repository. The findings on awareness suggest that a lot needs to be done on advocacy for the institutional repository. According to Covey (2011) recruiting a critical mass of content for the institutional repository is contingent on increasing awareness.
- ✓ Network accessibility; the study revealed that the LUANAR IR is currently accessible on local area network (LAN) only and this is a challenge especially now with more students living outside campus. The Institutional Repository needs to be accessible beyond the LAN (on Internet).

5.2.5 Proposed Strategies to Promote Creation and Use of LC

The study established strategies that were proposed for LUANAR to promote the usage of local content. The following proposed strategies were considered significant in order to have a vibrant institutional repository:-

- ✓ More institutional repository advocacy to counter ignorance or lack of awareness of the institutional repository existence on campus. The LUANAR institutional repository needs an effective advocacy that does not assume anything; advocacy that is ready to deal with issues ranging from the basics of institutional repository concept to creator rights management.

- ✓ More digitization of local content in print format making them ready for possible institutional repository uploads. Okede and Udumukwu (2014) rightly observed that institutional repositories cannot be possible without the digitization of print materials.
- ✓ Mandatory IR policy that makes IR contribution an obligation for the university community. Mark and Shearer (2006) reinforce this argument by pointing out that a mandatory Institutional Repository policy is helpful in populating the repository because it adds an extra legitimacy and authority when contacting authors or creators for their local content.
- ✓ More or better training for personnel responsible for the LUANAR IR. According to Chiware (2007) many of the library personnel who are usually at the centre of digitization of the local content materials are yet to obtain the requisite training for the skills required. Ezeani and Ezema (2009) add weight to this argument by stating that librarians lacked some essential skills in the digitization of library materials.
- ✓ The Institutional Repository must be accessible outside the Local Area Network (LAN). It must be accessible even on Internet.

5.3 Conclusions

LUANAR creates and use a variety of local contents in the process of facilitating learning, research and teaching activities at the institution. These finding resonates with Egwunyenga (2008) who observes that research is made compulsory for both teaching staff and graduate students either by job description or by prescribed academic program

of study at institutions of higher learning. Clearly, technology has made it easy for universities like LUANAR to create local content.

However, the ability to use the created content is dependent on the capacity of these institutions of higher learning in capturing, collocating, organizing and preserving for dissemination the created content. Institutional repositories have therefore become a key part of the scholarly communication cycle that focuses on the creation of new knowledge through research and scholarship and making that new knowledge available to the next community of researchers, who will further build on it (Chawner & Cullen, 2009). In order to make local content more visible and its usage increase dramatically at LUANAR, the avid usage of an institutional repository was seen to be pivotal. Indeed, the role of an institutional repository at LUANAR, Malawi has perhaps emerged as the missing link in the dissemination process. However, the findings of this study reveal that a lot still needs to be done in order to raise IR awareness if local content creation and usage by the user community in general can be improved. It also revealed that a good percentage of academic staff, researchers and indeed students appear willing and committed to use this platform in disseminating their local content. It is therefore imperative for LUANAR to adopt strategies that would promote the success of institutional repository. This would include deploying a mandatory institutional policy that could help in effective and sustainable content recruitment, creating awareness on the need and benefits of institutional repository publishing and more digitization of local content in readiness for Institutional Repository uploads.

5.4 Recommendations

The findings of this study revealed that an institutional repository can play an important role in promoting the creation and use of local content at LUANAR. However, in order for the LUANAR to enhance this role, the following is recommended based on the findings.

5.4.1 Institutional Repository Advocacy

Despite the many potential benefits of institutional repositories, content recruitment has indeed proved a core challenge for many repositories worldwide including LUANAR. However, in order for local content to be visible and consequently be subjected to wider usage at the LUANAR institutional repository, an effective advocacy and promotion campaign must be made to raise awareness for the institutional repository, from concept to rights management. All advocacy efforts must be made; face to face (one to one) communication is an effective strategy for marketing an IR, however it may not reach the whole community as staff may not be available for the task at all times. An effective IR advocacy would also include passing out brochures, conducting presentations to faculty committees, publishing articles in the library or campus newsletters, and also a visible online promotional presence.

The success of LUANAR institutional repository may depend on the robustness of its advocacy.

5.4.2 Internet Accessibility

The LUANAR institutional repository is currently only accessible on campus, yet today more than half of the IR user community from academic staff to students live outside the

main campus. It is therefore recommended that all efforts be made by stakeholders at LUANAR to have the repository accessible even beyond the local area network (LAN) or simply put, accessible even on the Internet. Remote access to repository content becomes increasingly important to a user community and indeed postgraduate students who spend less time on campus or library and perhaps juggle employment with studies. Such an arrangement could certainly also require a policy that would regulate accessibility to the content.

5.4.3 Institutional Repository Contribution Incentives

Institutional repository contribution is considered one of the success factors for an institutional repository even though several studies have found low rates in submission Kim (2007); and without doubt there can't be an institutional repository without institutional repository contribution. As most content creators are generally reluctant to share their work due to varying reasons, there exists a need for LUANAR to introduce incentives on institutional repository contribution. Incentives would therefore encourage academic staff, researchers and indeed students to create and publish their work on the institutional repository.

5.4.4 Mandatory Institutional Repository (IR) policy

The Library as the unit running the institutional repository should spearhead efforts in developing a LUANAR mandatory institutional repository policy document that takes onboard the interests of all stakeholders. An institutional repository mandatory policy would define the terms and conditions of submission of items deposited in the institutional repository. The institutional repository policy document would also stipulate

whether submission would be made directly by the authors (self-archiving) or shall be mediated by designated individuals (library staff). It would also clearly state the content type that would be captured in the repository and who would be eligible for content submission. An institutional repository policy adds weight and creates an obligation for the user community to institutional repository contribution. Mark and Shearer (2008) add credence to this argument by stating that an institutional repository policy is helpful in populating the repository because it adds legitimacy and authority when contacting authors for their papers.

5.4.5 More Digitization

Need for more digitization of local content in print format as digitization becomes a surrogate form of local content creation. Institutional repositories cannot be possible without the digitization of materials (Okede & Udumukwu, 2014).

5.5 Recommendations for Further Studies

This study was limited to the role of an Institutional Repository in the creation and use of Local Content by staff and students at Lilongwe University of Agriculture and Natural Resources. However, further studies are suggested in the following areas:-

1. The Perception of Faculty towards the Institutional Repository at LUANAR, Malawi.

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APPENDICES**APPENDIX I****LETTER OF INTRODUCTION**

Dear Respondent

I am a Masters student at Moi University in the School of Information Sciences. I am currently carrying out a study on “*The Role of an Institutional Repository in the Creation and Use of Local Content by Staff and Students at Lilongwe University of Agriculture and Natural Resources, Malawi*”. You have therefore been selected as a key person who can help me gather information that could be relevant for the stated topic. Kindly complete this questionnaire. May I assure you that all responses will be treated as confidential.

Your cooperation will be greatly appreciated

Kind Regards

.....

Herbert Kathewera

APPENDIX II

QUESTIONNAIRE

Please, tick your answers if applicable, in the spaces provided.

1. What would describe you best?
 - (i) Academic staff/Researcher
 - (ii) Postgraduate student
 - (iii) Undergraduate student

2. What do you think are the types of local content that can be created or contributed by academic staff and students at LUANAR;
 - (i) Dissertations or theses
 - (ii) Conference papers
 - (iii) Lecture notes
 - (iv) Past Exam papers
 - (v) Public lecture papers
 - (vi) Research projects
 - (vii) Technical papers
 - (viii) Others specify.....

3. How do you access such local content at LUANAR?
 - (i) Through library visits
 - (ii) Online
 - (iv) Others specify.....

4. Are you familiar with the term Institutional Repository (IR), how familiar?
 - (i) Not familiar []
 - (ii) A Little familiar []
 - (iii) Familiar []
 - (iv) Very familiar []

5. An IR could be described as a digital collection or archive of scholarly literature. Are you aware that the LUANAR Library has a digital institutional repository?
 - (i) Yes []
 - (ii) No []

6. If yes, how did you learn about the digital institutional repository?
 - (i) LUANAR homepage []
 - (ii) LUANAR library webpage []
 - (iii) Library news/Newsletter []

- (v) Library Orientation/Visits []
- (vi) Others specify.....
7. Have you ever used the institutional repository before?
- (i) Yes []
- (ii) No []
8. If yes, how have you used the institutional repository before?
- (i) Information retrieval []
- (ii) Content contribution []
9. Have you published before, if yes, where do you normally publish your work?
- Print journals []
- Online journals []
- ResearchGate []
- Others specify
10. If given a chance, could you be interested to publish on the digital institutional repository on campus?
- (i) Yes []
- (ii) No []
11. How interested could you be at publishing or sharing your work on the campus Institutional Repository?
- (i) Extremely interested []
- (ii) Interested []
- (iii) Slightly interested []
- (iv) Not interested []
12. What type of materials could you be interested in contributing to the repository?
- (i) Dissertations or theses []
- (ii) Conference papers []
- (iii) E-prints []
- (iv) Lecture notes []
- (v) Past Exam Papers []
- (vi) Public lecture papers []
- (vii) Research projects []
- (viii) Technical papers []
- (ix) Others specify.....

13. If you were not interested in publishing or sharing your work on the campus repository, what could make you reluctant to contribute to the IR?
- (i) Copyright issues []
 - (ii) Fears for plagiarism []
 - (iii) Lack of personal benefit []
 - (iv) My work is confidential []
 - (v) Other specify.....
14. Why do you publish as a researcher?
- (i) Communicate with colleagues []
 - (ii) Professional advancement []
 - (iii) Professional recognition []
 - (iv) Influence of co-authors []
 - (v) Other specify.....
15. Suggest how else the library or indeed LUANAR could be doing to promote the visibility and usage of local research content?
-
16. In your own opinion what could be the possible benefits of having a vibrant digital institutional repository on campus?
-
-
-
-

May I thank you for spending your valuable time in answering this questionnaire

APPENDIX III

INTERVIEW GUIDE FOR ADMINISTRATIVE STAFF AT LUANAR

Do not indicate your name.

Please, tick your answers if applicable, in the spaces provided.

1. What would describe you best?
 - (i) University Librarian
 - (ii) Deputy Librarian
 - (iii) Systems Administrator

2. What are the types of local content created or contributed by academic staff and postgraduate students found at LUANAR Institutional Repository;
 - (i) Dissertations or theses
 - (ii) Conference papers
 - (iii) Lecture notes
 - (iv) Past Exam papers
 - (v) Public lecture papers
 - (vi) Research Projects
 - (vii) Technical papers
 - (viii) Others specify.....

3. In your opinion how does the IR support local content creation and use?

.....

.....

4. What type of platform (software) is the campus Institutional Repository being run on?
 - (i) DSpace
 - (ii) Eprints
 - (iii) Fedora
 - (iv) Greenstone
 - (v) Others Specify.....

5. Why was the platform in Q3 chosen?

- (i) Open Access
- (ii) Donor recommended
- (iii) Recommended by the institution
- (iv) User friendly

6. What file formats does the platform support

- (i) HTML
- (ii) MSWord
- (iii) PDF
- (iv) XHTML
- (v) Others Specify.....

7. Does LUANAR have a policy on the campus IR?

- (i) Yes
- (ii) No

8. How is the campus Institutional Repository promoted?

- (i) Brochure/Newsletter
- (ii) During Orientation
- (iii) Institutional website
- (iv) Through IR user training sessions
- (v) Other specify.....

9. Does the library has its own website?

- (i) Yes
- (ii) No

If yes, indicate the website and if not indicate why not

.....

10. Does the Library website have a link to the repository?

- (i) Yes
- (ii) No

11. How else is the existence of the campus IR promoted on campus?

12. How is Local Content uploaded on the Institutional Repository?

- (i) Self-deposit by Content Contributors
- (ii) Deposit by ICT staff
- (iii) Deposit by Library Staff
- (iv) Others Specify.....

13. How successful has the institutional repository been in dissemination of Local Content

- (i) Unsuccessful []
- (ii) Successful []
- (iii) Very Successful []

14. Is the campus IR accessible on

- (i) On Local Area Network []
- (ii) On World Wide Web []

15. What could you say are the challenges faced by the campus?

- (i) A lack of mandatory policies for depositing intellectual output []
- (ii) Content Recruitment []
- (iii) Copyright Issues []
- (iv) Inadequate Advocacy []
- (v) Inadequate Network Connectivity and Infrastructure []
- (vi) Inadequate Funding []

16. How supportive is LUANAR top management on the Campus IR?

- (i) Supportive
- (ii) Not Supportive
- (iii) Don't know

17. What are the current opportunities the LUANAR campus IR has enjoyed?

.....

18. In your own words, what are the benefits of a campus IR?

.....
.....
.....

19. What strategies could you personally recommend for LUANAR to help the Campus IR promote local content visibility?

.....
.....
.....

20. How could the library promote the visibility of the campus IR in order to promote LUANAR Local Content visibility and usage?

.....

21. What difference do you think a mandatory policy on content contribution could make to the campus IR local content contribution?

.....

May I thank you for spending your valuable time in answering this questionnaire

APPENDIX IV: LETTER OF CONSCENT

To: The University Registrar
From: Herbert Kathewera
Date: 13th January, 2015



Subject: Request for Consent to Conduct Research on Campus

My name is Herbert Kathewera, I am a Master of Science student in Library and Information Studies in the School of Information Sciences at Moi University in Kenya. I am mandated by the University to do a Research as part of the fulfillment for the award of a Master of Science in Library and Information Studies. The purpose of this memo is therefore to seek your consent to allow me to collect data on campus. My research topic is *"The Role of an Institutional Repository in the Creation and Use of Local Content by Staff and Students at Lilongwe University of Agriculture and Natural Resources, Malawi"*

May I assure your office Sir that data collected will solely be used for the intended purpose only.

Your assistance to this end will be highly appreciated.

Thank you.

Handwritten signature of Herbert Kathewera in black ink.

Herbert Kathewera

Cc: University Librarian

Handwritten signature and stamp of the Registrar. The text "Approved Granted" is written in blue ink above the signature. There is a blue ink stamp over the signature, and the name "D. J. J. J." is written below it.