CHALLENGES FACING ACADEMIC STAFF IN ADOPTING OPEN ACCESS OUTLETS FOR DISSEMINATING RESEARCH FINDINGS IN SELECTED UNIVERSITY LIBRARIES IN KENYA

BY

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DECLARATION

I confirm that this research thesis is my original work and has not been presented in any other university / institution for certification. The thesis has been complemented by referenced works duly acknowledged. Where text, data, graphics, pictures or tables have been borrowed from other works- including the internet, the sources are specifically accredited through referencing in accordance with anti-plagiarism regulations.

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DEDICATION

To my caring parents Mr. Julius Muruyia and Mrs. Janet Mutwiri for their support and my children Shirlynn Kendi and Sheila Karimi for putting up with my absence in the course of my studies.

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ABBREVIATIONS AND ACRONYMS

AAU	Association of African Universities
AGORA	Access to Global Online Research in Agriculture
AIFF	Audio Interchange File Format
AJOL	African Journals Online
ANU	Africa Nazarene University
ARL	Association of Research Libraries
ASCII	American Standard Code for Information Interchange
ASSAf	Academy of Science of South Africa
BMC	Bio Med Central
BOAI	Budapest Open Archives Initiative
CAS	Current Awareness Services
CEOs	Chief Executive Officers
CHE	Commission for Higher Education
CIHR	Canadian Institute of Health Research
CSIC	Consejo Superior de Investigaciones Científicas
CUEA	Catholic University of Eastern Africa
DATAD	Database of African Theses and Dissertations
DOAJ	Directory of Open Access Journals
DOAR	Directory of Open Access Repositories
DRM	Digital Rights Management

eIFL	Electronic Information For Libraries
eSAP	Electronic Supply of Academic Publications
ETD	Electronic Theses and Dissertations
FEDORA	Flexible Extensible Digital Object Repository Architecture
GoK	Government of Kenya
HINARI	Health Internetwork Access to Research Initiative
HTML	Hyper-Text Markup Language
HTTP	Hyper Text Transfer Protocol
IES	Institute of Education Sciences
ICT	Information Communication Technology
ILL/DD	Inter Library Lending and Document Delivery
ILRI	International Livestock Research Institute
INASP	International Network for the Availability of Scientific Publications
INSA	Indian National Science Academy
IPR	Intellectual Property Rights
IRs	Institutional Repositories
IT	Information Technology
JKUAT	Jomo Kenyatta University of Agriculture and Technology
JISC	Joint Information Systems Committee
JPEG	Joint Photographic Expert Group

KeMU	Kenya Methodist University
KLISC	Kenya Libraries and Information Services Consortium
KU	Kenyatta University
LAN	Local Area Network
LIASA	Library and Information Association of South Africa
LIS	Library and Information Science
MMUST	Masinde Muliro University of Science and Technology
MoE	Ministry of Education
MPEG	Movable Photographic Expert Group
MU	Moi University
NACOSTI	National Council for Science, Technology and Innovation
NCST	National Council for Science and Technology
NIH	National Institutes of Health
OA	Open Access
OAA	Open Access Archives
OAI	Open Access Initiative
OAI-PMH	Open Archives Initiative Protocol for Metadata Harvesting
OAJs	Open Access Journals
OAP	Open Access Publishing
OARE	Online Access to Research in the Environment
OASPQ	Open Access and Scholarly Publishing Questionnaire

OAWG	Open Access Working Group
OSS	Open Source Software
PACU	Pan African Christian University
PDF	Portable Document Format
PLoS	Public Library of Science
PR	Public Relations
PUEA	Presbyterian University of East Africa
QAS	Questionnaire for Academic Staff
QLS	Questionnaire for Library Staff
RIN	Research Information Network
ROARMAP	Registry of Open Access Repositories Mandatory Archiving Policies
RSS	Rich Site Summary or Really Simple Syndication
SASLI	South African Site Licensing Initiative
SDI	Selective Dissemination of Information
SPARC	Scholarly Publishing and Academic Resources Coalition
SPSS	Statistical Package for Social Sciences
SU	Strathmore University
TEEAL	The Essential Electronic Agricultural Library
TF	Tutorial Fellow
TIFF	Tagged Image File Format

UK	United Kingdom
Unisa	University of South Africa
UoN	University of Nairobi
USA	United States of America
USIU	United States International University
WAN	Wide Area Network
WWW	World Wide Web
XML	Extensible Markup Language

ABSTRACT

Open Access Journals (OAJs) and Institutional Repositories (IRs) are Open Access (OA) outlets that provide a platform for disseminating research findings. Although these outlets have been introduced in universities to increase dissemination, access and impact of staff, academic staff adoption of such outlets in Africa has been slow and their use of these outlets in disseminating their research works has been low. This study sought to establish the challenges academic staff face with regard to OA outlets. It established outlets employed by academic staff in dissemination, their awareness, skills and training, attitude and use of OA outlets. Rogers Diffusion of Innovations theory was used. Descriptive design using survey method was used for this study. The target population was 15,000 academic staff from which a sample of 381 was selected using stratified sampling technique. The study was conducted in 12 private and 7 public universities in Kenya. Questionnaires were used to collect data. A pilot study to assure validity and reliability was conducted, yielding a Cronbach correlation coefficient of 0.76 which was considered acceptable. Statistical Package for Social Sciences (SPSS) was used to generate data. Descriptive statistics such as percentages and means were used for analysis. The study established that academics preferred traditional publishing outlets for dissemination but they were associated with problems of accessibility, cost and delays in publishing while OA outlets were associated with low quality. General awareness of OAP among academic staff was high (66%) but awareness of specific OA aspects was low. A majority of academic staff were active consumers of OAJs (74.3%) and IR content (75.7%) but not prolific contributors at 20.9% and 27.5% respectively. Only 29% of the academic staff had training in OAJs and IRs. The study concluded that traditional publishing outlets were utilized more than OA outlets and awareness of OAP was low among scholars. The study recommends awareness creation of OA outlets, capacity building in self archiving, institutionalization of OA outlets in Kenyan universities and enhancement of academic - library staff collaborations, among others. The study findings are significant to all stakeholders interested in dissemination of research findings through OA outlets.

CHAPTER ONE

INTRODUCTION AND CONTEXT/ BACKGROUND OF THE STUDY

1.1 Introduction

This chapter provides a brief background to the study, explains the problem that the study addresses. It also presents the study purpose, objectives, research questions on which the study was based as well as the significance of the study. Finally, this chapter describes the theory upon which the study was based, conceptual framework and gives the definitions of terms as used in the thesis.

1.2 Background to the Study

Universities the world over are considered to be centers for teaching and learning. One of their core functions is to create knowledge through research activities. To carry out research, academic staff review literature and collect raw data from the field. This is a time-consuming and costly process. Due to the time spent and the large amount of money expended in creation of new knowledge, universities and other research entities emphasize dissemination of such research findings through the use of various outlets. Dissemination helps to accelerate innovation, avoid duplication of effort, build on previous research as well as involve citizens and society (European Commission, 2012).Without wide dissemination of research findings, such findings are rendered useless and

that is likely to lead to stagnation in the research cycle in different fields. It also becomes difficult for researchers to build on the existing body of knowledge. As access to information is vital for any type of development, failure to share such findings may cause delays in development. It is for this reason that universities as research centers emphasize scholarly communication which enables academic staff to disseminate their research findings to a wide academic community as well as enabling them to access research works produced by their colleagues.

In order to practice scholarly communication, researchers use various outlets. Such outlets in the past included the use of print-based journals and books. Academic staff at the universities for a long time published their research findings in established traditional refereed journals. This has also been one of the criteria used by universities to promote their academic staff (Sweeny, 2000). Lang (2003) challenged the fact that universities recognize refereed journals in their promotion criteria as the only main outlets for sharing research findings on the basis that they do not reach a wide audience. The emphasis by universities that academic staff use renowned journals to publish their research findings, may limit sharing of research results with a wider audience and may make some academic staff reluctant to share their research findings through other outlets except the recognized journals. Similarly, academic staff continued publishing in established traditional journals may create difficulties

in the use of other outlets, especially now that Information Technology (IT) and other technological innovations are available and could be used for such purposes of dissemination of research findings. The use of traditional journals was also condemned by Sompel, (2004) who pointed out that the established scholarly communication systems have not kept pace with revolutionary changes. The requirement to have scholars publish only in refereed journals has also attracted another critique from Bjork (2004) who noted that those universities that emphasize on use of refereed journal outlets consider prestige more than wide dissemination. He also adds that publishing in refereed journals is considered prestigious due to the thorough peer review process involved, thus ensuring quality of works published in such journals. This is, however said to be done at the expense of wide and rapid dissemination.

Other outlets used to supplement journals in communication of research results were books, theses and dissertations, projects, conference proceedings and technical reports. Books have also been used for a long time in sharing research findings but they too have hindered accessibility to up-to-date information. Use of theses and dissertations are limiting due to the libraries' regulations to have them on closed access and only consulted within the library building. In addition, they are kept by libraries in the respective universities and only available selectively to the students and staff who wish to consult the physical

copy deposited in the library. Having theses and dissertations in print format has not provided the academic community an opportunity to access such works. Similarly, new research literature disseminated through workshops and conferences only benefits the individuals who attend the particular workshop or conference. Even when such findings are published through formal printed outlets, many times they are scattered in different journal titles, causing difficulties in accessibility to useful research works.

Abidi (1991) observed that it is practically impossible to have advancement in any field without information and modern outlets of disseminating such information. He further noted that the existing dissemination practices need to be adjusted to accommodate new outlets especially now that there is widespread availability of Information Communication Technologies (ICT). Damtew (2003) has opined that poor dissemination practices inhibit developments in research. He emphasized the need for effective communication of scholarly results. Oronje (2006) observed that dissemination has not been given adequate priority in comparison to the research activity. An ideal outlet for dissemination is considered to be one that facilitates wide access to research findings. Without outlets that facilitate access to research information, it is impossible for countries to attain the United Nations Millennium Development Goals (UNMDG) (Kuchma, 2008). The Association

of American Universities (AAU, 2009) has on several occasions emphasized the need for universities to take on a much more active role in ensuring dissemination of knowledge produced by their institutions by encouraging their scholars to share their research output. According to AAU, universities need to pay closer attention to the activity of dissemination just as they pay attention to the activity of research so that credible findings reach the target audience.

In Africa, attempts have in the past been made to improve management and access to scholarly research works using information communication technology. With the use of such technology, the Association of African Universities (AAU) was able to initiate the Database of African Theses and Dissertations (DATAD). Introduction of DATAD was aimed at disseminating research findings contained in theses and dissertations that were produced in all African universities (Association of African Universities, 2009). The database contains citations and abstracts for theses and dissertations and such abstracts are provided to participating members online. While DATAD consolidates research output conducted at various African universities, accessibility to its contents is only limited to institutions that have subscribed. This makes it difficult for scholars from non participating institutions to gain universal access to research works.

In addition to DATAD, there were other projects initiated which aimed at

improving dissemination of research findings generated at the universities. The Electronic Supply of Academic Publications (eSAP) for instance, set up an electronic document delivery system by means of internet between universities (Mutula and Odero-Musakali, 2007). In Africa, the universities involved in the project were Sokoine University, University of Dar-es-Salaam, and St. Augustine University while in Kenya, Catholic University of East Africa (CUEA), Kenyatta University (KU) and University of Nairobi (UoN) were involved. The International Network for the Availability of Scientific Publication (INASP) is also a co-operative network whose mission is to enhance the flow of information within and between countries, and more so, between countries with less developed systems of publication and dissemination.

However, despite the use of such technological advancements for dissemination of information, access to information is still limited (Vlachaki and Urquhart, 2010). One of the reasons for this situation is that such information is controlled either on subscription basis or only availed to member organizations. It is apparent therefore that even with many efforts to improve dissemination of research works generated at various universities, a plausible solution has not been found, making the academic community to continue suffering. It is such inaccessibility that has resulted in the move by academic and library staff, authors and researchers to seek alternative outlets

of disseminating research output. As Byrne (2005) rightly observed, alternative outlets of dissemination such as the use of e-journals, e-books, digital libraries, multimedia and Open Access Initiatives (OAI) are being adopted by scholars. Sawant (2012) also noted the development of web communication tools which include wikis, blogs, online magazines and repositories through which academic staff could make available their research findings. Quadri (2012) noted that there was widespread use of computers for storage, retrieval and dissemination of information, and library and academic staff have little choice but to adopt them.

In particular, OA has become popular in many countries. According to Gideon (2008) Open Access Publishing (OAP) system emerged in response to the restrictive access to knowledge in scholarly and scientific journals that is imposed by commercial publishing houses. The nature of restrictions entail exorbitant journal prices via what the publishers refer to as annual subscription fees, license fees or pay-per-view fees. In addition, the shift to OAP outlets is also due to their numerous benefits which according to Hernández-Borges et al. (2006) include improved accessibility, increased dissemination and citation of studies, reduced production costs and immediate community awareness of scientific advances.

The goal of OA is well captured in three declarations: the Budapest Open

Archives Initiative (BOAI) of February 2002, the Bethesda Statement of June 2003 on Open Access Publishing and the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities of October 2003. Although the three fora focused on diverse aspects of OAP, they shared the common view that research findings should be availed online free of charge without restrictions. The restrictions referred to are restrictions on copying, price, display charges, distribution and printing. Adoption of OA according to the Budapest Open Access Initiative would involve two main outlets: Open Access Journals (OAJ) (gold open access) and Institutional Repositories (IRs) (green open access) (Budapest, 2012).

After the declarations, some universities worldwide began supporting the open access initiative by becoming signatories to the Budapest, Bethesda or Berlin declarations to OA. Ten South African universities, the Academy of Science of South Africa (ASSAf) and the Library and Information Association of South Africa (LIASA) became signatories of the Berlin Open Access Declaration (Botha, 2012). Other organizations like the Indian National Science Academy (INSA) too became a signatory to the Berlin Declaration (Chan, et. al. 2005).The BOAI also had 5,750 signatories from associations and institutions as at August 2013. Of these, 664 are institutional signatures and the only institution in Kenya that is a signatory to this initiative is the Rift Valley Institute of Science and Technology (Budapest Open Archives Initiative,

2013).

In addition to becoming signatories to major declarations, organizations have also made it mandatory to have research generated within their organizations availed through OA. That has resulted in the National Institutes of Health (NIH) and the Institute of Education Sciences (IES) in the United States (US), the European Research Council (ERC) in Europe, the Canadian Institutes of Health Research (CIHR) and the Wellcome Trust in the United Kingdom (UK) mandating open access to the research that they fund (Clobridge, 2012). Several other universities and research institutions have also come up with policies mandating OA to research they fund and these are listed in the Registry of Open Access Repositories Mandatory Archiving Policies (ROARMAP) (University of Southampton, 2012). This is a database which shows the growth of open access mandates by universities and research institutions. The database contained 410 registered institutional mandates by August 2013 and only two from Kenyan universities were active. The two were from the University of Nairobi, (UoN) and Strathmore University (SU) while Jomo Kenyatta University (JKUAT) policy was not specified.

Collective advocacy by the Open Access Working Group (OAWG) initiated by the Scholarly Publishing and Academic Resources Coalition (SPARC) also began (SPARC, 2007). It was aimed at increasing support by academic

institutions towards adoption of OA. In order to promote adoption of OA outlets, various advocacy groups used forums such as workshops and seminars. Many workshops and seminars mainly sponsored by electronic Information For Libraries (eIFL) were organized worldwide to create awareness among key stakeholders on the need for adopting OA outlets. In South Africa, the South African Site Licensing Initiative (SASLI) and the coalition of South African Libraries Consortia with support from eIFL organized OA workshops in 2004. In Kenya, INASP sponsored two members of Kenya Libraries and Information Services Consortium (KLISC) from the University of Nairobi (UoN) in the year 2009 to attend a seminar in South Africa on OA (Morris, 2011). After the seminar, the two KLISC members organized awareness workshops and seminars in Kenya through the support of eIFL and International Network Availability of Scientific Publications (INASP). The result of such workshops and seminars was commencement in the establishment IRs.

Literature surveys indicate that there exist disparities in adoption of IRs between the developed and developing countries. A study by Krishnamurthy (2008) showed that in the year 2007, Europe had 372 IRs, North America 196, Asia 88 and Africa 9. This indicates higher adoption of IRs in the developed world than in the developing world. Further studies on developing countries such as Swan and Chan (2003) indicate that Institutional Repositories (IRs) are being developed but the growth is still at the early stages. Other studies express

concern over the low adoption of these outlets particularly in Africa. For instance, Dulle, Minish-Majanja and Cloete (2010) noted that IRs were not widely used in Tanzania. Likewise, Utulu and Bolarinwa (2009) pointed out that even with the proliferation of electronic scholarly information systems, Nigeria and the whole of Africa still lagged behind. That was an indication that African nations were still behind in adopting such outlets to help them disseminate their research findings. In addition, Muinde (2009) observed that progress in capitalizing on OA to enhance accessibility and visibility in Africa is slow while Reinsfelder (2012) indicated that adoption of OA has been slower than its supporters predicted. All these authors express dissatisfaction with the sluggish pace at which OA was being adopted especially among African countries.

A survey conducted by Kenya Libraries and Information Services Consortium (KLISC) in 2009 assessed the extent to which institutional repositories (IRs) had been established in Kenya. It established that many universities were in the development stages of policy issues, customization and submission (Morris, 2011). Customization and submission are the preliminary stages hence indicating the slow progress in adoption just like in the other developing countries for reasons which have not yet been established.

An important indicator of adoption of IRs is the deposition of research works

in the IRs. This is determined by the number of research works deposited in the DOAR or the ROAR which are searchable international databases that list all the IRs registered across the world and the number of items captured in those IRs. Academic staff play a crucial role in self-archiving (depositing) their research works in the IRs or providing their works for deposition, an activity which require high levels of awareness and skills. A search through the DOAR database however revealed the presence of IRs across the world but more concentrated in the developed regions. The information on the number of IRs and the distribution of items deposited in those IRs of various university libraries in Kenya and other countries is shown in Table 1.1.

Table: 1.1: Number of Deposited items in the IRs of Some Universities in Selected Countries in Developed and Developing Countries by August 2013

Country	Total No. of IRs	No. of IRs Found in Universities	No. of Items Deposited in the IRs
Developed Countries			
United Kingdom (U.K)	213	134	288,047 *(Only for 4 universities)
United States of America (U.S.A)	403	256	1,619,139 *(Only for 4 universities)
Australia	46	33	*(Only for 4 universities)
Developing Countries			
Singapore	3	3	25,505
Nigeria	5	5	30,376
South Africa	25	19	103,835 *(Only for 4 universities)
Ethiopia	1	1	4,136
Uganda	1	1	1753
Tanzania	4	3	1,136
Kenya	9	4	58,377

* For countries where the total number of universities with IRs was large, only 4 were chosen to arrive at the total number of items to support this study

Source: Adapted from *www.doar.org* (2013)

Table 1.1 shows that in developed countries the United States of America (U.S.A) has more institutions and universities with IRs. The same scenario applies to other developed countries including United Kingdom (U.K) and Australia. Some developing countries such as South Africa, Kenya, Nigeria and Singapore have a higher number of IRs compared to those in some East African countries. That means that scholars in developed countries have greater opportunities of disseminating their research findings through IRs compared to those in other regions. The number of universities with IRs in developed countries is also larger than those in developing countries, such as East African countries and Kenya in particular. However, it is seen that in Kenya, the proportion of IRs belonging to universities is lower than that of other East African countries and of the *58,377* items deposited by Kenyan scholars, nearly 50,000 were from the University of Nairobi. The reasons for low deposition of research works have not been systematically documented, hence the need for this study.

Other than IRs, there are other outlets such as OAJs that scholars can use to disseminate their research findings (***www.doaj.org*** 2013). The use of such OAJs by scholars and the increase in the number of articles published in these OAJs are important indicators of their adoption. The number of OAJs available in different regions is summarized and presented in Table 1.2.

Table: 1.2: Total Number of Open Access Journals Established in Selected Developed and Developing Countries per Year: 2009-2013

Country	Country OAJs Established Per YEAR				
	2009	**2010**	**2011**	**2012**	**2013**
Developed Countries					
United Kingdom (U.K)	341	457	562	567	624
United States of America (U.S.A)	697	834	1044	1134	1272
Australia	76	95	116	121	131
Developing Countries					
Singapore	4	5	7	10	36
Nigeria	16	22	23	26	40
South Africa	18	35	43	54	67
Ethiopia	1	4	5	5	6
Uganda	4	4	4	4	4
Tanzania	2	2	2	3	3
Kenya	1	4	5	6	7

Source: Adapted from *www.doaj.org* (2013)

From Table 1.2, it is seen that once again, the U.S.A has high numbers of OAJs listed in the DOAJ and the same case applies to other developed countries. The number of OAJs from developing countries listed in the directory is low and worse when it comes to East African countries. In this region, Kenya included, there is a slow increase in OAJs listed per year in the DOAJ compared to Nigeria, South Africa, Singapore and the developed countries except in Uganda where there was no increase. This study was designed to establish why few scholars in Kenya used databases of OAJs to publish their research works.

1.3 Statement of the Problem

The role of any university is to do research and publish resulting knowledge in various outlets for scholarly consumption. Print outlets and paid up journals have hitherto been used in form of refereed journals but which limit accessibility and dissemination of the published works. Although OA outlets have been introduced in universities to increase dissemination, access and impact of their staff, the academic staff adoption of such outlets has been slow and their use of these outlets in disseminating their research works has been low. The reasons for the slow and low rate of adoption of OA outlets among academic staff, however, have not been systematically established, documented and explained. This study was designed to establish the challenges that account for the low adoption of OA outlets among the academic staff in Kenya.

1.4 Purpose of the Study

The purpose of this study was to establish the challenges facing academic staff in adoption of OA outlets with a view to improving dissemination of research findings to a wider scholarly community using these outlets.

1.5 Study Objectives

Specifically, the study intended to:

1. Establish which of the known outlets academic staff employed in disseminating their research findings.
2. Find out levels of awareness of OA outlets among academic staff.
3. Determine the extent to which academic staff used OA outlets in accessing and disseminating their research works.
4. Establish skills and training of academic staff on various aspects of open access outlets.
5. Find out the attitude of academic staff towards OA outlets.

1.6 Research Questions

The study sought to answer the following research questions:

1. What outlets do academic staff use in disseminating research findings?
2. What is the level of awareness of OA as research findings outlets among academic staff?
3. What is the level of use of OAJs and institutional repository content by academic staff?
4. What skills and training do academic staff have to enable them self archive research works in OAJs and repositories?
5. What is the attitude of academic staff with regard to open access journals and institutional repositories?

1.7 Assumptions of the Study

The study was based on the assumptions that:

a) The respondents would be honest and truthful in their responses.
b) The universities had necessary infrastructure for support of OA adoption by the academic community.

1.8 Limitations of the Study

A major limitation of this study which needed to be acknowledged relates to inadequate resources. However, the study optimized the available resources.

1.9 Delimitations of the Study

1. This study was restricted to the then chartered private and public universities. The consideration for this was based on the view that such universities were more stable compared to newly upcoming universities. In addition, there was an increased mushrooming of universities being established and there was need for definite number of established universities to use.
2. The study focused on academic staff and not postgraduate and undergraduate students even though they too are engaged in research activity. This is because academic staff's were considered to be in a better position to conduct lifelong research as opposed to postgraduates and undergraduates

who only carry out research as an academic requirement. In addition, academic staff's were chosen among all the user groups because research is one of their core duties at the university hence they are more likely to be involved in dissemination practices.

1.10 Significance of the Study

The results of this study will be significant to:

1. Academic Staff

Academic staff contributes to the adoption of OA outlets by depositing and making use of research works deposited in OA outlets by their colleagues. Having identified the challenges they face when adopting OA outlets, they would be helped to overcome such challenges hence increasing adoption of OA outlets.

2. Libraries

These are the implementers of OAP. The findings of this study would make them re-focus on strategies and policies based on the issues raised by the main users of OA outlets. The findings would also act as a guide for library management on areas to concentrate on when developing training programmes for academic staff as it would reveal areas in which they require additional training.

3. Universities in Kenya

Universities worldwide are ranked based on their web presence. The findings would help universities in Kenya in devising strategies in line with academic staff needs. Increased academic staff provision of research works would be useful in organization of the university's academic databases so that they would be comparable to other world universities through IRs and OAJs.

4. The Government of Kenya (GoK) and other Stakeholders

Kenya is a developing nation. For the nation to achieve development, access to scientific research findings is required. The results would guide the GoK, non-governmental organizations, the Ministry of Education (MoE) and other organizations that fund scholarly research in preparing appropriate programs which would assist in making the research they sponsor publicly available.

1.11 Theoretical Framework

The study is based on Rogers' diffusion of innovations theory (Rogers, 2003). The theory states that adoption of an innovation is affected by four major factors: the innovation itself, communication channels, time and social system. In this study, OA outlets were taken as the new technological innovations. First and foremost, the theory states that innovations with attributes such as relative advantage, compatibility, ease of use, trial ability in the sense that

potential adopters want to test and ascertain the benefits it claims exist and observability were more likely to be adopted by individuals. OA outlets pose the advantage of accessibility in comparison to print based avenues. Increased awareness among academic staff of such an advantage would make them adopt them while lack of it would prevent them from using them in dissemination of research findings.

Secondly, communication channels which denote the means by which a message is conveyed from one individual to another and the relationship between individuals determine the success of transmission of an innovation. Interpersonal channels are more powerful in creating and changing strong attitudes held by individuals. Rogers also noted that in using interpersonal channels, the communication may be affected by *homophily*, which is the degree to which two or more individuals who interact have certain similar attributes. Such attributes include beliefs and education. However, he also noted that there may be a challenge with diffusion of innovations if the participants were quite *heterophilous* or dissimilar. Academic staff can be considered to be homophily to the extent that they desire to share information and to benefit from researches of their counterparts.

Thirdly, he noted that time determines adoption of an innovation. In his view, the rate of adoption of an innovation was likely to increase with time as more

people become aware of its relative advantage. Increased awareness of the potential of OA outlets appears to have contributed to a higher uptake of OA sources in developed countries. Finally, the diffusion of an innovation within society was seen to depend on social structure, norms of opinion leaders who influence its adoption. It also includes the cultural context within which an innovation is expected to diffuse. Adoption of OA outlets by academic staff occurs in an academic and research culture that should be favourable to increased uptake of OA facilities.

This theory was deemed suitable for this study because it helps in explaining why open access outlets may or may not be adopted.

1.12 Conceptual Framework

A number of variables that relate to academic staff could be sources of challenges to adoption of OA outlets. Those variables and their relationship with one another are shown in Figure 1.1 below.

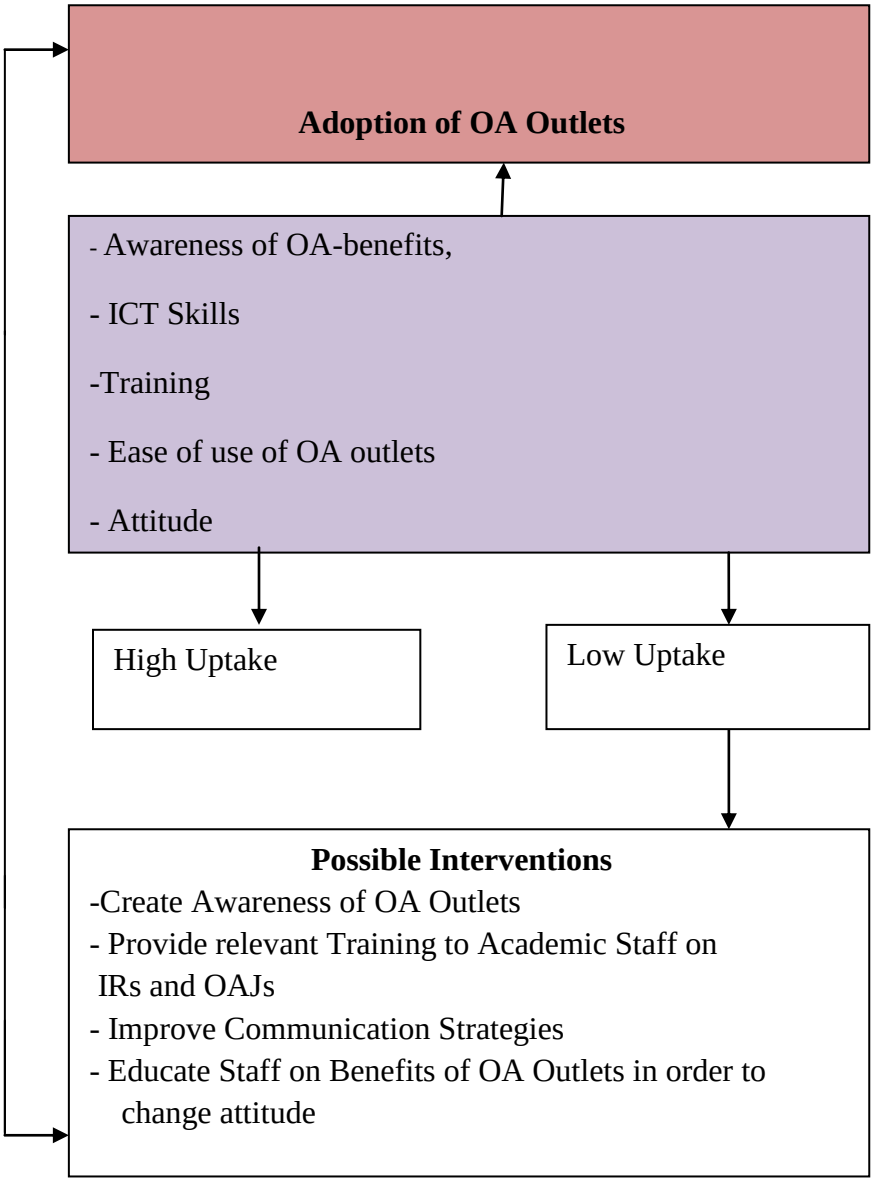


Figure 1.1: Conceptual Framework

KEY: Dependent Variable **Independent Variables**

Unidirectional Relationship → **Dual Directional Relationship** ↔

Source: **Researcher (2013)**

Figure1.1 shows that the adoption of open access outlets may be determined by variables which relate to academic staff. The academic staff play a key role in adoption of those outlets.

Their key role lies in provision of research output for filling the OA outlets as well as use of research works for depositing in the same outlets. In order for the academic staff to provide OA content, they need to be aware of the existence of such outlets. In addition, they ought to be convinced of the benefits of using those outlets. Other variables that could determine adoption of OA outlets by academic staff include their skills, training on OAP, willingness to provide and use OA content. When academic staff are fully aware and have skills they will be in a position to have high uptake of OA outlets. However, when those factors are inadequate, their uptake of the outlets would be low. An individual attitude is fundamental in determining whether or not they use an outlet. Negative attitudes among academic staff may deter them from using the outlets in sharing their findings. The academic staff ICT skills were deemed essential as they too could determine the success at which they can deposit their works as well as utilize materials available on open access journals and institutional repositories.

If there are inadequacies among the academic staff attributes with regard to these variables, creation of awareness about OA outlets, relevant training to

library and academic staff could be provided. Such interventions may perhaps help in promoting increased awareness and utilization of OA outlets for purposes of disseminating research findings, thus enabling academic staff share their research findings as well as enabling them gain access to research findings of others. That would in turn help to prevent duplication of research by giving scholars an insight into research conducted elsewhere. Academic staff would also have access to up-to-date information and universities would get better returns on investment they make in research.

1.13 Operational Definition of Terms

Adoption: Decision to embrace, take up or make full use of OA outlets as the best options available for dissemination of research findings.

Challenge: Source of hindrance or slowness in adoption of OA outlets in university libraries in Kenya.

Disseminate: To share, distribute research findings with a wide audience.

Diffusion: The uptake and spread of OA outlets among the members of the academic community.

Self-Archiving: The academic staffs' act of depositing a free copy of a digital document on the World Wide Web (WWW) by making their non- peer reviewed documents (E-prints) free and publicly accessible.

Open Access (OA): Unrestricted online access to research articles published in scholarly journals or institutional repositories.

Open Access Outlets: The platforms, avenues, strategies for disseminating research findings such as OAJs and IRs.

Open Access Journals (OAJs): These are also referred to as **"*Gold Road OA*".** They are journals that provide free access to their articles and the authors pay to publish their works but users access articles without any charges.

Institutional Repository (IR): This is also referred to as the **"*Green Road OA".*** It was taken in this study to mean an online hub established for purposes of collecting, preserving, and disseminating the intellectual output of an institution which is in digital form.

Open Archives: These are institutional repositories or subject repositories.

E-Print: This was taken to mean a digital copy of a research work availed in a digital repository.

Innovation: A new or improved method of sharing research findings.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter reviewed relevant literature based on the study objectives namely: outlets used by academic staff in disseminating research findings, their skills and training in OA; awareness of OA publishing, provision and use of OA content; and academic staff attitude regarding OAP outlets. Finally, there was a summary in which the research gaps that the study was intended to address were shown.

2.2 Outlets Used in Dissemination of Research Findings

Scholars adopt various outlets to ensure the research results they generate are accessible to other researchers. The outlets of communicating research outcomes range from traditional print based outlets to outlets which make use of modern communication technologies.

Antelman (2004) investigated the research impact of articles published on open access journal outlets. The study was based on their citations in the ISI Web of Science database. Four disciplines were used namely political science, electrical and electronic engineering and mathematics. The sample included open-access articles from ten leading journals in each of the selected

disciplines. The research was based on the hypothesis that scholarly articles available on open-access adoption had greater research impact. The study found that in all the four disciplines, freely available articles have a greater research impact. This study was limited to a web search while the current study sought to have the academics themselves provide their views about the outlets they used. This study also limited itself to OAJs while the current looks at dissemination outlets broadly. It is not clear how the sample was chosen.

Björk (2004) analyzed the barriers associated with the use of various outlets in dissemination. Specifically, he looked at open access journals, subject-specific repositories and institutional repositories. He concentrated on such issues as legal framework, academic reward system, marketing business models and indexing services and standards. He observed that academics behaviour in the choice of an outlet for dissemination was determined by the reward system. He also noted that most universities, the most rewarding systems were established journals in one's field. He noted that use of such systems places upcoming journals, whether subscription-based or open access, in a disadvantaged position. His paper concludes that researcher support of OA was good for advancement in science but recommended raising of awareness to help change habits. This study only concentrated on legal framework, academic reward system, marketing business models and indexing services but did not address

the issues of awareness, skills and attitude.

A report by the Research Information Network and Joint Information Systems Committee (JISC) in the year 2009 summarized the findings of a research that helped to clarify the issues that would influence authors' publication and dissemination behavior, including their citation behavior. That is, the factors that researchers consider in to deciding when, where and how to communicate their findings. Focus groups and interviews were employed. That was followed by an online survey of UK research-active academics from a cross-section of institutions and disciplines. A bibliometric analysis was used to examine research output from authors over in the period between 2001 and 2008. Random sampling was used. The report noted that researchers published and disseminated their work in many different ways which included formal publications such as books, professional journals; conferences and their proceedings; and other means, including web-based tools for social networking. This report observes that decisions that authors make in the choice of a dissemination outlet depend on such factors as the speed of delivery of findings to interested users, esteem and rewards. The findings revealed that while over 90% of respondents in all disciplines used peer reviewed journals, and that there was slow uptake of OAJs and IRs. This study differs from the present in that focus groups and interviews were not used. Further, this study did an analysis of author output which was not the case with the present study.

Differences are also noted in the mode of administration of the survey instrument.

Zainab (2010) in a paper described the growth of Open Access (OA) repositories and journals as outlets for communication of research results. The author used monitoring initiatives such as ROAR (Registry of Open Access Repositories), Open DOAR (Open Directory of Open Access Repositories), DOAJ (Directory of Open Access Journals), Directory of Web Ranking of World Repositories to collate information that could show the performance of Malaysian OA repositories and journals. The author also intended to propose the various roles that libraries can play in order to promote the use of OAJs and IRs. The paper pointed out that the future of scholarly communication was likely to be dominated more by OA electronic journals and archives as a channel for communication. This paper recommended creation of awareness amongst academics of the various faculties and noted that it was a fallacy for librarians to imagine that academics knew about the existence of these channels of communication. This author strongly believed that the academics' knowledge about the OA resources would induce them into using them for dissemination and research consumption. This author used certain platforms in establishing the visibility of OA resources but did not solicit for feedback about these resources from the users which was the focus of the current study.

Mortland (2012) explored how organizations could enhance conversations with consumers by combining various outlets including the traditional and social media. Thirty four (34) undergraduate public relations (PR) students and 32 communication professionals were used. Interviews were conducted with six "interested" individuals. A qualitative approach was used. Surveymonkey.com was used for compilation of responses. The study revealed that nearly 94% use social media such as Facebook, Twitter, blogs, and Pinterest to reach their desired audiences while 64% used traditional media such as newspapers, radio, and TV. It is not clear from this study what sampling procedure was used or even how the data collected was analyzed. This study differs from the present in that the present uses academic users while this one used undergraduates as well as communication professionals. Furthermore, the focus of the present study was on open access outlets as opposed to social media and traditional media. Finally, this study focused on dissemination output for public relations while the present one focuses on dissemination outlets for academic research.

Nariani and Fernandez (2012) examined whether authors were satisfied with open access publishing (OAJ) outlets at the New York University. Semi-structured interviews were used. The respondents were authors and coauthors within the campus who published in Open Access Publishing. They were identified through a Web search of Science, Scopus, and PubMed. Online surveys were also used as an alternative for interviews. 12 authors were

interviewed and eight completed the online questionnaire. The combined response rate was 62.5%. The survey showed increased author publishing in OAJs. It was observed that what authors would like is to have their works read and cited. The factor of impact was found to be important to them. However, the researchers pointed out the small sample size used as a major limitation of their study. This study limited itself to OAJs and not other publishing outlets. The current study includes IRs. The sample size for this study was small as acknowledged by the authors and it is not even known what the target population size was. The study used interviews as well as online questionnaires while the present study used a questionnaire.

Sawant (2012) explored the changes that had taken place in the scholarly communication process over time. He used available literature on both the traditional and open access to compare and contrast the two processes. The author found that Web 2.0 technologies had affected the creation and dissemination of knowledge, and that new avenues of the peer review process had been established. This study concluded that open access publishing had changed scholarly publishing in the generation and dissemination, with open archiving, using institutional repositories to aid collection, preservation, and dissemination of an institutions intellectual capital. The author posed the question as to whether academic journals were less relevant in light of web 2.0 technologies. This study differed from the current in that it mainly focused on

social media and not to open access. This study was only limited to literature searches while the current used academics to obtain data.

Xia (2012) in an article on diffusionism and open access explored the geographic distribution of open access practices at the global level with a keen interest on the expansion of OA over space and time. His interest was in examining the diffusion of OA movement from the West to the rest of the world. He used maps and tables to support the analysis. This study employed the diffusionist theory to aid the understanding of open access. The study found that there was disproportionate growth of OA between developing and developed countries. The researcher explained these differences based on technology (ICT infrastructure) as well as cultural dissimilarities across countries. This study used a applied a tempo-spatial analysis examine development of open access at the global scale as opposed to chronological evaluation that traces the history of open access. This study only focused on the spread of OA in various countries but did not look at the challenges which were the emphasis for the current study.

Mail and Weitkamp (2013) explored the use of traditional and social media outlets by environmental researchers to disseminate research. They used a questionnaire to investigate the impact of different media. Out of the 504

questionnaires sent to researchers, only 149 were received (a 29% return rate). They found that only a few environmental researchers actively used social media to disseminate their research findings. They mainly relied on academic journals and face-to-face communication to reach the intended audience. This study differs from the current one in that its focus was more on use of social and traditional media. It did not address the use of OAJs and IRs which is the focus of the current study. It also was only limited to environmental researchers while the present one proposes to use all academics. Notable also is the relatively low response rate. This study pointed to the fact that both traditional and modern methods of accessing and disseminating research outputs were in use, with an increasing presence of OA outputs.

Wasike (2013) examined the status of the universities in the implementation of OA in Kenya. He employed a descriptive research and used formal interviews and discussions. This study was conducted in four university libraries in Kenya namely Catholic University of Eastern Africa (CUEA), University of Nairobi (UoN), Strathmore University (SU) and Jomo Kenyatta University of Agriculture and Technology (JKUAT. He found that Kenya was still at the intermediate stage of embracing OA and that university libraries were helping in the adoption of OA outlets. His subjects were four university librarians, two university administrators and two students two from each participating university. This study had a total of 20 respondents. The study reported support

for OA in university libraries in Kenya. This study recommended that university libraries provide assistance in helping faculties manage copyrights. This study differed from the current in many aspects. While this study addressed the status of OA, the current addressed the challenges of OA. The current study limited itself to librarians, university administrators and students while the current mainly focused on the academic community. This study also limited itself to only 20 respondents while the current used 381 academics. It is not clear how the authors' sample was drawn considering that he does not even give details of the target population. This study mainly used interviews while the current used a questionnaire for data collection. While this study used four universities, the current used 19 universities.

2.3Awareness about OA Outlets amongst Academic Staff

It has been observed that in order for adoption of OA outlets to be realized, scholars must be aware of their existence, their advantages, their accessibility, and the advantages that OA outlets have to offer over traditional ones.

Utulu and Bolarinwa (2009) studied the awareness and use of open access outlets among Nigerian academics. Convenient sampling was used to select the two universities enlisted in the study. Their target population was 2,224 academic staff members. They used a questionnaire to collect qualitative data. They had a 75% response rate of 180 of 250 subjects. The responses indicated

that 48.3 % were aware of post print. Regarding use, 54 (30%) of the respondents had deposited their scholarly works as pre-prints, 42 (23.3 %) had deposited their scholarly works as post-prints, while 63 (35%) used OAJs in disseminating their research works. Forty Seven (47%) respondents used works deposited in OAJs. It was not specified how data was analyzed. This study limited itself to the oldest universities in Nigeria and it focused only on qualitative data. The present study used respondents from all universities and used both quantitative and qualitative data.

Creaser et al. (2010) looked into the awareness of scholarly authors toward open access repositories and the factors that motivate their use of institutional repositories. Their main intention was to establish the extent to which these authors were aware of open access. A questionnaire was used and over 3,139 responses were received. Focus groups held across Europe. The subjects were authors drawn from four disciplines. The authors used mixed methods research. The research found that there was a good understanding and appreciation of the open access in general by over two thirds of survey respondents but the understanding of scholars from different disciplinary backgrounds differed. However, the authors reported concerns over copyright infringement and unwillingness to place outputs where other content had not been peer reviewed among the respondents. This study was conducted in Europe and the details about study design employed, method used to select the

subjects as well as data analysis approaches were not clearly outlined.

Dulle and Minishi-Majanja (2010) explored the awareness, usage and perspectives of open access repositories among Tanzanian researchers. The researchers also intended to further recommend strategies to enhance the adoption of open access in Tanzania. They used a survey questionnaire. Their sample was 544 selected through stratified random sampling. The respondents were selected from six public universities in Tanzania. A response rate of 73% was obtained. Their study revealed that the majority of the researchers were aware of and were positive towards open access. They also revealed more use of open access outlets in accessing scholarly content than in dissemination of research findings. They were of the opinion that addressing issues relating to researchers' self-efficacy, fears and misconceptions, ICT infrastructure, researchers' information search and publishing skills, and policies would enhance the adoption of repositories among Tanzanian researchers.

Their study differed from the current one in that these authors only addressed researchers' awareness and use but did not consider researchers' skills and training useful for accessing and disseminating research including skills to self-archive research information. This would definitely require specialized support from the librarians. This was the essence of this study.

Vlachaki and Urquhart (2010) explored the impact of open access initiatives on biomedical research scientific publishing and scholarly communication in Greece. They used a longitudinal approach and employed bibliometrics, questionnaire surveys and interviews. They examined knowledge, awareness and attitudes towards open access. The researchers used a bibliographic survey with the intention of detecting Greek biomedical journals in five world-wide sources. Their sample comprised of 70 biomedical researchers. A response rate 88.5% was achieved. Their finding was that awareness of open access among Greek biomedical scientists low (58 %). The researchers limited themselves to Greek-language journals indexed in various OAJs. In contrast to our study, which used scholars in universities the subjects in this study were biomedical researchers only. Furthermore, this study used a small sample of 70 and only drawn from one field (medical). Another distinct feature was the use of interviews for this study unlike the current that used questionnaires.

Anuradha, Gopakumar, and Baradol (2011) examined the awareness of the availability of free open access resources via the internet. Data was collected amongst students and members of the academic community of the BITS Pilani K.K. Birla Goa Campus, Goa. This study used a structured questionnaire to obtain data. Two hundred and fifty (250) members of the academic community participated. The analysis revealed that the Internet was the most preferred source of information by the academic community. Results also revealed

unawareness of the freely available resources. It was not clear how many students participated in this study or the method used in arriving at the sample for both the students and academic staff. The study pointed out that the librarians ought to play a role in imparting awareness and developing skills through information literacy sessions. As a collaborative support of academic staff, library staff needs to initiate appropriate user education programs to sensitize academic staff researchers on the existence of OA resources. It was necessary to establish the sources of information for academic staff including the library.

Emojorho, Ivwighregweta and Onoriode (2012) studied the awareness of Open Access Scholarly Publication among members of the teaching fraternity drawn from the University of Benin in Edo State, Nigeria. They used a descriptive research design. Seventy (70) academic staff were the subjects of their study. The subjects were randomly selected in the University of Benin Main Library. They used a structured questionnaire, Open Access and Scholarly Publishing Questionnaire (OASPQ) to collect data. They used simple frequency counts and simple percentages for data analysis. Their study found that the respondents were aware of open access scholarly publication. Most of the respondents leant about OA from their colleagues. The respondents cited increased impact and free online access were some of the advantages of open access while unavailability of internet facilities were some of the constraints

reported. The authors suggested that the university library needed to intensify its efforts in the creation of awareness of both open access journals and institutional repository. This study and the current used a similar design and statistics for purposes of data analysis. However, the authors did not come clear on the total population from which they drew their sample nor indicate whether they employed qualitative, quantitative or a combination of both approaches.

Stanton and Liew (2012) examined doctoral students' awareness of and attitudes to open access forms of publication. A sequential exploratory design was used. Mixed-methods approach consisting of qualitative semi-structured interviews and quantitative self-completion questionnaire was adopted. They interviewed eight doctoral students enrolled in a range of disciplines in Massey University, New Zealand who were purposively selected. Data collected formed the basis for the quantitative self-completion web survey which involved 251 students. From 901 doctoral students 251 took part in the survey, a response rate of 28% was obtained. Both qualitative and quantitative data were collected. Qualitative data were analyzed thematically. NVivo 8 was used to sort, store and analyze the interview transcripts by theme while survey responses were analyzed using Survey Monkey's online toolkit and Excel.

These researchers found that awareness of open access and repository

archiving was still low but respondents supported the concept of open access. Only two of the eight interview participants could describe the concept of open access. Reported also was the fact that deeper knowledge of IRs was lacking among the respondents. While respondent lacked in-depth knowledge of IRs, they still preferred a voluntary system of self- archiving their work in an institutional repository as opposed to the compulsory system. This involves knowledge about various protocols, file formats, security measures, metadata as well as preservation strategies. In order to improve on academics' self archiving, there is need for knowledge of the above mentioned issues. That calls for extra support from specialized librarians.

The current study was designed to establish the extent to which the librarians were aware of these self archiving related requirements in order to assist academic staff in self archiving. Similarly, it was noted that this study limited itself to one university in New Zealand and it focused on doctoral students while the present study used academic staff from selected universities in Kenya. This study also differs from the present in research design, use of interviews and mode of administration of the survey questionnaire.

Darvish (2014) investigated faculty members' awareness on open access at Çankaya University, Turkey. They conducted using a survey and quantitative analysis was used. Their population was 115 faculty members out of which 41

members responded. The study found that the University's faculty members were well-informed of the concept of open access. This study, besides being conducted in Turkey only limited itself to awareness of the concept of OA while the current was conducted in Kenya and also extended its scope to awareness of other aspects of OA. This study also used only quantitative current study uses both qualitative and quantitative approaches. The author failed to clearly show how the respondents were selected.

These research findings point to the fact of awareness of OA concept amongst the subjects engaged in the research but most of these studies did not look at awareness of specific aspects of OA. Besides, no such studies have been done in Kenya.

2.4 Use of OA Outlets by Academic Staff in Accessing and Disseminating their Research Works

Academic staff are pivotal to the realization of OA. The participation of academic staff in OAP is crucial in successful adoption of open outlets worldwide. This is because they generate content for uploading in OA outlets as well as use of content uploaded in the outlets by their colleagues. They are also considered to be the main users of institutional repositories and determine their universal adoption. (Consejo superior de Investigaciones Cientificas (CSIC) (2010)

Antelman (2004) investigated the research impact of articles published on open access journal outlets in the fields of political science, electrical and electronic engineering and mathematics. The sample included open-access articles from ten leading journals in each of the selected disciplines. The study found that in all the four disciplines, freely available articles have a greater research impact. This study was limited to a web search while the current study sought to have the academics themselves provide their views about the outlets they used. This study also limited itself to OAJs while the current looks at dissemination outlets broadly.

Chan et al. (2005) presented a paper which basically addressed the issue of use of OA outlets and its benefits to researchers in developing countries. In the paper they covered the progress in developing nations as well as the progress in some developing countries such as Brazil, China and India. The authors indicated that to achieve a global, interoperable, free-of-charge network of published refereed research literature, an awareness-raising exercise as well as regional technical workshops to train key individuals was needed. Their paper gave an indication of the benefits of OA in dissemination of research findings but did not show which benefits researchers were aware of. While progress in use of OA outlets in some developed countries was addressed in this paper, the current seeks to examine the extent of its use and use of other outlets in Kenya.

Klang (2006) examined the effects of copyright law and licenses on open access to scientific information. He used semi-structured interviews to collect information from all university libraries in Sweden. The study sought to find out how librarians dealt with copyright law and licenses in an attempt to make OA resources accessible. This was through action research which is a reflective process of problem solving. All the respondents expressed concerns about copyright in their everyday work and how to interpret copyright law. Some even indicated lack of sources of legal advice. Nevertheless, a number of respondents showed a substantial understanding of copyright. It was concluded that copyright is a major hindrance in use of OA resources. This study differs from the current study in the mode of data collection and the fact that it focused on copyright related issues. Furthermore, it restricted itself to librarians while the main focus of the current study is the academic user.

Abrizah (2009) investigated the use of open access repositories, among academics in Malaysia. He used a web-based survey to obtain data on reasons for contribution or non-contribution to Institutional Repositories (IRs). Respondents were randomly-selected. The test-items were a mixture of closed and open questions. One hundred and thirty one (131) academics from 14 faculties, institutes and centers' at the university were used. It emerged that science-based faculty members were in favour of depositing their research

work compared to those from other faculties. He noted that 55.7% of the respondents had deposited their research in publicly accessible websites and open access digital repositories. He also noted that issues of ownership of copyright and plagiarism were the major deterrents to self-archiving. This research differs from the present one in that this one used a web-based survey while the current uses a self-administered questionnaire.

Young (2009) explored metadata issues relating to open access database outlet for dissemination. He mainly studied how metadata differences inhibit optimization of open access non-peer reviewed resources. This paper was limited to one database only, "Spenser and the Tradition: English Poetry 1579-1830" He employed a case study approach. This paper indicated strained faculty-library collaboration where faculty were reported as not concerned with dissemination, and libraries having not taken up their role in scholarly publishing. The writer suggested improvement of navigation and search tools as well as more explicit dissemination methods can be employed. This writer however studied the actual database and brought out database specific issues but did not use any human subjects unlike the current study.

Ani, Edem and Ottong, (2010) investigated the extent of internet access, and use by academic staff. The survey method was used and a structured questionnaire applied for data collection. The subjects for this study were

academic staff drawn from the University of Calabar in Nigeria. Out of a total of 200 questionnaires administered, 138 were returned giving a 69 % response rate. The study revealed extensive internet usage by the respondents, but low level of access to the internet (26.92 %). The study recommended regular formal user training by the university library (university management), for all academic staff, effective policy on electronic collection development to supplement traditional printed journals/books in the libraries and formal user training on internet access and use. This study differs from the current study in the subject under investigation where the current one investigated the use of OAJs and IRs which are accessible via the internet and not the internet in general.

Gbaje (2010) examined the use of open access journal outlets for scholarly publications. 21 chief-editors of scholarly journals published in Ahmadu Bello University, Nigeria were the subjects. This study used survey research method. Purposive sampling technique was employed to select the participants. Data was collected using a questionnaire and treated using frequencies and percentages. The study revealed, among others that only 2(9.5%) out of the 21(100%) of scholarly journals published in Ahmadu Bello University were open access journals. Besides, a large number of scholarly works and research findings emanated from scholars and researchers. Editors felt that a lack of awareness of the potentials of open access journals, coupled with concerns

over copyright hindered the shift of closed journals to open access journals by publishers of scholarly journals. This study limited itself to editors of scholarly journals while the current study which used academics. Purposive sampling technique was used to select the respondents but the current study used stratified random sampling.

Fengand Gunilla (2011) studied the use of social media in scholarly communication. Their intention was to give an indication of whether researchers' used Web 2.0 techniques scholarly communication. This was an exploratory study and they used a web survey to collect data from university academics. They used SPSS for purposes of data analysis. This study found that researchers were familiar with Web 2.0 tools such as blogs, wikis, social networks among others and they considered them convenient for scholarly communication. This study differed from the current in the design adopted. While both studies focused on the academic staff, the former mainly studied social media while the current was limited to open access outlets. It is not clear what the population was from which their sample was drawn.

Dzandu and Dadzie (2012) examined the impact of ICT on information provision. They gathered information on the awareness, access to, and use of ICT facilities and services; training and skills as well as effects of ICT use on the research activities. This study was conducted in Accra, Ghana. The

respondents were research officers drawn from seven selected institutes. They mainly focused on computers, the Internet, databases, Inter Library Lending and Document Delivery (ILL/DD) and Online Public Access Catalogue (OPAC). Their research adopted a case study approach. They used questionnaires and interviews to draw information from the participants. The selection of the respondents was done proportionally to the population. Out of the total population of 200, a sample of 100 (50 % of the population) was selected for the study and drawn across the six institutes. 80 of the 100 questionnaires were returned giving a response rate of 80%. Their data showed high usage of the Internet (97.5%) and low usage of library OPACs (40.5 %). More than half (55.6 %) said they received some training on usage of databases. Among their key recommendations was the publicizing of ICT facilities and services available in order to increase patronage of the services as well as provision of adequate training to the research officers in the use of the ICT facilities and services. This study focused its attention to adoption of ICT in general but covered some outlets used in dissemination such as databases and OPACs. The current study, however, dwells on adoption of open access journals and institutional repositories. The respondents for this study were research officers while the current is limited to academics. While this was a case study, the current adopts the survey approach. Differences in sampling procedures are also noted where the current study adopts a stratified random sampling approach. Finally, this study used a questionnaire and interviews for

data collection while the current makes use of only a questionnaire.

Ivwighreghweta and Onoriode (2012) in their study examined the extent of researchers' appreciation of open access scholarly publishing. Their main focus was the level of usage of open access articles by academics. They concentrated more on issues relating to language, resistance to change and infrastructure. Their participants were drawn from one University in Benin, Nigeria. They used a population of 140 lecturers. They used a descriptive survey design. A questionnaire was used to collect data. They analyzed data using frequency counts and percentages. They concluded that researchers cited more open access journal articles than subscription based journals and recommended improvement of internet connectivity strategy to enhance use of open access publications. This study examined open access journals while the current examines both OAJs and IRs. It focuses its attention to use while the current addressed issues of awareness, attitude in addition to use. While the participants for this study were all from one university in Nigeria, the current study uses academics drawn from various universities in Kenya. Further, the authors did not mention what their population size was.

Liebenberg, Chetty and Prinsloo (2012) wrote a paper that was based on a descriptive study conducted to investigate students' access to technology and their capabilities in using technology. The paper, explored variations in the

digital divide in the specific context of the University of South Africa (Unisa) a university with over 350,000 students. The intention was to investigate student access to and effective utilization of ICTs and specifically used mobile applications. Non-random and purposive sampling techniques were used. They used an online survey and a paper-based one. 22,216 completed the survey online while 474 who completed the paper-based returned it. From the survey, majority of online students used the Internet (57%) from home and (51%) at work. It was observed that more students had private access to the Internet from home. This study was different from the present since its focus was ICT in general and mobile applications in particular while this is specific to IRs and OAJs. In addition, the subjects for this survey were students while the current study focuses of academic staff. While this study used non-random and purposive, the present used stratified random sampling technique.

Ozoemelem and Bozimo (2012) examined the awareness and use of open access scholarly publications. Their respondents were Library and Information Science (LIS) lecturers in (14) universities in southern Nigeria. They employed descriptive survey design. A questionnaire was administered to 141 LIS lecturers and all the responses were collected. Frequency counts, percentages and mean were used for data analysis. Regression analysis was used to establish the relationship between awareness and use of open access publications. The study revealed a high level of usage of open access

publications among the participants. They suggested the need for an enabling infrastructure, policies that include mandatory deposit of scholarly works in open access archives as a way of increasing usage. This study limited itself to LIS lectures in South Nigeria and it also used regression analysis. The present study used all academic staff from all universities and used descriptive statistics.

Lwoga and Questier (2014) investigated the factors that influence adoption and use of OA amongst staff in health sciences in Tanzanian universities. They used a cross sectional questionnaire to collect data. They used stratified random sampling to pick their sample. They found that some of the factors influencing adoption include professional recognition, professional rank, and number of publications, attitude, academic reward and accessibility. One of the greatest fears that were observed by the researchers was one relating to copyright infringement. While this study focused in the health sciences sector alone the current work used a cross-section of academic staff. Similar to this study is the method of sampling.

These studies indicate a certain level of use of OA resources. However, many researchers observe that the use of OA resources may not be high due to lack of awareness, lack of infrastructure, lack of training, and lack of a policy requiring the use of such resources, amongst others. It is also instructive that

none of the works was done in Kenya.

2.5 Skills and Training of Academic Staff on Open Access Outlets

Successful adoption of OA outlets depend on the contribution of the academic staff working at various universities. This is because of the crucial role that they play. Their role is twofold: producing and consuming research output (Stanton and Liew, 2011; Chan, Catherine and Steve (2005). Effective provision and consumption by academic staff which constitutes their adoption can only occur if the academic staff have the right skills mix to self archive their research output as well as access research output of other scholars.

Cassella and Morando (2012) conducted a survey in Italy in which they explored the skills for repository managers and administrators. They assessed the educational and professional background of the repository managers and their skills for implementing institutional repositories. This was an online survey using an online questionnaire. A response rate of 55% was obtained. Their findings showed that highly specialized competencies were required and more so skills to deal with copyright issues, metadata expertise and technical skills on interoperability standards and protocols. They reported that the main challenge for repository managers in Italy was raising of internal stakeholders' awareness regarding open access and suggested focus of attention on internal advocacy initiatives including training courses. While this study's' key group

was the library managers and administrators, the current study mainly focused on academics.

Mathew and Baby (2012) studied technology skills for academic librarians. They used a questionnaire to obtain data from library professionals in seven universities in Kerala, India. Microsoft Excel was used for analysis. The study revealed that most of the qualified library professionals did not have an opportunity to familiarize themselves with ICT services and these were performed by ICT personnel. Mobile phone (91.4%) and internet (86%) were the most used technologies. Their awareness in emerging technologies was considered low with younger professionals being more interested in emerging technologies and ICT based services. This study showed that lack of training in ICT applications was a main hindrance to ICT utilization. While the focus of this study was library staff, the current targets the academic community with subsidiary data from library staff. This study limited itself to mobile and internet as opposed to IRs and OAJs which is the focus of the current study. The authors failed to give details about sample size determination and selection of the subjects, and how they went about analyzing the data.

Morgan (1996) in his paper, explored the skills required by the academic or subject - librarians in future. The author emphasized on the need for more

people-oriented skills which were considered important for the organization and provision of effective services. He emphasized on the need for improving credibility with academic staff. The author also put emphasis on teaching and training information skills, IT-related skills and acquisition of key management skills including strategic awareness. He finally warned that librarians, being information intermediaries to the wider academic community, must undergo immense change if are to avoid being displaced. This author limited himself to the skills required by the librarians in order to effectively serve the academic community. He did not look at the skills needed by the academic user.

The implication of the argument of these authors was that the managers had low specialized skills. It is likely that similar situations would be experienced in Kenya. In Kenya, people needing specialized skills would include librarians and other information specialist. Such skills would be useful in helping academic staff researchers to apply in self archiving and accessing research information. This study was designed to establish the extent to which the academic staff user as well as the librarians who are expected to assist them had the required skills. Similarly, it was noted that most of these studies focused on librarians and there were hardly any studies that specifically targeted academic staff in terms of evaluation of the required skills. This study sought to interrogate that aspect.

2.6 Attitude of Academic Staff towards Open Access Outlets

Academic staff are key players in the adoption of the outlets and their attitude towards OA outlets may affect their publishing behavior. That in turn may also determine their adoption of OAJs and IRs or whether they become widely accepted as platforms for dissemination of research findings. The viability of OA outlets therefore depends on their acceptance and validation, a decision which may promote or jeopardize application of the outlets in the dissemination of research findings

Schroter, Tite, and Richard (2005) examined authors' attitudes towards open access publishing and author charges, their perceptions of journals that charge authors, and whether they would be willing to submit to these journals. They used semi-structured telephone interviews. Their respondents were 28 international authors from the United Kingdom; North America; Australasia; and Europe who submitted to the *BMJ* in 2003. The authors were randomly selected using computer generated random numbers. Their findings showed that authors were aware of the concepts of open access publishing and that they would not mind publishing in journals they perceived as being of high quality even if they charged authors fees. Hence, journal quality was perceived more important than the cost when deciding where to submit papers. This study differs from the current one in the manner in which respondents were selected,

as well as the mode of data collection. A further difference is evident in the sample sizes for the two studies.

Herndez-Borges et al. (2006) studied the attitude and awareness of medical authors to OA publishing. The researchers used Spanish speaking writers who published in PubMed as their population. 354 authors were conveniently selected from 716. The sample cut across many institutions including university hospitals and non-university hospitals. They used a nine-item questionnaire which was emailed to the respondents. Comparisons were done using the Pearsons' chi-square test with significance set at $p<0.05$. The return quota was 100 (28%). No differences were found based on medical specialty, type of residence or type of institution. About 30% cited lack of funds as a barrier. It was concluded that most of the authors were reluctant to pay author fees for the OA facility. This study differed from the current study in the manner of sampling technique, data collection and data analysis.

Hoornand Graaf (2006) explored the attitudes of authors in the UK and the Netherlands towards Open Access. The survey mainly dwelt into copyright issues. These were seen to have an influence on academics' views of OA. Information was canvassed from a survey of authors of articles published in OA journals. A total of 1,226 authors of Open Access articles in Biomed Central journals, PLoS Biology and PLoS Medicine, *BMJ* and *EJC*L were used

and 355 responded, giving a 29% response rate. The main issue addressed was the academic authors' views on the usefulness of present-day copyright policies for scholarly communication. The survey revealed that authors publishing in Open Access journals were not satisfied with assigning copyright to publishers. 71% of the authors preferred keeping the copyright, 2% preferred to transfer their copyright to journal publishers, 23% were neutral and 4% did not know. This study limited itself to copyright issues of authors who published in specific journals. It is not clear how the respondents were sampled or even how the data was analyzed. The current study used academics and canvassed their attitude on a wide range of IR and OAJ issues.

Fullard (2007) reported on the findings of a survey that was undertaken to assess the support for open access amongst researchers, research managers and policy makers in South Africa. The study focused mainly on quality, author charges and academic reward systems. An online questionnaire was used. Out of 500 South African biomedical authors 145 responded giving a response rate of 29%. Eleven (11) university research managers (52.3%) and eight representatives from official research organizations (61.5%) also completed the questionnaires. It was not clear whether all the targeted Deans of Research or Deputy Vice Chancellors (Academic) at the 21 public universities and the Chief Executive Officers (CEOs) at 13 governmental organizations. The study revealed that academicians did not have a positive attitude towards OA

resources. The study proposed advocacy by the library community to improve uptake of OAJs. This study focused on the various stakeholders and policy makers while the current study limited itself to academic staff. The study found that the authors' attitude was based on quality, academic reward system and author fees. The author did not indicate how the subjects were selected or even how the data was analyzed.

Shao and Scherlen (2007) examined the perceptions of academic journal editors on Open access publishing. The editors used were drawn from mainland China, Hong Kong, and Taiwan. The authors conducted interviews with two editors from open access and four from traditional subscription-based journals in the region. They intended to gather information from the editors on how open access has or could affect their publications. The study used 18 journals. However, only 6 editors from those journals were contacted for informal interviews. One of the editors expressed fear that if open access publishing dominates, it could negatively affect the commercial publishing system and warns that readers could suffer if either of the two overly dominates the field. This study limited itself to journal editors while the current uses the academic user. The study also used interviews while the present used a questionnaire to obtain data. The authors did not make clear the methods they used in selection of the subjects as well as data analysis.

Gul, Shah and Baghwan, (2010) investigated the experience, attitudes and perceptions of researcher's about the open access (OA) movement. Their study was limited to 84 scholars out of 326 drawn from two faculties of Science and Social Science at the University of Kashmir. A 14-item questionnaire was used. They used stratified disproportionate sampling and their sample size for the departments of both faculties was confined to four scholars. They used Microsoft Excel for analysis. They found out that majority of researchers at the University of Kashmir mostly relied on web based resources to carry out their research programs (95.23 % of the scholarly community retrieved OA content using search engines, 29.76 % used OA journal to deposit their works and 9.52 % deposited their works in OA repositories). Colleagues (57.14 per cent) were the main referral sources of OA awareness with the least intervention from library professionals. This study is different from the current one in that the subjects for this study were scholars drawn from one university and two faculties while the respondents for the current were drawn from a number of universities and they too cut across all faculties. While this study used stratified disproportionate sampling, the current used stratified random sampling to select the respondents.

Hattingdi (2010) conducted a study to in South Africa in order to unravel the attitude of faculty with regard to use of technology in teaching of online courses for distance learning. His study revealed that academic staff feared, resisted

change and were concerned about intellectual property and the quality of the online courses. That prevented them from using technology in distance learning. Just like distance learning, dissemination via OA outlets makes use of Information Communication Technology (ICT). This study limited itself to attitudes of respondents in use of ICT in distance learning while the current focused on IRs and OAJs. It is however possible that similar situations would be experienced in as far as OA outlets are concerned.

Oliveira (2011) examined the opinions of directors of Seventh-Day Adventist university libraries around the world regarding the advantages of OA as well as the main challenges they face for the implementation of an institutional repository. They used 92 university and technological library directors drawn from 66 different countries but only 13 library directors from 10 countries answered the survey. The response rate was only 14%. The study reported technological infrastructure; funds; specialized personnel, implementation and maintenance quality control system among the barriers. A four question questionnaire was used to collect data and emailed to the participants. Only thirteen librarians from ten countries returned the questionnaire. This study only solicited for opinions from librarians of Seventh-Day Adventist universities in the world while the current one studied academics from different universities in Kenya. More so, this study used a four-question

survey which was emailed to the participants while the present was self-administered.

Xiao and Askin (2014) examined academics' awareness of and attitudes towards Wikipedia and Open Access journals for academic publishing in order to help understand perceived benefits and challenges of the two models. They compared the Wikipedia and open access journals to determine their advantages and disadvantages which they considered necessary in making scholars submit their research papers in either of the models. A web survey administered by way of listservs was used. An online open-ended questionnaire whose data was mainly nominal was used for this study to compare views on the various aspects. The study involved 41 top world ranked universities from the USA, Canada, China, and India. They used six selected departments of chemistry, biology, physics, education, psychology, and sociology. Of 198 e-mails sent, 120 were received. Thematic analysis was used. The study analyzed the relationships using correlations. Their study showed that Wikipedia had perceived advantages and challenges compared to the Open Access model. It also revealed that researchers' experiences with Open Access journals were correlated with their Wikipedia experiences, whereby those who have not had any Open Access journal experiences were more likely not to have had any Wikipedia experience. While this study used an online questionnaire, the current used a self-administered questionnaire.

Further, it was limited to scholars in some top world ranked universities in some countries while this focused on scholars drawn from selected Kenyan Universities. The open-ended questionnaire in this study generated qualitative data while the current used a combination of both quantitative and qualitative.

These studies show that the attitudes of (potential-) contributors to publications are influenced by the cost of subscription, copyright issues, technology related infrastructure, and negative effects on commercialization and outright disinterest in OA resources.

2.7 Summary and Research Gaps

Several gaps crying out for research can be deciphered from the literature reviewed. In terms of content, several factors that hinder OA and IR use were identified through studies on different categories of subjects. One of the things that stand out is that none of these studies has been carried out in Kenya. Even if we have seen a number of studies done in Ghana, Nigeria, South Africa and Tanzania, it cannot be assumed that the findings of such studies can be automatically applied to Kenya.

Some interesting studies were done in developed countries that reported high uptake of OA and that subscription price may not be a hindrance. There was

need to carry out similar studies in Kenya to find the extent of a possible comparison and to establish whether factors like cost of subscription amongst others is a barrier to the uptake of OA.

Some of the studies used students, others managers, a few used academic staff as their subjects. The sampling techniques, sample size and mode of data collection differed from study to study. Majority of the studies focused on qualitative approaches. There was need to have a study that combines the two.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter explains and justifies the research design chosen, independent and dependent variables, location of the study, and target population. The sampling techniques and sample size as well as research instruments are also covered. It also explains how validity and reliability were to be established. Finally, data collection techniques, data analysis and logistical and ethical considerations are discussed.

3.2 Research Design and Locale

A descriptive research design was chosen for this study. This design describes and characterizes present conditions occurring at a specific place (s) and time in order to explain a phenomenon. It deals with conditions, practices, structures, or processes that evidently portray the trends that exist or opinions held. (Saunders, Lewis & Thornhill, 2007). A descriptive design tries to describe what is happening in more detail, and fill in the missing information and expand general understanding.

OA outlets are such a phenomenon which requires such description especially with regard to their adoption among academic staff in selected universities in

Kenya. The researcher intended to determine what existed with regard to adoption of OA outlets by describing the views and attitudes of the academic staff. Both quantitative and qualitative data was collected. Quantitative data was obtained from closed ended questions while qualitative data was obtained from open ended questions which led to descriptive explanations through appropriate presentations.

3.2.1: Study Variables

Adoption of OA outlets was taken to be the dependent variable in this study. Academic staff related variables were taken to be the independent variables. These include ICT skills and level of training, awareness of OA outlets, and attitudes of academic staff towards OA.

i. ICT Skills and Training

OAJs and IRs rely on computers. Academic staff are expected to be equipped with excellent ICT skills to enable them self archive their works in the repository as well as utilize repository content. ICT skills and training in various aspects of OA greatly determine use of these outlets.

ii. Academic Staff Awareness of OA

For the academic staff to fully utilize OA outlets as well as provide their works on open access, they must be aware of the existence of the outlets, its benefits

and also shortcomings. Knowledge regarding the outlets may promote or hinder its adoption.

iii. Academic Staff Attitude

Academic staff attitude was considered key in determining adoption of these outlets. This included their attitude regarding the quality of OA works, usefulness of the outlets and their attitude with regard to providing their works on OA. If they perceived OA contents as being of low quality, they were not likely to utilize such content. Similarly, if the academic staff hold onto the notion that providing their works on OA was likely to expose their works to plagiarism, they were not likely to disseminate their works using OA outlets hence difficulty in adoption.

3.2.2: Study Locale

The study was carried out in chartered private and public universities all over Kenya. These universities are scattered in an uneven proportion throughout the country. The findings were generalized to the entire academic community in Kenya.

3.3 Population

All academic staff in both public and private universities formed the population of this study. There were seven public and twelve private chartered

universities in Kenya at the commencement of this study, with a total academic complement of 15,000. This population was chosen on grounds that by nature of their work academic staff are supposed to generate and disseminate knowledge.

Library staff in the selected university libraries were used as a support group. These were also selected from all universities in Kenya. These were chosen as a support group because of the supportive role they play in the management of information systems. There is a complement of 625 in the universities used for the study.

3.4 Sampling Techniques and Sample Size Determination

3.4.1 Sampling Techniques

Several techniques were used to obtain the required sample. Purposive sampling was used to select 19 universities which comprised of 7 public and 12 private universities out of a total of 43 at the time of the study. The study used a census approach to select all the 19 universities. The then seven public universities were included in the study because they were older than those that were not fully fledged. The 12 private universities used were the only chartered universities at the time of the study and were compliant with the law relating to accreditation at the time of study. All the public and private institutions used for this study were either fully-fledged universities or complied with the law

relating to accreditation. In addition, these universities were used for this study because they were considered stable in form of staff and infrastructure and more likely to have an establishment for OA outlets.

Stratified sampling technique was used to select respondents belonging to different universities. It was observed that the selected institutions did not have equal numbers of staff. For this reason, proportionate distribution of the total sample was applied to determine the number of respondents from each university. The results of the sampling techniques are indicated in Table 3.1 and Appendix VII.

Table 3.1: Sampling Grid for Individual Universities

	Name of University	Target Population Academic Staff	Sample Size	Target Population Library Staff	Sample Size
1	UoN	1591	40	79	31
2	KU	1241	31	64	25
3	MU	1181	30	57	22
4	JKUAT	928	24	58	23
5	Maseno	873	22	35	14
6	Egerton	970	25	35	14
7	MMUST	958	24	25	10
8	ANU	574	15	33	13
9	CUEA	663	17	35	14
10	Daystar	587	15	27	11
11	KEMU	681	17	25	10
12	USIU	679	17	25	10
13	PACU	559	14	15	6
14	SU	658	17	15	6
15	St. Pauls	586	15	15	6
16	Kabarak	597	15	20	8
17	Scott Theological College	501	13	22	9
18	University of Eastern Africa	582	15	20	8
19	MKU	591	15	20	8
	Total	**15,000**	**381**	**625**	**248**

Source: University Human Resources Office

3.4.2 Sample Size

The formula used to obtain the sample size involving a target population equal to or greater than (≥) 100,000 was:

$$n = \frac{z^2 pq}{e^2}$$ (Kothari, 2004)

Where,

n= Sample size for target population

p= probability of occurrence

q=probability of non-occurrence

e= 0.05 (Level of Significance)

z= 1.96 (Coefficient for z score in a normal distribution)

The sample was adjusted using Saunders, Lewis and Thornhill, (2009) formula:

$$n' = \frac{n}{1+\left(\frac{n}{N}\right)}$$

n'= The required adjusted sample size for the small target population.

This modification was necessitated by the fact that the population under study was below 100,000. This yielded n'= 374 academic staff and n'=238 for library staff. Specifically, the study used 381 academic staff and 248 library staff. The discrepancy in the figures between the calculated figures and actual figures used for the study arose because of decimals at various levels of

calculations. For this reason, where figures such as 29.3 were obtained when frequencies were calculated, such samples were rounded off to the nearest whole number.

3.5 Research Instruments

Two sets of questionnaires were designed: one for the academic staff who were the main target for this study and another for librarians to help obtain supporting data. A Questionnaire for academic staff (QAS) was a general instrument administered to academic staff in the selected universities. The main objective for the instrument was used to gather information on their awareness, skills, use of OAJs and IRs and their views or attitudes of OAJs and repositories. The academic staff questionnaire was comprised of both open and closed ended questions and statements ((Appendix II). The questionnaire for library staff (QLS) assisted the researcher to obtain additional information on such issues as staff skills, awareness and training with regard to OA which was used to supplement data obtained from academic staff (Appendix IV)

The questionnaire was preferred to other data collection techniques because of its cost effectiveness for such a study that involved a large sample size and large geographic areas. Besides, the questionnaire was also preferred because there was high literacy rate among the selected respondents. Finally, the questionnaires used helped in reducing bias thus ensuring that the researcher’s

opinion did not influence the respondents to answer questions in a certain manner. These were first pretested to ensure validity and reliability.

3.5.1 Pilot Study

Two universities that did not constitute part of the final study were used to conduct the pilot study. These included the then Kenya Polytechnic University College currently known as Technical University of Kenya and Presbyterian University of East Africa (PUEA). At the Technical University College, out of 697 members of academic staff, 18 were selected while out of 15 library staff, 6 were selected. At the Presbyterian University with 448 members of academic staff, 11 were selected, while 4 out of 10 library staff were selected. The pilot study sample size was determined using the formulae n'= (n/1+n/N). A questionnaire was subsequently administered to them. Data collected from the pilot study were analyzed.

Results from the pilot study were used to test any vagueness in the questions used, to find out how long a respondent would take in answering the questionnaire, to establish the usefulness of the content and to find out whether the results would be dependent on either the person administering or the time of administration. The questionnaire was thereafter adjusted accordingly.

3.5.2 Validity

In this study, content validity was achieved by ensuring that the research

instrument adequately covered the area being studied. Each theme under investigation had adequate representation. Content validity of the questionnaire was further attained through evaluation and scrutiny by experts in the field of Information Science and open access publishing. These were helpful in determining whether the instruments adequately addressed the study objectives.

The research instrument was then pretested prior to the actual study with identical procedures to those that were employed during the actual data collection and questions reviewed as necessary. That was done to clarify areas of ambiguity as well as make the data usable. Finally, construct validity was achieved by ensuring that all the terms used were operationally defined. This was established after the pilot study.

3.5.3 Reliability

Data obtained from the pilot study was used to determine the reliability of the various items in the instrument. Gay (1992) defines reliability as the degree to which a test consistently measures whatever it is designed to measure and is expressed as a coefficient. To ensure that the same results were consistently obtained from the study, during pilot testing the instrument was administered by different people at varying conditions of time of day and venue. The instrument proved to be robust as there were no variations in the responses based on surrounding circumstances.

To determine the internal consistency of each test item in the instruments, a correlation coefficient was determined using Cronbach correlation coefficient. The closer Cronbach's alpha was to 1.0 the greater the internal consistency of the items in the scale. The reliability test yielded a Cronbach's alpha of 0.76which is closer to 1.0. The reliability coefficient that was obtained from the pilot was accepted since it attained a coefficient which the researcher considered to be reasonable based on George and Mallery (2003) who provide a guideline for interpreting correlation coefficients where ">0.9-Excellent, >0.8-Good, >0.7-Acceptable, >0.6-Questionable, >0.5 – Poor and <0.5-Unacceptable".

3.6 Data Collection

Before commencement of the study, the researcher sought permission to conduct the study from the National Council for Science, Technology and Innovation (NACOSTI). The researcher further sought permission from the specific universities where the research was to be conducted. The researcher administered and collected the questionnaires personally to both the academic and library staff. That was especially so for the universities within Nairobi County, and that was done in order to ensure a high return rate and avoid delays. For the universities outside Nairobi County, the researcher used research assistants to administer the questionnaires.

3.6.1 Logistical and Ethical Considerations

The researcher sought permission from the National Council for Science and Technology (NCST), now referred to as National Council for Science, Technology Innovation (NACOSTI). This was given in form of a research permit. Furthermore, approval from all the universities where research was to be conducted was sought. Participants were informed of the purpose of the study. Informed consent was obtained from the participants. It was explained to the participants that the information they gave would be treated confidentially (See Appendix I and Appendix III) They were not required to show their identities on the questionnaires. The respondents were encouraged to give honest answers in order to lend credence to the study and to help come up with useful recommendations. Care was taken to ensure that the questionnaire was not too long and that it would not take a lot of time for the respondents to fill. All sources of information in this study were acknowledged through appropriate citation. The researcher maintained integrity by presenting findings honestly and objectively and without manipulating results.

3.7 Data Analysis

Prior to the analysis, all questionnaires were scrutinized for completeness. A coding scheme was designed after data collection to facilitate analysis by use of a computer. The scheme matched every response with a number for efficient analysis.

Data was analyzed differently depending on the type. The data generated was of both quantitative and qualitative nature. Quantitative data was obtained from the closed ended questions. This data was analyzed using the Statistical Package for Social Sciences (SPSS). Frequencies, percentages, graphs and the mean were computed. Data obtained this way was compared between the two groups of academic and library staff by way of percentages. Data was also presented using tables, pie charts and graphs. Qualitative data was obtained from open ended questions. The responses from this type of data were classified into broad themes and the content analyzed. Objectives one to four generated nominal data which was analyzed using descriptive statistics and presented using tables, pie charts and graphs. Objective number five generated ordinal data which was analyzed using a likert scale and presented using the mean score of the intervals.

CHAPTER FOUR

PRESENTATION OF FINDINGS, INTERPRETATION AND DISCUSSION

4.1: Introduction

In this chapter, the collected data is analyzed, presented and interpreted under specific sections arising from the objectives and respondents' responses. It first starts with respondents' general information followed by:

1. Outlets used by academic staff in dissemination of research findings
2. Awareness about OA outlets amongst academic staff
3. Use of OA Outlets by Academic Staff in Accessing and Disseminating their Research Works
4. Skills and Training of Academic Staff on Open Access Outlets
5. Attitude of Academic Staff toward Open Access Outlets

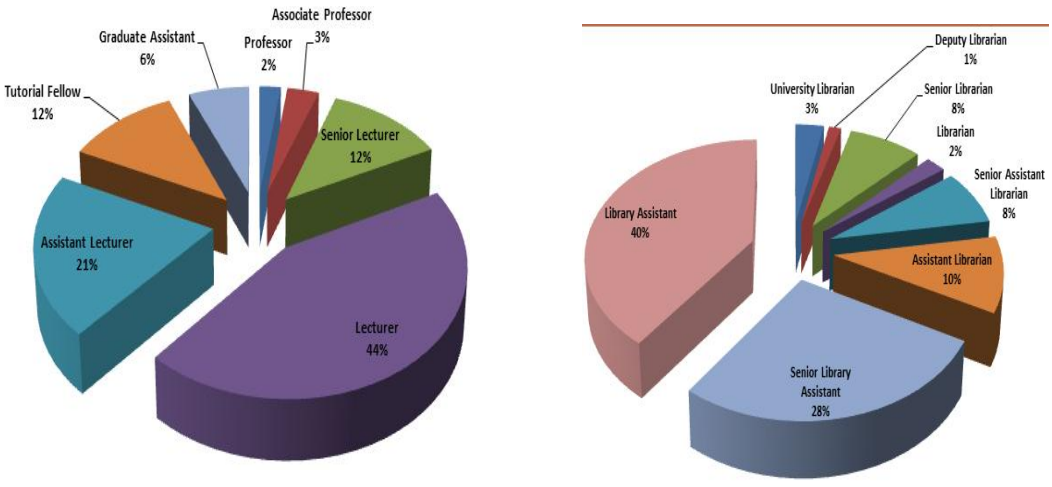
4.2. General Information

The research had one main category of respondents' namely academic staff. A total of 381 questionnaires were distributed to the academic staff and 361 were returned giving a return rate of 94.7% which was considered suitable for this study. Librarians formed the subsidiary group and this was brought in for comparison purposes. As for the subsidiary group, of the 248 questionnaires administered 223 of them were returned translating to a return rate of 89. 9%

which too was considered adequate for this study.

The two sets of questionnaires administered captured additional information about the respondents and that was limited only to academic and library staff designations and academic staff duration of teaching at the university. The information was considered necessary in arriving at conclusions on adoption of OA outlets based on such information.

The academic and library staff who formed the populations for this study were of different designations which are summarized and presented in Figure 4.1 below. (See also Appendix A)



Academic Staff

Library Staff

Figure 4.1: Academic and Library Staff Designations

Figure 4.1 above shows that in the academic staff category, lecturers were the

highest respondents with 44% while professors were 2%. Majority (40%) of the respondents in the library staff category were library assistants. The low numbers of academic staff at the assistant lecturer, tutorial fellow and graduate assistant positions is expected. They are on training and as they get promoted from the training positions to more permanent positions, that results in the high numbers lecturers.

It is also seen that only 14% of the respondents in the library staff category were senior members of staff and included university librarians, deputy university librarians, senior librarians and librarians. The university libraries regulations stipulate that a librarian is a professionally trained person with a minimum of a master of Library and Information Science (Commission for Higher Education, 2007). The highest category of staff (40%) was library assistants, a position held by holders of a diploma in library science respectively.

4.3: Outlets Used by Academic Staff in Disseminating Research Findings

Academic staff use different outlets to share their research findings. In order to determine adoption of OA outlets, academic staff were presented with various

outlets used in dissemination including the OA outlets as well as other outlets. They were further asked to indicate which outlets they mostly used in disseminating their research works. This was done in order to determine adoption of OA outlets as literature earlier reviewed indicated that print journals and books were commonly used in dissemination. The findings are presented in Table 4.1 below.

Table 4.1: Outlets used by Academic Staff to Disseminate Research Findings Based on Their Designation (n= 361)

Designation	Outlet Used in Dissemination											
	Print Journals		Books		Open Access Journal		Institutional Repository		Never Published		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Professor	5	35.7	4	28.6	3	21.4	2	14.3	0	0.0	14	100
Associate Professor	8	32.0	6	24.0	9	36.0	1	4.0	1	4.0	25	100
Senior Lecturer	31	36.5	22	25.9	17	20.0	11	12.9	4	4.7	85	100
Lecturer	74	36.6	40	19.8	32	15.8	16	7.9	40	19.8	202	100
Assistant Lecturer	16	18.4	13	14.9	16	18.4	15	17.2	27	31.0	87	100
Tutorial Fellow	13	25.0	7	13.5	15	28.8	3	5.8	14	26.9	52	100
Graduate Assistant	7	26.9	5	19.2	7	26.9	2	7.7	5	19.2	26	100
Total	**154**	**31.4**	**97**	**19.8**	**99**	**20.2**	**50**	**10.2**	**91**	**18.5**	**491**	**100**

Total frequency in this table (491) differs from the number of respondents (n=361) because some respondents gave more than one answer

From Table 4.1, it can be seen that 51.2% of the academic staff admitted that they published their research works in print journals and books. Use of print journals and books was widespread among academic staff who were more senior in rank including professors (64.3 %), associate professors (56 %), senior lecturers (62.4 %), and lecturers (56.4 %). On the other hand, the use of OAJs and IRs stood at 30.4%. There is discernible difference in the use of OA outlets between the senior and junior members of the academia.

The study findings revealed that traditional publishing outlets were still used in dissemination of research findings and mostly by the members of staff who were more senior in rank. These results are in agreement with those of Mail and Weitkamp (2013) even if the latter focused on environmental researchers only. Furthermore, a report from Research Information Network (RIN) and Joint Information System Committee (2009) showed a very low uptake of OA outlets with 90% of the researchers preferring peer-reviewed journals. Some researchers, notably, Bjork (2004) ; Sweeny (2000) and Henderson and Bosch (2010) found that researchers relied more on traditional outlets than modern ones because the reward system was tilted in favour of traditional forms. Their findings agree with those of this study. The reward system at Kenyan universities tends to emphasis publication in peer-reviewed journals. However, this may not be the only reason for the low uptake of OA.

However, Mortland (2012) found that most organizations communicated using social media (94%) while only 64% used traditional methods. It should be pointed out that this study did not focus on research output by academicians. Narian and Fernandez (2012) observed a rise in the use of OA outlets by authors at the New York University. Given that they interviewed only 12 authors it is difficult to handle any generalizations for this information. Antelman (2004) stated that OA resources had a greater impact on research. This may as well mean that Kenyan researchers need to improve their uptake

of OA outlets.

Results in Table 4.1 above also show that nearly 19% of academic staff had never published. The implication is that there lacks research findings for dissemination from these staff through IRs and OAJs. Literature indicates that open access outlets are ideal for disseminating research findings because such findings are available to users everywhere and authors have their papers more read and more cited (Ivwighreghweta and Onoriode 2012). It is thus apparent that even though OA outlets are ideal for dissemination of research findings, unfortunately their adoption is hindered by the lack of research publications for dissemination arising from non publishing by some academic staff.

Further analysis was done showing academic staff use of various outlets in relation to their experience in terms of the number of years that they had served at the various universities. Experience is essential in reaching a decision with regard to application of various outlets of research dissemination. This will help in finding out whether the more experienced staff had better opportunities in disseminating their research findings using various outlets than the less experienced. The results are shown in Table 4.2 below.

Table 4.2: Outlets Academic Staff Used in Disseminating their Research Findings Based on Duration of Teaching at the University (n=361)

	Outlets Used in Dissemination											
	Print Journals		**Books**		**OA Journals**		**Institutional Repository**		**Never Published**		**Total**	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**	Freq	**%**
<1 Year	5	15.6	7	21.9	3	9.4	6	18.8	11	34.4	32	100
1-5 Years	45	22.8	33	16.8	49	24.9	17	8.6	53	26.9	197	100
6-10 Years	52	43.3	24	20.0	22	18.3	10	8.3	12	10	120	100
>10 Years	52	36.6	33	23.2	25	17.6	17	12.0	15	10.6	142	100
Total	**154**	**31.4**	**97**	**19.8**	**99**	**20.2**	**50**	**10.2**	**91**	**18.5**	**491**	**100**

Total frequency in this table (491) differs from the number of respondents (n=361) because some respondents gave more than one answer

Generally, from Table 4.2 above, it can be seen that the most used outlet was print journals by 31.4% of the respondents when compared to other outlets. Use of print journals and books as outlets for sharing research findings with a wider audience was greater among the academic staff who had taught at the university for 6 years and above (43.3% and 36.6%; 20% and 23.2%) as compared to 18.3% and 17.6% using OAJs and 8.3% and 12% using IRs. Such outlets are print based and are popular especially among the long serving academic staff. This is because these were the readily available dissemination

outlets. OA outlets are relatively modern phenomena with the first OA awareness campaign dating 2002 (BOAI, 2002). This resulted in development of IRs across the world. In New Zealand, the first publicly available IR was launched in 2005 while over 32 Australian universities had active IRs by the year 2006 (Simon and Richardson, 2012). In Kenya, the first IR published was in 2011 (DOAR, 2013). The tendency to use print based outlets by this category of staff may be due to the fact that they are gradually adjusting to these ICT based outlets.

From the findings, it is evident that adoption of OA outlets is low among academic staff. The findings concur with those by Muller (2009) who noted that although OA outlets had been adopted by many universities, they had not been widely accepted by academic staff. They were, ,however, being slowly assimilated among academic staff who had served for five years and below with 24.9% of those who had served for 1-5 years and 18.8% of those who had served for below one year using OAJs and IRs respectively. These two categories represent the highest users of OA outlets. Increased usage of IRs and OAJs by academic staff who had served at the university for a shorter period is attributed to an already existing university institutional culture that is based on Information Communication Technology (ICT).

The representation of academic staff who have a university teaching

experience of more than six years among those using OA outlets and the higher numbers of less experienced academic staff using OA outlets supports findings by Byrne (2005) who observed that e-journals, e-books, digital libraries, multimedia, self publishing and Open Access Initiatives (OAI) were slowly being adopted in dissemination.The challenge to adoption of OA outlets therefore lies in the pace at which the long serving academic staff will be increasingly represented in the use of OA outlets as they transit from traditional based outlets to a university institutional culture that is ICT based.

4.3.1: Shortcomings of Outlets used in Dissemination

In addition to establishing the outlets that academic staff preferred for distributing their research findings, the researcher also intended to find out the shortcomings of the various outlets used. This was found necessary because other than the shortcomings of the print based outlets, there was hardly any literature available on the shortcomings of the newer outlets such as OAJs and IRs. Besides, establishing the shortcomings of various outlets would help shed light on some of the challenges to adoption of various outlets and more so OA outlets. The summary of the responses given on shortcomings of various outlets that academic staff used is presented in Table 4.3 below.

Table 4.3: Shortcoming of the Outlets used by Academic Staff in Disseminating their Research Findings

Shortcoming	Outlet Used in Disseminating Research Findings									
	Print Journals		Books		Open Access Journals		Institutional Repository		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Accessibility Problems	57	50.4	0	0.0	0	0.0	0	0.0	57	32.2
Costly	47	41.6	0	0.0	0	0.0	0	0.0	47	26.6
Delay in Publishing	0	0.0	39	95.1	0	0.0	0	0.0	39	22.0
Low quality of content	0	0.0	0	0.0	10	90.9	8	66.7	18	10.2
Copyright	7	6.2	0	0.0	0	0.0	0	0.0	7	4.0
Tedious	0	0.0	2	4.9	0	0.0	0	0.0	2	1.1
At Times not Published	2	1.8	0	0.0	0	0.0	0	0.0	2	1.1
Unawareness	0	0.0	0	0.0	0	0.0	3	25.0	3	1.7
Identifying Publishers	0	0.0	0	0.0	1	9.1	0	0.0	1	0.6
IT Updates	0	0.0	0	0.0	0	0.0	1	8.3	1	0.6
Total	**113**	**100**	**41**	**100**	**11**	**100**	**12**	**100**	**177**	**100**

Table 4.3 above indicates that there were diverse shortcomings of different outlets that academic staff used. For instance, 50.4% and nearly 42% of the academic staff reported that print journals had challenges of accessibility and cost respectively. Simply put as the respondents did, one of them said "***Poor accessibility by other people outside***". Another one lamented "***not accessible to everyone***" Yet, another one said "***they take long to reach the intended consumers***" Still, another respondent said "***limited audience, only a limited***

number of readers can access, cost". To sum it all was a response that "***the materials do not reach a wider readership as expected***".

On the issue of cost, one of the respondents feedback was "***expensive especially print journals***" while another gave almost a similar response, "***expensive and out of reach to most students***". The major challenge reported with use of books as outlets of sharing research findings was the delay in publishing which was reported by a vast majority of the academic staff (95.1%). On this issue, one of the respondents said ***"publishers delay and funding"*** another one said "***time it takes to publish and print***". Finally, a respondent just said "***it is slow and time consuming***". Similar findings are documented elsewhere in literature that research publications contained in print outlets were inaccessible because of high cost of obtaining the publications (Chan, 2005; Ivwighreghweta and Onoriode, 2012). The issues of access, cost and delay in publishing were, however, not related to OA outlets. Hernandez-Borges (2006) lauds them for improved accessibility, increased dissemination and citation of studies, reduced production costs and immediate community awareness of scientific advances while Chan (2005) and Mutula (2010) point out that their cost is low.

Shortcomings related to OAJs were in reference to low quality with 91% of the academic staff decrying the low quality of their content. Approximately 67% of the academic staff also reported that IR content was also of low quality. One

respondent for instance, on the shortcomings of OAJs said "***not authentic, low quality***" Another one gave a similar response "***They are not of good quality***". While academic staff are encouraged to adopt these outlets in sharing their research findings, the study revealed that a section of them were not contented with the quality of research findings disseminated through those OA outlets. A study by Fullard (2006) on attitudes of academic staff regarding OA outlets noted that respondents looked at OAJs and IRs as new publications which, even though they had many virtues, such virtues were not associated with quality.

The preference for print based outlets on the basis of quality due to existing peer review mechanisms contrasts with the advocacy for OA outlets based on the virtues of increased accessibility and reduced cost. Viewed in light of adoption of OA outlets, this tension causes a dilemma to their adoption since all academic staff cannot fully embrace OA outlets. The irony is that there exist mechanisms of assuring the quality of works published through OA outlets and especially OAJs but it appears that academic staff who condemn them for low quality do not appear to be aware of such mechanisms. Chang and Chung-Li (2006) noted that OAJs, just like traditional subscription based journals open access journal too go through a peer review process. Another possibility is that even when the academic staff are aware of the existing mechanisms for assuring quality of OAJs, they are skeptical of their effectiveness.

4.4: Awareness of Open Access Publishing (OAP) among Academic Staff

Awareness of the existence of OA outlets in general and its specific aspects are important for their adoption. For academic staff who should use them for dissemination of their research findings, awareness of their existence as well as their benefits play a key role in their adoption. For library staff who facilitate their development and use by their clientele, such awareness is central for their institutionalization in university libraries. It was important to find out the levels of awareness among academic and library staff regarding open access publishing outlets in order to identify challenges related to awareness. Determining such challenges that emanate from various aspects of awareness then was key in identifying how these obstruct the uptake of OA outlets in university libraries. The results on their general awareness of OAP and of specific issues on OAP are presented in the subsequent sections.

In order for academic staff to adopt open access outlets, they need to be aware of OAP. To determine this, they were asked to state if they were aware of what OAP entailed. Similar data was also collected from library staff because they are at the center of the development of open access outlets. The results are presented in Figure 4.2 below

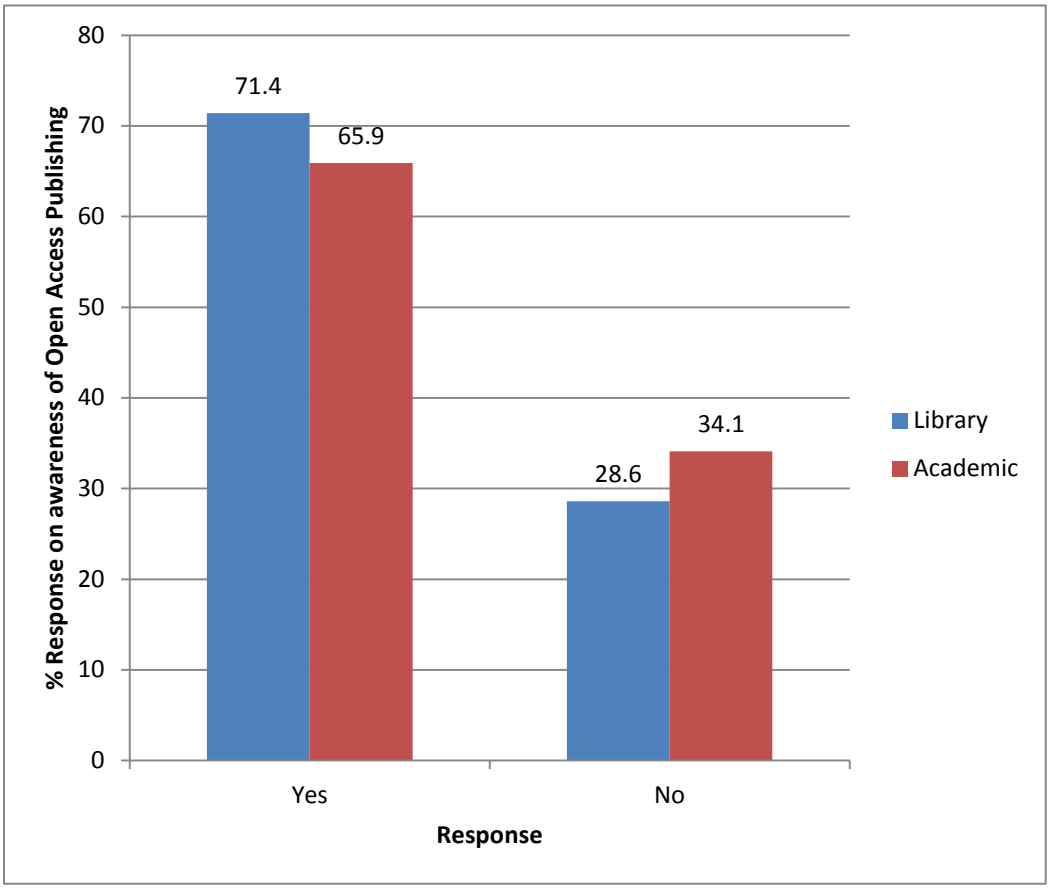


Figure 4.2: Academic and Library Staff Awareness of Open Access Publishing (OAP) ***(n=361- Academic Staff; n=223=Library Staff)***

From Figure 4.2 above, it can be seen that awareness of OAP among academic and library staff was generally high with about 66% of academic staff and 71% among library staff. The levels appear slightly higher among library staff than academic staff. Compared to other countries these findings are similar to those in Tanzania where the level of awareness was reported at 72.1% among researchers (Dulle Minish-Majanja and Cloete, 2010).

Stanton and Liew (2012) found a lower awareness amongst doctoral students. This study differed from the current study probably because academics used in the current study are already in the habit of publishing. Vlachaki and Urquhart (2010) found relatively lower awareness levels amongst biomedical researchers in Greece. This could be because research output is not a key determinant in the progression and growth of these researchers. In total contrast to the findings of this study, Anuratha, Gopakumar and Baradol (2011) found lack of awareness of OA outlets amongst students and academic staff community in Goa, India.

4.4.1 Academic Staff Awareness of the Benefits of OA Publishing

An appreciation of the benefits of OA publishing is could be vital for its infusion into the publishing culture among academic staff (Rodgers, 2003). Awareness of the benefits of a technology such as OAP plays a support role in its uptake among such users. In order to determine awareness of such benefits, those academic staff who had earlier reported being aware of what OAP entailed were presented with a list of the benefits of OAP. They were requested to show by ticking those that they deemed as benefits of OAP. The results are summarized and presented in Table 4.4.

Table 4.4: Academic Staff Awareness of Various Benefits of OA Publishing

Designation	Benefit of OA Publishing (n=258)													
	Improved/ Wider Dissemination		Visibility of Academic Staff		Greater Citation		Reduced Cost		Retention Copyright		Not Aware		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Professor	4	44.4	1	11.1	2	22.2	1	11.1	1	11.1	0	0.0	9	100
Associate Professor	10	30.3	7	21.2	6	18.2	7	21.2	3	9.1	0	0.0	33	100
Senior Lecturer	26	28.0	22	23.7	18	19.4	22	23.7	5	5.4	0	0.0	93	100
Lecturer	88	31.8	57	20.6	48	17.3	56	20.2	25	9.0	3	1.1	277	100
Assistant Lecturer	41	31.3	30	22.9	21	16.0	29	22.1	9	6.9	1	0.8	131	100
Tutorial Fellow	24	27.0	18	20.2	21	23.6	17	19.1	9	10.1	0	0.0	89	100
Graduate Assistant	9	23.7	9	23.7	9	23.7	7	18.4	4	10.5	0	0.0	38	100
Total	**202**	**30.1**	**144**	**21.5**	**125**	**18.7**	**139**	**20.7**	**56**	**8.4**	**4**	**0.6**	**670**	**100**

Total frequency in this table (670) differs from the number of respondents (n=258) because some respondents gave more than one answer.

Table 4.4 above depicts a generally low level of awareness of the benefits of OAP among academic staff ranging between 30.1% and 8.4%. A closer look at specific benefits revealed variations in the distribution of awareness of various benefits. The highest number of teaching staff (30.1 %) was more aware of the benefit of improved or wider dissemination. A comparison of the responses of academic staff on the general awareness of OAP and on its specific benefits reveals a startling mismatch. Whereas the general awareness of OAP among academic staff stood at 65.9 % (Figure 4.2), the awareness of their specific benefits ranged between 8.4% and 30%. This mismatch belies a gap in the means through which awareness about OAP is passed on since the coverage appears to be on other areas other than such a central pillar as their benefits. This failure to foreground benefits as a key plank in the adoption of OAP constitutes a critical barrier to their institutionalization.

The low percentage of awareness of benefits of OAP means that academic staff were not likely to gain from OA outlets since an appreciation of their benefits catalyses their use. This finds support from the diffusion of innovations theory that postulates that an innovation was more likely to be adopted if users perceived it to be more advantageous than the ideas or processes it supersedes (Rogers, 2003). This implies that they may not use them to disseminate their research works nor access important research findings from other scholars.

While OA outlets advocates such as OAWG, SPARC and eIFL hype such benefits in promoting these outlets, it was interesting to note that academic staff who are the main beneficiaries were not aware of such benefits. This raises the question of the fora through which advocacy for OA take place if they do not bring all stakeholders who include academic staff. The implied non-inclusive, lone ranger advocacy that does not emphasize the benefits of OA to the key users presents a difficulty to the proliferation in use of OAP outlets.

4.4.2: Academic Staff Awareness of Availability of IRs in their University Libraries

Determining the extent to which IRs were available in Kenyan university libraries was deemed necessary as an indicator of the extent of their adoption. It was thus deemed necessary to find out if academic staff were aware of IRs in their libraries. This section also targeted library staff so as to triangulate the responses from both groups, thus verify the actual picture with regard to adoption of IRs in the different universities in Kenya. The resulting picture is depicted in Table 4.5.

Table 4.5: Academic and Library Staff Awareness of Existence of IRs in their University Libraries

Name of University	Academic Staff						Library Staff					
	Yes		No		Total		Yes		No		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
MASENO	10	45.5	12	54.5	22	100	3	25.0	11	75.0	14	100.0
MMUST	2	8.3	22	91.7	24	100	2	25.0	8	75.0	10	100.0
CUEA	2	11.1	15	88.9	17	100	4	30.8	10	69.2	14	100.0
DAYSTAR	15	100.0	0	0.0	15	100	7	63.6	4	36.4	11	100.0
KEMU	8	47.0	9	53.0	17	100	3	30.0	7	70.0	10	100.0
USIU	2	25.0	8	75.0	10	100	1	8.3	9	90.7	10	100.0
PACU	2	12.5	12	87.5	10	100	1	25.0	5	75.0	6	100.0
KABARAK	9	60.0	6	40.0	15	100	6	66.7	2	33.3	8	100.0
BARATON	10	66.7	5	33.3	15	100	6	66.7	2	33.3	8	100.0
MKU	3	16.7	12	83.3	15	100	7	80.0	1	20.0	8	100.0
KU	16	51.1	15	48.9	31	100	13	61.9	8	38.1	21	100.0
SU	17	100.0	0	0.0	17	100	5	90.9	1	9.1	6	100.0
ANU	5	36.0	10	64.0	15	100	1	10.0	12	90.0	13	100.0
JKUAT	4	18.5	20	81.5	24	100	3	15.4	17	84.6	20	100.0
ST PAULS	8	55.6	7	44.4	15	100	3	50.0	3	50.0	6	100.0
UoN	27	68.6	13	31.4	40	100	24	84.6	4	15.4	28	100.0
MOI	14	46.7	16	53.3	30	100	4	22.2	14	77.8	18	100.0
EGERTON	8	30.3	17	69.7	25	100	3	25.0	9	75.0	14	100.0
Total	**162**	**44.9**	**199**	**55.1**	**361**	**100**	**96**	**43.1**	**127**	**56.9**	**223**	**100.0**

Table 4.5 above shows that there was consistency in the responses on the actual availability, with 44.9 % of academic staff and 43.1 % of library staff indicating awareness of their existence in their libraries. The responses also confirmed the relatively low levels of uptake of IRs in Kenyan university libraries. These IRs are usually registered in international directories such as DOAR and the ROAR. The non-availability of most of the Kenyan university library IRs in the international directories further reflected and confirmed this picture. It is instructive to note that only UoN, SU, KU and JKUAT are listed as having IRs in these international lists.

The picture of IRs adoption in Kenya resonates with that on Africa as depicted in literature Swan and Chan (2003) report that IRs are being developed but the growth is still at the early stages. Dulle, Minish-Majanja and Cloete (2010) noted that IRs were not widely used in Tanzania while Utulu and Bolarinwa (2009) pointed out that even with the proliferation of electronic scholarly information systems, Nigeria and the whole of Africa still lagged behind. Muinde (2009) observed that progress in capitalizing on OA to enhance accessibility and visibility in Africa is slow while Reinsfelder (2012) indicated that adoption of OA has been slower than its supporters predicted.

The low levels of adoption of IRs in Kenyan university libraries brings to question the effectiveness of awareness campaigns that ought to have been

conducted by the two KLISC members who attended awareness fora in South Africa (Morris, 2011). This lacklustre performance in marketing IRs among university libraries in Kenya perpetuates the low and slow pace in their adoption and does not augur well for their diffusion in these libraries. It is also expected that awareness should be followed with practical measures to help in the development of specific IR institutional capacities in university libraries. The failure to make the connection between awareness and practical support further complicates the picture for IR adoption in Kenyan libraries.

While some library staff said their libraries had developed IRs, and had some challenges, others reported that their libraries had not established IRs at all and gave various reasons. Both the challenges and the reasons impact on the efforts to institutionalize the use of IRs, and thus their widespread use. The corresponding questionnaire items were directed at the library staff in order to establish the challenges that library staff faced during establishment of IRs and reasons for non establishment in some other libraries. Their feedback is presented in Appendix VII. The Budapest Open Access Initiative (BOAI) recommends only two outlets through which OA may be provided: OAJs and IRs. It was deemed important to find out if library staff were aware of these two outlets. Only 38.1% of the library staff were actually aware of the established avenues (See Appendix IX). Their responses, which included the internet, e-books, digitization of documents and journals did contrast with what

is known about the avenues for OA and thus display their ignorance of the conventional OA outlets.

The findings revealed a discrepancy between the declared general awareness of OAP amongst library staff and their self-reported specific OA vehicles vis-a vis the actual vehicles. These signals a fundamental lack of differentiation by library staff between outlets for achieving OA and other ICT –based but non OA related resources. This implies that even though library staff indicated that they were aware of OAP, they were not aware of how to go about disseminating research output via OA outlets since they were not even aware of the outlets. This inability to make that fundamental distinction by the group expected to help academics in using these outlets is a crucial impediment to the adoption of OA.

While this section dealt with awareness of IRs, the next section handled matters relating to OAJs since it was equally important to investigate the awareness of OAJs among the academic staff, who are the main users of these outlets. This is handled in the subsequent section.

4.4.3: Academic Staff Awareness of Availability of OAJs

In order for academic staff to adopt OAJs in disseminating their research findings, they have to be aware of their existence. A critical indicator of the adoption of a technology is its use by the intended consumers. However, this can only occur when these consumers are aware of its existence and availability. Thus, the study sought to determine the awareness by academic staff of the existence of OAJs in their university libraries. The resulting findings were presented in Table 4.6 below.

Table 4.6: Academic Staff Awareness of Open Access Journals

Designation	**Yes**		**No**		**Total**	
	Freq	**%**	**Freq**	**%**	**Freq**	**%**
Professor	4	50.0	4	50.0	8	100
Associate Professor	10	90.9	1	9.1	11	100
Senior Lecturer	35	83.3	7	16.7	42	100
Lecturer	109	69.4	48	30.6	157	100
Assistant Lecturer	54	76.1	17	23.9	71	100
Tutorial Fellow	32	76.2	10	23.8	42	100
Graduate Assistant	19	82.6	4	17.4	23	100
Total	**263**	**74.3**	**91**	**25.7**	**354**	**100**

From Table 4.6 above, a majority of the academic staff (74.3 %) were aware of

OAJs. Lack of awareness of the existence of OAJs was only 25.7 %.

OAJs are outlets for dissemination of research findings contained in databases. Library staff are expected to organize them in subject databases, to link users to the OAJs in order to facilitate their use, and to disseminate information regarding the OAJs for their adoption. Since library staff are the key link between the user community and these OAJ databases, it was deemed necessary to find out if they were aware of their existence in their university libraries. Over 80% of the library staff appeared to be aware of OAJs and their databases (Appendix X). The results of this study therefore show that both academics and librarians have similar levels of awareness of OAJs.

It was also necessary to triangulate the academic staff awareness of OAJs and where they obtained their information on OA outlets. This is because scholars as users require support of the library staff. To that end, the pre-eminent role of library staff in OA is to collaborate with academic staff in order to disseminate available information. They communicate availability of new research information and outlets to academic staff who are the main users of OAJ content. That is why it was of interest to find out the relative influence of library staff in university libraries as sources of information on OAJs for academic staff given that their influence is strategic in the adoption of OAJs. The academic staff were therefore asked to indicate the source of their information about OAJs, and their responses are presented in Table 4.7.

Table 4.7: Sources of Information Regarding the Existence of OAJ (n=263)

Designation	From Library		Colleagues		Workshop/ Seminar		Internet		From all listed		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Professor	0	0.0	1	25.0	2	50.0	1	25.0	0	0.0	4	100
Associate Professor	2	18.2	4	36.4	4	36.4	1	9.1	0	0.0	11	100
Senior Lecturer	12	30.8	18	46.2	4	10.3	4	10.3	1	2.6	39	100
Lecturer	41	34.2	39	32.5	24	20.0	16	13.3	0	0.0	120	100
Assistant Lecturer	23	37.7	18	29.5	5	8.2	14	23.0	1	1.6	61	100
Tutorial Fellow	7	20.0	7	20.0	12	34.3	9	25.7	0	0.0	35	100
Graduate Assistant	6	31.6	5	26.3	6	31.6	2	10.5	0	0.0	19	100
Total	**91**	**31.5**	**92**	**31.8**	**57**	**19.7**	**47**	**16.3**	**2**	**0.7**	**289**	**100**

* ***Total frequency in this table (289) differs from the number of respondents (n=263) because some respondents gave more than one answer.***

From Table 4.7 above, the combination of other sources of information about OAJs outstripped library staff (67.8 %) as sources of information about them. Only 31.5 % obtained that information from library staff, implying that they were not the key source of information about OAJs. Table 4.7 also revealed that none of the professors and only 18.2% of the associate professors had obtained the information about OAJs from the library. It was noteworthy that they did so

from peers and fora where they meet these peers with whom they share a lot, when compared with the predominantly junior staff (library assistants and library attendants) (See Appendix VII). This differential in status characteristics is what Rogers (2003) distinguishes as *homophilus* and *heterophilous* characteristics have implications for communication of information that occurs at an interpersonal level. These communication differentials impede the dissemination of information that would raise awareness levels among the academic staff, adversely impacting on the adoption of OAJs. As an addition to the communication argument dealt with here, it was necessary to investigate whether library staff as custodians of database lists of OAJs passes on information of their existence to their academic counterparts. The discussions in the following part are based on this.

Organization of OAJs in databases and provision of links to such databases so as to facilitate effective use by clients who include academic staff is a duty of the library staff. The extent to which they do this is an indicator of the levels of interaction that exists between them and academic staff, and in turn dictates the extent to which adoption of OAJs occurs. Thus it was necessary to find out if library staff shared the lists of OAJ databases that were available in the university libraries that had them. The purpose of this section was to find out from the academic staff whether they had received these lists from the library staff. The results are presented in Table 4.8.

Table 4.8: Academic Staff Receipt of Lists of OAJs

Designation	Yes		No		Total	
	Freq	%	Freq	%	Freq	%
Professor	2	25.0	6	75.0	8	100
Associate Professor	5	41.7	7	58.3	12	100
Senior Lecturer	22	51.2	21	48.8	43	100
Lecturer	87	57.6	64	42.4	151	100
Assistant Lecturer	43	61.4	27	38.6	70	100
Tutorial Fellow	25	61.0	16	39.0	41	100
Graduate Assistant	14	66.7	7	33.3	21	100
Total	**198**	**57.2**	**148**	**42.8**	**346**	**100**

The findings in Table 4.8 above show that 57.2% of academic staff had received the lists of OAJs while 42.8% had not. This average availability of the lists among academic staff can be further be disaggregated by the designation of the academic staff. Generally, more senior academic staff at the level of professors, associate professors and senior lecturers (75 %, 58.3 % and 48.8 %) did not receive these lists from the library staff compared with the junior echelons (38.6 %, 39 % and 33.3 %). It is not clear why majority of professors and associate professors do not seem to have been provided with the list of OAJs.

From the above findings, the *heterophilous–homophilous* argument by Rogers (2003) could probably explain the lop-sided communication of OAJ databases between senior and junior academic staff, a pattern that saw junior academic staff receive information from the library staff with whom they share status characteristics. It cannot be over-emphasized that these differentials in communication based on status-based characteristics do stand in the way of uniform dispersal of OAJ databases across the academic staff irrespective of their rank and in turn affecting their across-the –board adoption.

4.4.4: Academic Staff Awareness of Self Archiving

IRs constitute one of the outlets of providing OA as repositories of research output. Their growth depends on deposits made by both academic and library staff. When academic staff conduct research, it is expected that they would be interested in sharing the findings with other consumers of their findings, and IRs provide an avenue for doing this. They can share these findings by making these deposits themselves that is self-archiving their work in an IR. Thus, the growth of IRs depends on the willingness of academic staff to self archive their research works. Nevertheless, their willingness to do so depends on their awareness of IRs as avenues for sharing their work through self-archiving. Self-archiving in turn becomes a strong indicator of the extent to which IRs have been adopted by the academic staff. Academic staff responses on awareness of self archiving are presented in Table 4.9.

Table 4.9: Academic Staff Awareness of Self Archiving

	Awareness of Self-Archiving					
Designation	**Yes**		**No**		**Total**	
	Freq	%	Freq	%	Freq	%
Professor	3	37.5	5	62.5	8	100
Associate Professor	7	58.3	5	41.7	12	100
Senior Lecturer	15	34.9	28	65.1	43	100
Lecturer	47	30.3	108	69.7	155	100
Assistant Lecturer	23	34.3	44	65.7	67	100
Tutorial Fellow	16	39.0	25	61.0	41	100
Graduate Assistant	9	42.9	12	57.1	21	100
Total	**120**	**34.6**	**227**	**65.4**	**347**	**100**

Table 4.9 above shows that the majority (65.4%) of the academic staff were not aware of self-archiving. Only 34.6% were aware, which is quite low. Among these staff, associate professors demonstrated relatively higher awareness at 58.3%.

The essence of self-archiving is to facilitate dissemination of research findings. The fact that academic staff were unaware of self-archiving was an indication that such staff were not actively involved in disseminating their research works

particularly using IRs or at all. When the level of awareness of self-archiving is low, this negatively affects the volume of materials in IRs. The low volumes of research output in IRs is echoed by Grundmann (2009) and Swan and Brown (2007). This is attributed to the low awareness among academic staff of self-archiving, leading to low populations of IR deposits, which in turn signals poor adoption of OA outlets.

The activity of self-archiving and other IR-based functions operate on rules that undergird these functions, that is protocols that are platforms for the performance of end-user activities. For the academic staff to be able to archive their materials, they need support of the librarians. Librarians are supposed to be knowledgeable about various procedures and strategies for archiving materials. The librarians need to ensure that material is archived using an appropriate file format, is retrievable and secure. This study showed that the library staff did not have high levels of awareness of various protocols necessary for online exchange and sharing of information (Table 4.10)

Table 4.10: Library Staff Awareness of Functions of IR Protocols (n=223)

Designation	Percentage of Awareness of Function per Protocol											
	HTTP		OAI-PMH		RSS		Z39.50		Apache		Not Aware of Any	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
University Librarian	7	100.0	3	42.9	3	42.9	5	71.4	1	14.3	0	.0
Deputy Librarian	3	100.0	1	33.3	1	33.3	2	66.7	2	66.7	0	.0
Senior Librarian	13	72.2	6	33.3	4	22.2	10	55.6	3	16.7	1	5.6
Librarian	3	60.0	2	40.0	4	80.0	2	40.0	2	40.0	0	.0
Senior Assistant Librarian	11	64.7	5	29.4	3	17.6	9	52.9	7	41.2	3	17.6
Assistant Librarian	18	78.3	11	47.8	9	39.1	15	65.2	10	43.5	3	13.0
Senior Library Assistant	29	47.5	17	27.9	6	9.8	30	49.2	5	8.2	18	29.5
Library Assistant	47	52.8	12	13.5	5	5.6	25	28.1	11	12.4	26	29.2
Total	**131**	**58.7**	**57**	**25.6**	**35**	**15.7**	**98**	**43.9**	**41**	**18.4**	**51**	**22.9**

Total frequency in this table (413) differs from the number of respondents (n=223) because some respondents gave more than one answer.

The results also showed that librarians were more aware of security measures that limit access to information such as usernames and passwords as well as firewalls compared to those measures that secure content.

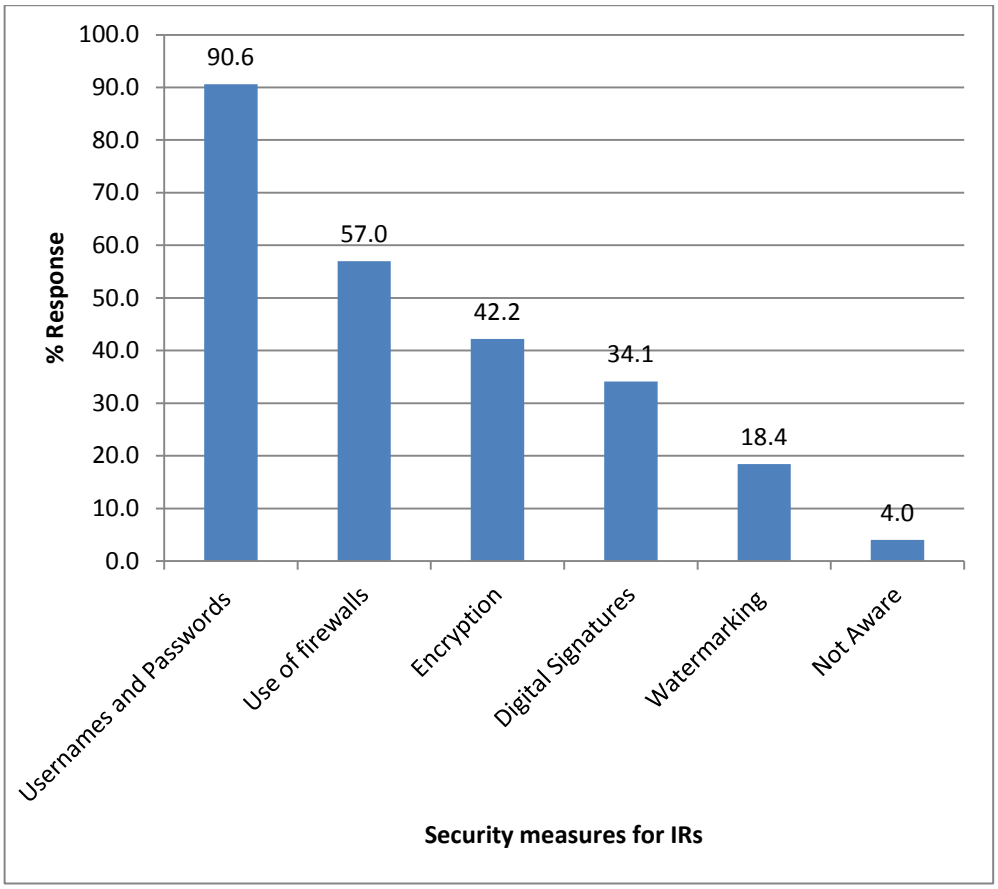


Figure 4.3: Library Staff Awareness of Security Measures for IR (*n=223)*

In terms of the knowledge of metadata, the librarians showed a low awareness of the contents of various metadata types (See Appendix XI). In terms of helping the users retrieve archived material, librarians showed a very high level of awareness (86%). However, their scores on other metadata types especially those that deal with preservation of archived material were low. (Table 4.11)

Table 4.11: Library Staff Awareness of Metadata Types (n=223)

Designation	Metadata Type											
	Descriptive		Structural		Administrative		Preservation		Technical		Not Aware	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
University Librarian	4	57.1	4	57.1	4	57.1	5	71.4	4	57.1	2	28.6
Deputy Librarian	2	100	1	33.3	0	0	1	33.3	0	0	0	0
Senior Librarian	14	87.5	8	44.4	5	27.8	6	33.3	5	27.8	1	5.6
Librarian	4	100	2	40	3	60	1	20	2	40	0	0
Senior Assistant Librarian	12	92.3	5	29.4	9	52.9	8	47.1	7	41.2	0	0
Assistant Librarian	12	70.6	7	30.4	13	56.5	9	39.1	7	30.4	3	13
Senior Library Assistant	37	90.2	20	32.8	16	26.2	14	23	11	18	3	4.9
Library Assistant	40	88.9	17	19.1	19	21.3	15	16.9	12	13.5	5	5.6
Total	**125**	**86.2**	**64**	**28.7**	**69**	**30.9**	**59**	**26.5**	**48**	**21.5**	**14**	**6.3**

* ***Total frequency in this table (379) differs from the number of respondents (n=223) because some respondents gave more than one answer.***

With respect to file formats, about 72% of the library staff indicated that they were aware of what a file format is. However, less than 40% of the librarians were aware of the file formats needed for storing various information. (Appendix XII). This finding is particularly disturbing because the librarians

may not be able to advise academic users on the proper format to use in archiving their materials.

Similarly, most of the librarians were not familiar with the various strategies for preserving archived digital materials. General awareness among library staff of all preservation strategies lay between 18.8 % and 43%. (Fig. 4.4)

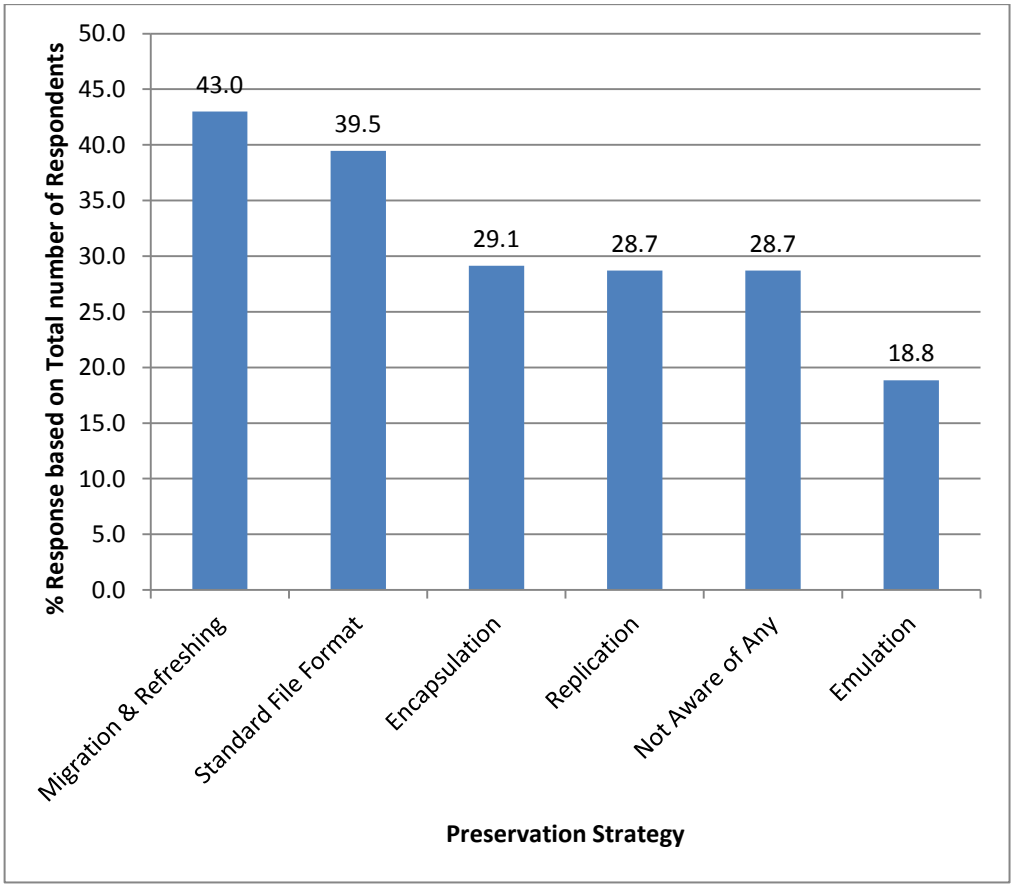


Figure 4.4: Library Staff Awareness of Preservation Strategies for Digital Materials *(n=223)*

If archived material cannot be preserved this impacts negatively on its accessibility. The results on self archiving in this study supports the findings by Stanton and Liew (2012) in that the respondents had low awareness of self archiving procedures such as protocols, file formats, security measures, metadata and preservation strategies. Low awareness among library staff who are expected to provide support to the academic staff in self archiving therefore explains some of the reasons for the low and slow adoption of OA among academic staff. The results for academic staff are thus a direct indicator of the inability of librarians to archive materials under OA outlets. Any measures aimed at improving this may have to target both groups.

4.5: Academic Staff Use of OA outlets

One of the determinants of adoption of OA outlets by academic staff is the use of such outlets. Determining use of OA outlets was considered essential since their adoption is dependent on academic staff access of materials uploaded in the those outlets as well as their willingness to self archive thus disseminating their research works through those outlets.

4.5.1: Academic Staff Use and Self Archiving of Research Works in the IRs

IRs are established in order to provide a platform for academic staff to share

their research works with their colleagues as well as enable them to access research works deposited by their colleagues. Their role is to produce and consume research output. This study sought to determine academic staff's use and deposition of research works in IRs as that would create adoption. The combined results for such utilization and deposition of research works by academic staff are summarized and presented in Table 4.12.

Table 4.12: Responses on Academic Staff Use and Depositing of Materials in the IRs

Designation	Academic Staff: Using Materials in IRs						Academic Staff: Depositing Research works in IRs					
	Yes		No		Total		Yes		No		Total	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
Professor	2	100.0	0	0.0	2	100	2	25.0	6	75.0	8	100
Associate Professor	5	83.3	1	16.7	6	100	4	33.3	8	66.7	12	100
Senior Lecturer	9	52.9	8	47.1	17	100	17	39.5	26	60.5	43	100
Lecturer	49	79.0	13	21.0	62	100	27	17.3	129	82.7	156	100
Assistant Lecturer	23	65.7	12	34.3	35	100	10	13.7	63	86.3	73	100
Tutorial Fellow	13	86.7	2	13.3	15	100	9	22.0	32	78.0	41	100
Graduate Assistant	6	85.7	1	14.3	7	100	5	23.8	16	76.2	21	100
Total	**107**	**74.3**	**37**	**25.7**	**144**	**100**	**74**	**20.9**	**280**	**79.1**	**354**	**100**

Results in Table 4.12 show that 107 (about 74%) of the academic staff made

use of the materials deposited in the IR while another 37 (close to 26%) of the respondents did not use the materials. Use of IR content was highest among professors with all of them admitting that they had used content deposited in IRs. The use of IRs was least among senior lecturers where only 9 (about 53%) of them used. In contrast, only 20.9% of them had posted their research works in an IR. An overwhelming majority (79.1%) had never deposited their research works in an IR.

The findings of this study showed that the academic staff access of deposited content in institutional repositories in Kenya was higher than deposition of research works in the IRs. This means that other scholars cannot access research works by these academic staff's.

Similar results have been documented by Swan and Brown (2007) with regard to deposition of research output. They noted that deposition of research outputs into institutional repositories around the world was very low but did not show reasons for it. Academic staff were consumers but not producers of IR content. Grundmann (2009) and Muller (2009) observed the discrepancy between use of IR content and depositing by academic staff in that despite increasing interest in IRs by academic institutions, deposits of research works by their faculty members in those IRs were very low, resulting in virtually empty IRs. This study concurs with the outcomes of the studies of these researchers.

Reasons for low deposits in IRs in the academic institutions was explained through Roger's diffusion of innovation theory which embraces cultural context. Rogers proposes that one of the determinants of adoption of an innovation is cultural context of an innovation (Rogers, 2003). Literature on the African cultural context of adoption of OA suggests that archiving of African digital documents by scholars is a form of south-north information flow, a development not necessarily welcome by African scholars, institutions and governments (Johan, 2005). He adds that IR among Africans, there is some degree of suspicion and resentment and that due to the political context and sensitivity of African perceptions, partnership in the development of IRs in the African context is needed, of which failure to do so constraints the adoption of OA outlets.

4.5.1.1: Reasons Why Academic Staff did not Use IRs

Use of IRs in accessing research works by scholars is one of the indicators of its adoption. But some scholars indicated that they did not use the IRs in their institutions. In order to establish why, they were asked to state the reasons. These are summarized and presented in Table 4.13 below.

Table 4.13: Reasons Why Academic Staff did not Use Content Available in IRs

Reason for non-use of IR	Frequency	Percent
IR not in existence or being established	24	46.2
IR policy implementation issues	9	17.3
Poor Internet Connectivity	6	11.5
Not bothered on checking for content from IRs	6	11.5
No content in area of interest	4	7.7
Financial constraints	3	5.8
Total	**52**	**100**

Findings on Table 4.13 above indicate that 46.2% percent of respondents did not use content in IRs because such IRs were still being established. This is evident from the respondents' statements. For instance, one of the respondents stated that "***it is not fully functional***" Another one said that ***"the institution is new and doesn't / hasn't developed its own".*** Yet another one said "***I have not seen one***". One more respondent said ***"it is still at the infancy stage i.e. being developed".*** Still another one said "***I have never come across it***". Another very interesting answer was "***I have never heard it in the university, therefore I guess it is not there***". One of the respondents went further to explain that "***The university library has submitted content to the Kenya Information and preservation society (KIPS) before it established an IR of its own***". Finally, one respondent said: "***Not yet established due to lack of managerial support, lack of funds***".

From the selected respondents voices, it was possible to deduce that some

universities' IRs were either not in place or were not yet ready for use, hence, constituting an institutional based challenge. Studies on development of IRs in the developing countries also observe that most university libraries were still at the early stages (Swan and Chan 2003). The overall implication is that the slow pace in establishment of IRs impeded their adoption.

There were other reasons why academic staff did not use the content deposited in IRs. Poor internet connectivity was an issue for some respondents. One respondent for instance clearly put it that "***no access, and slow internet access***". These issues depicted the lack of integration of the basic infrastructure needed for successful adoption of OA in university libraries. Further, an interesting response noted among some academic staff (11.5%) was the fact that they were not bothered to check content availed through IRs, an individual based reason. For instance one respondent clearly put it that "***although I am aware there is an IR, I have not bothered to find out what is available***" These respondents did not perceive any immediate benefits from it which would probably explain their, lack of interest. Rogers (2003) observes that the faculties were more likely to adopt innovations that were advantageous to them.

Some respondents also reported that relevancy of and lack of content in their disciplines deterred them from using content deposited in IRs. This was

deduced from the respondents statements for example one of them said "***relevancy to my interests lacking***" Another one clearly put it that: ***"most materials are outdated***". Elsewhere, studies indicated that OA was still hampered by unavailability of documents for OA (Muller, 2009). The unavailability of content is as a result of lack of deposits of research works by academic staff as can be seen in Table 4.12 and the reasons form the subject of discussion in the next subsection.

4.5.1.2: Reasons Why Academic Staff did not Deposit Their Research Works in the Institutional Repositories

Academic staff are said to adopt IRs when they deposit their research works in them for others to access. In order to determine why some academic staff did not deposit their works in IRs, they were presented with three possible reasons and asked to indicate which among them prevented them from depositing their research works in the IRs. The reasons that academic staff gave for not depositing their works in IRs were presented and summarized in Figure 4.5 below.

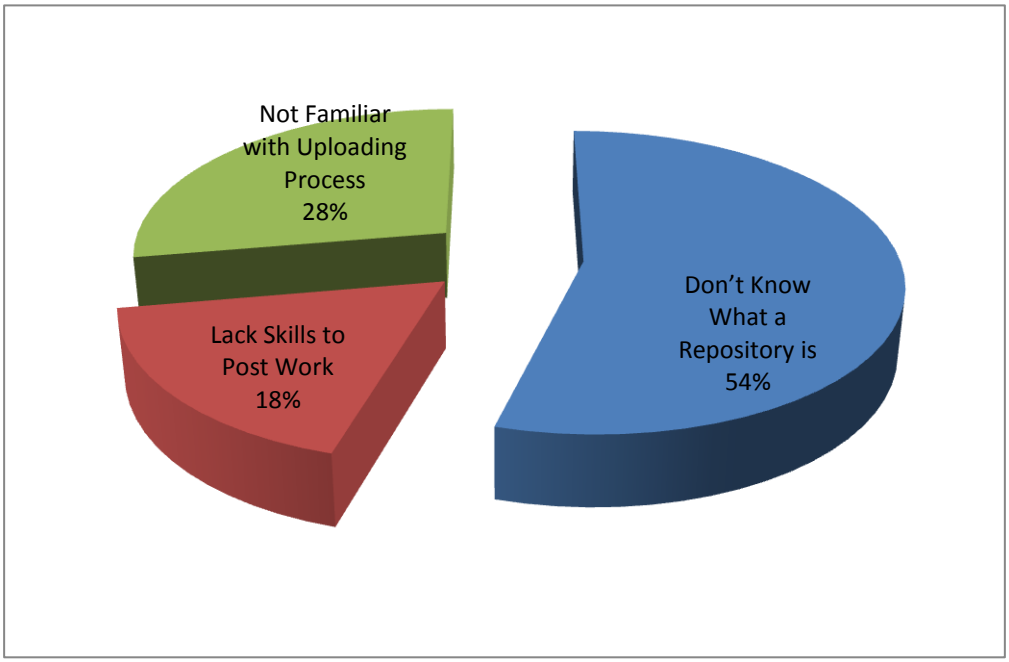


Figure 4.5: Reasons for Academic Staff not Depositing Research Works in IRs (n=213)

From Figure 4.5, 54% academic staff did not post their research works in the IRs since they did not know what a repository was hence could not deposit their works in them. Another 28% said they were not familiar with the process involved in uploading work in an IR, while 18% of the academic staff said that they did lack skills necessary to enable them upload their works.

Even though academic staff admitted being aware of OAP, they did not deposit their research works in IRs because they did not know what an IR is. This ignorance poses a great challenge to adoption of IRs. Similarly, lack of skills and unfamiliarity with the process of uploading was a manifestation of the challenges emanating from lack of opportunities for training in OA thus

accounting for the low deposits of research works in the IRs. This leads to slow progress in capitalizing on OAP initiatives. The closest explanation for low deposition by faculty from literature was that IRs had not been widely accepted by academic staff (Muller, 2009). It is important to note that acceptability does not imply ignorance or the lack of training opportunities. These were considered challenges to deposition of research works in IRs in academic institutions in Kenya.

Further reasons resulting from the same questionnaire on the reasons for not depositing in the IR are summarized and presented in Table 4.14.

Table 4.14: Other Reasons Why Academic Staff did not Deposit Research Works in IRs

Reasons for not Posting	**Frequency**	**Percent**
Repository lacking or being Established	20	39.2
Not yet Decided or Thought of using	11	21.6
Don't know its Existence	8	15.7
Lack of Time and interest	5	9.8
No Research work Done	4	7.8
Lack of Training	3	5.9
Total	**51**	**100**

Table 4.14 shows that academic staff did not post their works in the repository for diverse reasons. The main reason was the slow pace of development of IRs. Respondents said that the IRs were being established (39.2%). For instance one

respondent said "***no repository in place***" Another one stated "***institutional repository is in the establishment stage***" This confirms earlier findings that development of IRs in developing countries was still at the infancy stage (Swan and Chan 2003).

Similarly, some academic staff (22%) said they had not yet decided or thought of use IRs as outlets for disseminating their research works while about 10% reported lack of interest and time. One very interesting answer was " ***I have not thought of it as an alternative to publishing on conventionally available journals as required by the university***" Another respondent said "***still weighing the pros and cons***" while another put it that "***have not taken interest in them***". And yet another one just said "***lost in teaching***" Finally, one of the respondents simply put is "***not yet decided***". This can be linked to the manner in which IRs were introduced to universities as alternative publishing outlets (Byrne, 2005). Introduction as alternative makes it voluntary for them to deposit in the IRs thus influencing their decision to adopt or not such IRs. The voluntary aspect arises from the failure by most of the universities also did not revise their promotion criteria to incorporate these IRs thus giving a lee way for academic staff to come to a decision on whether or not to use them. The introduction of IRs as alternative outlets making their use voluntary and the failure to revise university promotion criteria create obstacles to the adoption of IRs in depositing their research findings.

The lack of awareness of existence of IRs still featured in the responses of 15.7% of the respondents as per Table 4.14 above. One respondent clearly put it "***I have not seen it, so I do not know***" Another response was "***Expecting further communication from the librarians***". Failure by academic staff to know the existence of IRs was also mentioned in the previous section as a reason why academic staff did not access research content in IRs. This is an indication of the inadequacy in communication by university libraries. The lack of communication on important issues was also a sign of the distant working relationship between the library staff and academic staff. Moreover, the lack of awareness also shows that publicity of IRs by university libraries is quite limited. To sum this, inadequate communication, limited publicity, and the lack of close working relationship between academic and library staff have slowed adoption of IRs.

4.5.2: Academic Staff Use of Works in IRs of other Institutions

Adoption of IRs depends on acceptance by academic staff. Such acceptance can be determined by their use of research works available in IRs of their university libraries as well as those of other university libraries. It was therefore necessary to establish whether academic staff used research works deposited in IRs of other university libraries in order to gauge academic staff acceptance of IRs as sources of information. The findings are shown in Table 4.15 below

Table 4.15: Academic Staff Use of Content in Repositories of other Universities

Designation	Yes		No		Total	
	Freq	%	Freq	%	Freq	%
Professor	5	62.5	3	37.5	8	100
Associate Professor	10	83.3	2	16.7	12	100
Senior Lecturer	19	45.2	23	54.8	42	100
Lecturer	45	31.5	98	68.5	143	100
Assistant Lecturer	26	37.7	43	62.3	69	100
Tutorial Fellow	14	35.0	26	65.0	40	100
Graduate Assistant	5	25.0	15	75.0	20	100
Total	**124**	**37.1**	**210**	**62.9**	**334**	**100**

Nearly 63% of the respondents had not accessed research works deposited in IRs of other university libraries while 37% had done so. Access was highest among associate professors with about 83% of them having accessed and lowest among graduate assistants at 25%. Even though some university libraries did not have institutional repositories of their own, academic staff had an opportunity of accessing research works from institutional repositories of other university libraries. The lack of interest and the failure to recognize the benefits of such IRs accounts for this, in turn affects the uptake of IRs.

4.5.3: Academic Staff Use of Works Published in OAJ and Publishing in OAJs

The two avenues through which OA is achieved are IRs and OAJs. The study sought to establish whether academic staff used works published in open access journals or published their works with OAJs. This was considered necessary

because publishing with OAJs and use of OAJ content indicate adoption of such outlets among the academic staff. Findings on academic staff use of works published in OAJs and their publishing with OAJs are summarized and presented in Table 4.16.

Table: 4.16: Academic Staff Use of Works published in OAJs and Publishing in OAJs

Designation	Accessing works published with OAJ				Total		Have Published in OA Journal				Total	
	Freq	Yes	Freq	No	Freq	%	Freq	Yes	Freq	No	Freq	%
Professor	5	62.5	3	37.5	8	100	2	25.0	6	75.0	8	100
Associate Professor	11	91.7	1	8.3	12	100	7	58.3	5	41.7	12	100
Senior Lecturer	36	81.8	8	18.2	44	100	20	45.5	24	54.5	44	100
Lecturer	109	70.8	45	29.2	154	100	39	25.0	117	75.0	156	100
Assistant Lecturer	52	74.3	18	25.7	70	100	9	12.3	64	87.7	73	100
Tutorial Fellow	35	85.4	6	14.6	41	100	16	39.0	25	61.0	41	100
Graduate Assistant	17	81.0	4	19.0	21	100	5	22.7	17	77.3	22	100
Total	**265**	**75.7**	**85**	**24.3**	**350**	**100**	**98**	**27.5**	**258**	**72.5**	**356**	**100**

From Table 4.16 above, use of OAJ works by academic staff stood at 75.7%, thus indicating a high level of use of OAJs. In contrast, the use of OAJs as publishing avenues stood only at 27.5%. An overwhelming majority (72.5%) did not publish their research works with OAJs. It is noteworthy that associate professors had the highest levels of use and publishing using OAJs while

professors and assistant lecturers respectively were the lowest users and publishers through OAJs.

These findings resonate well with those of Utulu and Bolarinwa (2009) who also noted that open access adoption still suffered major setbacks among Nigerian academic staff. Despite the academic staff high level of awareness of OA outlets, their actual use of these outlets for publishing purposes was low. When probed further on why they did not use OAJs to access research works, the reasons as those given were lack of awareness of OAJs as publishing avenues and lack of computer skills. The lack of awareness was also reported by Morris (2009). The issue of lack of computer skills is not surprising taking into consideration that this is a relatively new outlet that makes use of computers. Quadri (2012) noted that with the widespread use of computers for storage, retrieval and dissemination of information, academic staff have little choice but to adopt them.

It was also important to establish why the majority (72.5%) of academic staff did not publish their research findings in OAJs. Figure 4.6 below shows the reasons.

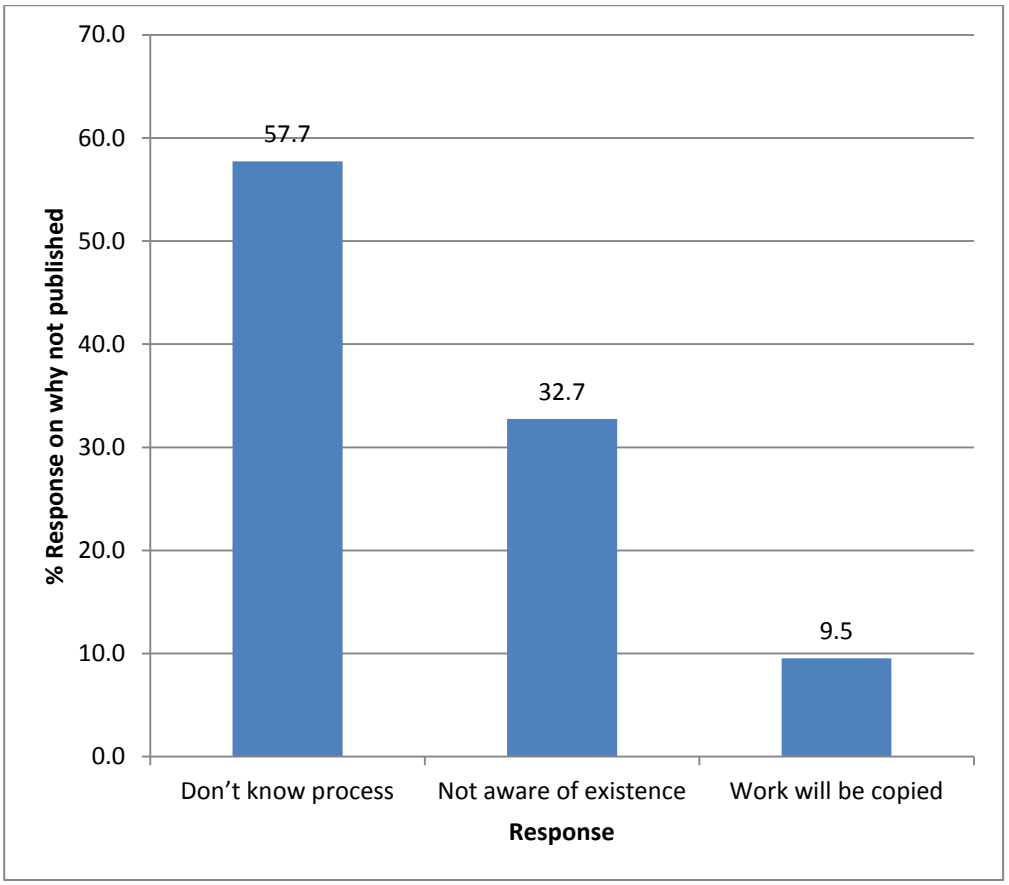


Figure 4.6: Reasons Why Academic Staff did not Publish Research Works in OAJs

From Figure 4.6 above, it can be noted that 57.7% did not know the process involved in publishing with OAJs, 32.7% were not aware of their existence while 9.5% expressed fears that their work would be copied. Attention needs to be drawn to the considerable number of academic staff who did not use OAJs owing to ignorance of the process involved in publishing with such journals. The lack of capacity poses danger to the taking up of OAJs as publishing channel.

Unlike the situation in South Africa where the challenge was knowledge of discipline-specific journals in which to publish (Fullard, 2006), the scenario in Kenya is one of total lack of awareness of their existence. This is a worrisome phenomenon given that a significant number of academic staff were ignorant of the existence of OAJs and constitutes a setback to their adoption. Finally, a small number (10%) said they did not publish their works in OAJs since such works would be copied. Such a response depicted the fear by academic staff towards opening up their research works for use by other scholars. Such a response differs with the goal of OA whose concern is that research findings be availed online free of charge without restrictions on copying, price, display charges, distribution and printing (BOAI, 2002). Such concerns about copyright are not favourable to the assimilation of OAJs.

From the results, however, it was manifest that even though the failure by academic staff to publish their research works in OAJs was as a result of a combination of various factors, lack of knowledge of the process involved ranked highest. The lack of opportunity to train as well as limitations in library dissemination practices were among the challenges that accounted for low adoption of OAJs among academic staff. While respondents were limited in their responses due to provision of choices, they were also provided with an opportunity in an open ended question to give other reasons why they did not publish their research works in OAJs. About 30% said they had not thought of

using such OAJs. Additional explanation that academic staff gave for not publishing their research works in OAJs are summarized and presented in Table 4.17 below.

Table 4.17: Other Reasons Why Academic Staff did not Publish Their Research Works in OAJs

Reason	Frequency	Percent
Not thought of Utilizing it	8	30.8
Busy/no Time for Research	6	23.1
Not Preferred	6	23.1
No complete research	3	11.5
Costly	3	11.5
Total	**26**	**100**

The key ground for not publishing in OAJs was that the academic staff had not thought of utilizing them (30.8%)). On this issue, one respondent simply put it "***I have not had very strong reasons to use it***" and another said "***I have never thought of doing so***". Lack of time for research (23.1%) also deterred others from using them. This can be seen from one of the respondents' feedback "***Pre-occupied always***" Another respondent said "***busy schedule***" while another one stated "***not yet had time***" Others had little preference for OAJs (23.1%) as a key reason. On the issue of preference one respondent out rightly said "***university requires that you publish with renown publishers***" Issues of lack of research and cost accounted for about 12% each. Academic staff who said they had not thought of using OAJs, do not perceive their immediate benefits. This does not

portend well for the uptake of OAJs. The issue of benefits of publishing through OAJs also applies to those respondents who said they did not prefer them. This echoes Rogers (2003) observation that an innovation is likely to be adopted if it is perceived to be more beneficial than other existing options. The low preference for OAJs reflects on the academic staffs' failure to give priority to publishing in OAJs as outlets of choice.

Although literature suggests that the cost of publishing in OA outlets is insignificant, variously labeled as "cheap", "free", the fact that it emerges as an issue in these findings is noteworthy. The ironical shift of the cost from the user to the producers presents a challenge to academic staff who are the main generators of research findings published through OAJs.

4.6: Academic Staff Skills and Training

The computer constitutes the platform on which various OA activities are conducted. Therefore ICT skills and training on OA outlets are key determinants of their ability to carry out various activities using the computer. It was necessary to find out whether academic staff possessed adequate ICT skills to perform these activities.

4.6.1: Academic Staff Computer Skills Adequacy

Determining academic staff computer skills was considered important in order

to evaluate whether they were competent to access as well as upload their research works in OA outlets. They were asked to indicate whether or not they considered their computer skills adequate to enable them use OA outlets. Figure 4.7 below summarized the results obtained on the same.

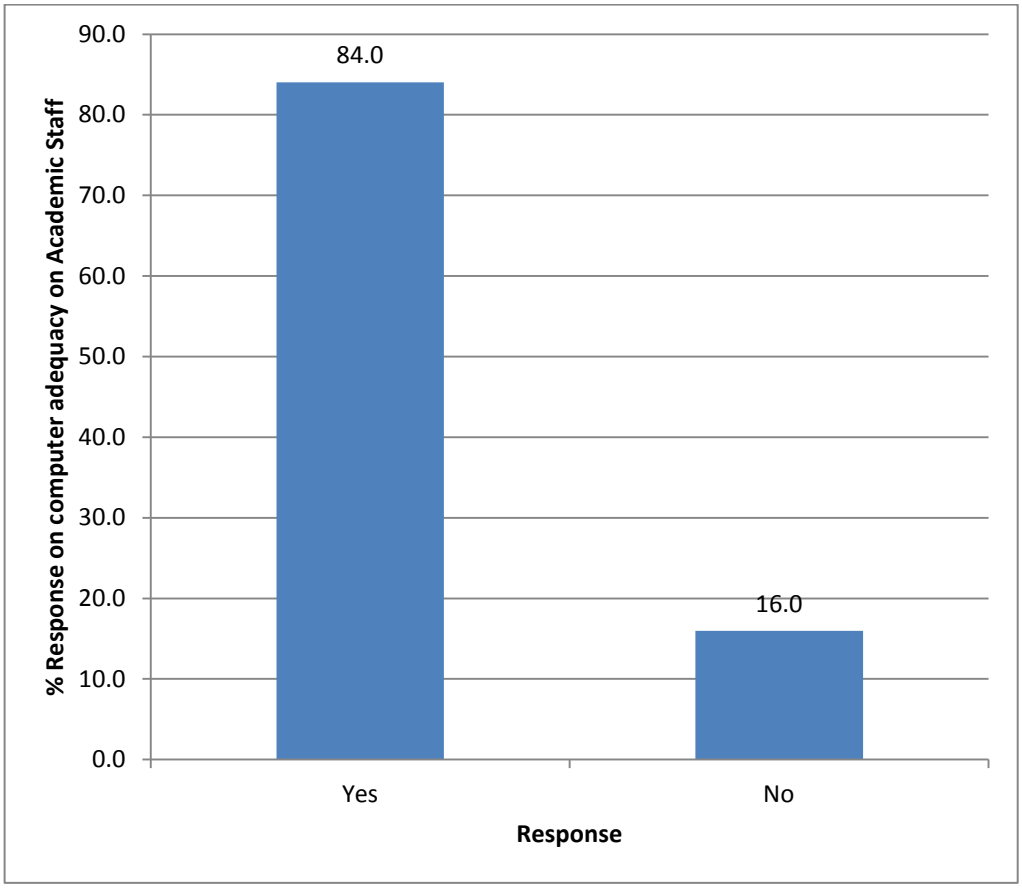


Figure 4.7: Academic Staff Computer Skills Adequacy

From Figure 4.7 above, it is seen that 84% of academic staff did have adequate basic computer skills while 16% said they did not. That was expected considering that most universities were in the process of deepening an institutional culture based on the computer, ranging from management functions

to teaching and research.

Even with the adequacy in computer skills for a majority of the respondents, it was clear on the basis of the 16% who considered their basic ICT skills inadequate that ongoing computer training courses were still needed. This owes to the fact that OA outlets depend on computers for access to research works as well as depositing and publishing in OAJs and IRs. While emphasizing on the need for ICT skills, Quadri (2012) observed that the information professionals and users who possessed high ICT skills were more likely to adopt electronic information resources compared to those with inadequate ICT skills. Training courses would provide the few academic staff an opportunity to improve their basic skills and enable them to comfortably use the computer in accessing OA works as well as depositing their works.

4.6.2: Academic Staff Training in OAJs

Adoption of OAJs can only take place when the key stakeholders are equipped with necessary skills through training. Thus, the effectiveness of academic staff in accessing OAJs depends on the support of library staff. Training is important not only for academics but also for the people who guide users of OAJs on such aspects as access, retrieval and processes of publishing. Therefore establishing whether academics had undergone training on aspects of OAJs was important since training links skills and adoption of OAJs.

Additional information was also sought from library staff to help compare the training of these two groups that play equally important roles in adoption. In order to do so, academic and library staff were requested to specify whether they had attended any conference, workshop or seminar on OAJs. The results are summarized and presented in Figure 4.8 below.

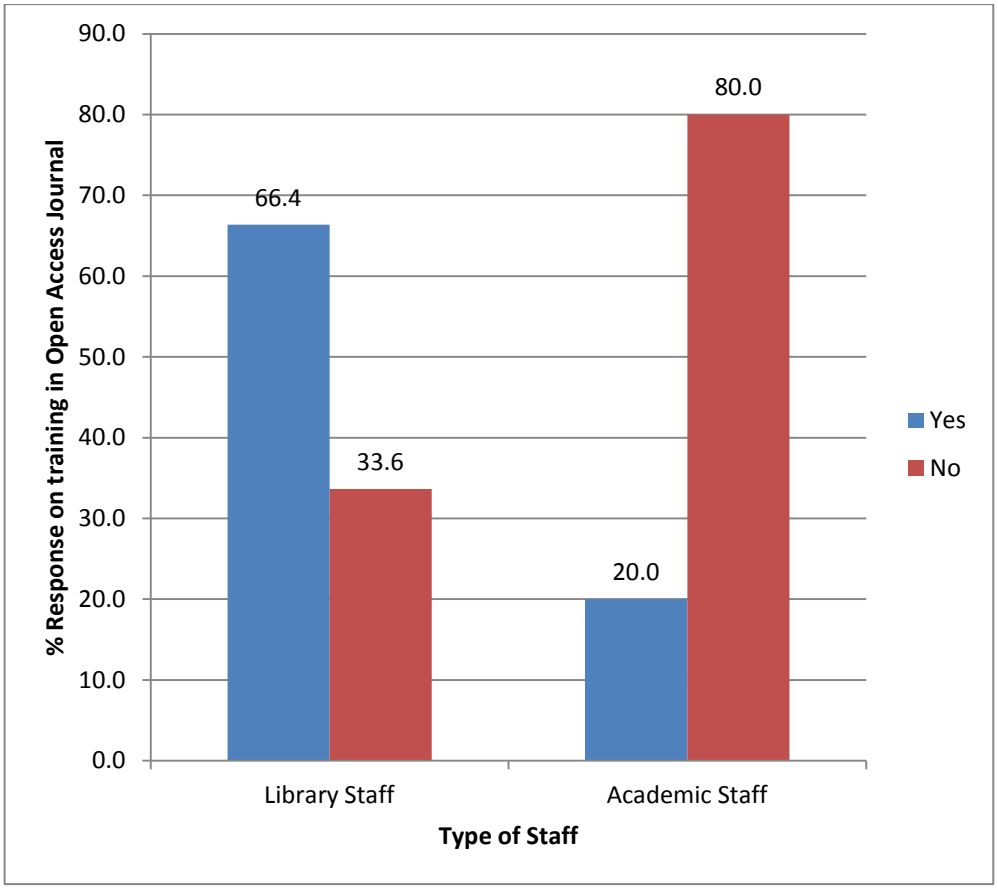


Figure 4.8: Academic and Library Staff Training in OAJs

The figure above shows that 66.4% of library staff had undertaken training with regard to OAJs whereas 34% had not. The opposite scenario emerged with the

academic staff, where a paltry 20% of them had been trained on access to OAJs while an overwhelming majority (80%) had not. For the library staff, opportunities for training were skewed toward the senior echelons of library management, the university librarians, their deputies, senior librarians and librarians. The distribution of responses on training for the academic staff was more or less uniform, with no particular category being over or under-trained.

As pointed out earlier, there is a dependency relationship between the library and academic staff where library staff support their academic counterparts to access, retrieve and use OAJ contents, while the academic staff are part of their core clientele. The observation that this dependency is not carried over in almost mutually availed training opportunities is remarkable. In other words, availing opportunities for training to one group and leaving the other one out does not augur well for the use of OAJs. This is the picture that emerges.

Salo (2007) warned on the danger of ignoring academic staff in who just like the library staff have a responsibility in adoption of OA outlets due to role they play in using and providing content for such outlets. The need for library support on training and creation of awareness among academic staff on OA had been established by Anuradha, Gopakumar and Baradol (2011) in Goa, India. This study has shown that academic staff in Kenya also need training cascaded from trained library staff to the academic staff. The failure to harmonize training

opportunities for both categories of staff or cascade the training from one group to the other presents a barrier to the adoption of OAJs among the academic staff.

4.6.3: OA Aspects in Which Academic Staff Required Training

Irrespective of whether academic staff had had an opportunity to undergo training as depicted in the previous section, the centrality of training in facilitating the acquisition of key skills necessary for the use of OA outlets cannot be overemphasized. To adopt OA outlets, academic staff requires training in a wide range of activities that relate to both OAJs and IRs. In order to establish the training needs of academic staff in OA, these staff were provided with an opportunity to select from a multiple choice list training areas in OA. Their choices are presented in Table 4.18.

Table 4.18: Open Access Aspects in which Academic staff Required Training (n=361)

OA Aspect	Freq	%
Benefit of Open Access Publishing	176	48.8
Process of Publishing with OAJ	272	75.3
Procedure for self-archiving Research Works in IRs	275	76.2
Copyright Issues as they relate to OAJ	266	73.7

** Total frequencies in this table for each of the aspects differs from the number of respondents (n=361) because respondents were only choosing the aspects they required training in.*

Table 4.18 demonstrates that three areas were considered to be important for training: procedure for self-archiving (76.2%); process of publishing with

OAJs (75.3 %); and OAJ related copyright issues (73.7 %). It is worth noting at this point that these are basic activities and issues, and the fact that academic staff indicated need for training in them signals limited training opportunities for their acquisition as echoed in the previous section. The limited training opportunities comprise a key obstacle to the diffusion of OA outlets. It is also worth noting that close to half of the respondents (48.8%) need to be made of the benefits of OA publishing. This sizable number can be considered as symptomatic of an underlying concern for the adoption of OA since uptake of OA can only occur meaningfully when the benefits are appreciated.

4.6.4: Academic Staff Training in IRs

The study sought to determine the state of training for academic staff on IRs. Adoption of IRs can only successfully occur when academic staff have undertaken pertinent training to obtain skills in uploading their research works in IRs. However, it was equally important to establish if library staff had been exposed to relevant training to acquire skills that would enable them offer required support to the academics. To establish if both groups had undergone any area-specific training, separate questionnaires were used. Academic staff were asked to state whether they had attended a workshop, conference or seminar on uploading of research works in IRs while library staff were asked whether they had attended a course on IRs. The resulting findings are presented in Figure 4.9 below.

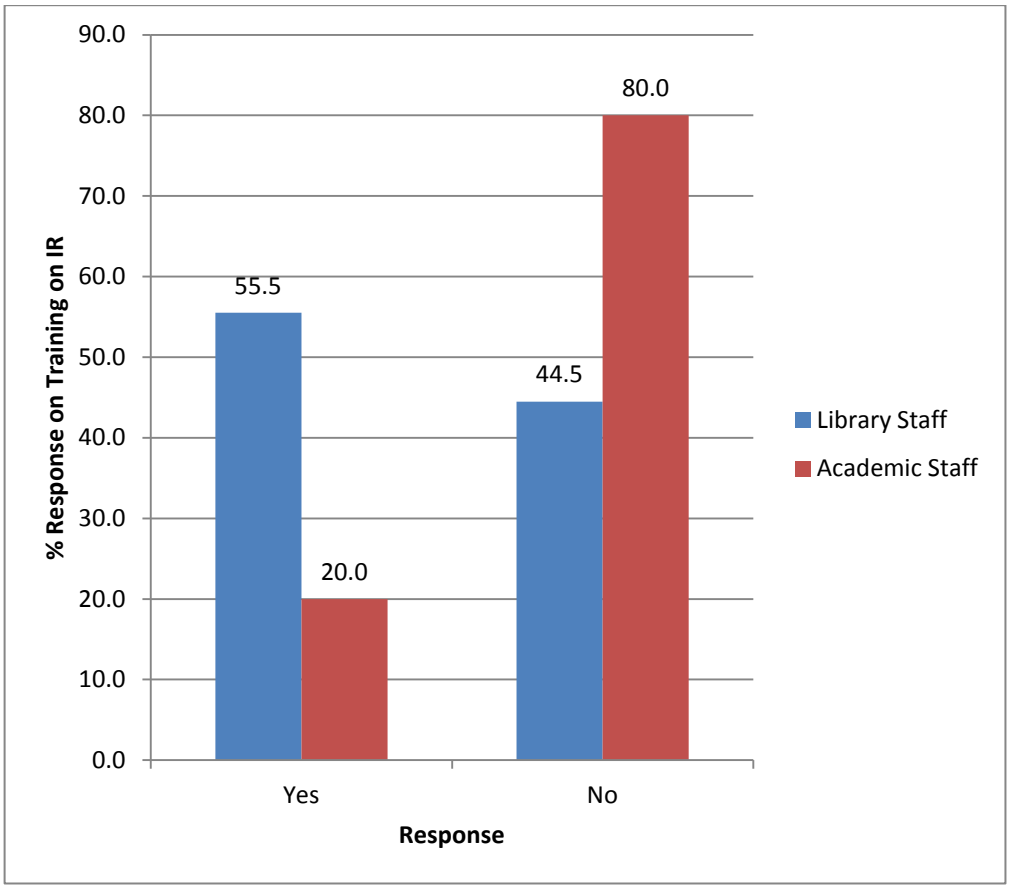


Figure 4.9: Academic and Library Staff Training on IRs

From Figure 4.9 above, 55.5% of the library staff had attended a course on IRs while 44.5% had not. Of the 55.5% librarians who were trained, 98.3% even reported that the training was useful (See also Appendix XIII).On the contrary, only 20% of academic staff had attended training on IRs while the vast majority (80%) had not been trained on how to deposit their research works in an IR. Comparing these findings above on academic staff training in depositing research works in an IR, and library staff training in putting up IRs, it is evident that more library staff than academic staff had received training on IRs.

However, the percentage of librarians trained in IRs is low (56%) considering these are the people who need to be thoroughly trained in order to support academic staff.

The discrepancy in training arises from imbalanced training opportunities for both groups where library staff appear to enjoy disproportionately higher chances than academic staff. It is also discernible from the relatively limited training opportunities that there is also failure to involve academic staff in the adoption of IRs. This explains why Salo (2007) questions the assumption that library staff only need to build OA outlets and faculty will automatically use them. He points out that the faculty may not show interest or see the benefit in contributing their work to a digital repository particularly when they were not involved in its establishment. The Consejo superior de Investigaciones Cientificas (CSIC) (2010), a body concerned with release of university web rankings, pointed out in its January 2010 release that ignoring the main users of institutional repositories hampers universal adoption of OAI, thus pointing out the need to have academic staff actively involved especially in development of IRs. Leaving academic staff out in the setting up of the IRs they are supposed to use and in training related to their use constitutes an expensive cost to their adoption.

Another disturbing finding is that of those librarians who were trained on IR

software, (Appendix XIV) only a very small percentage can handle various IR software usages and installations (Fig. 4.10)

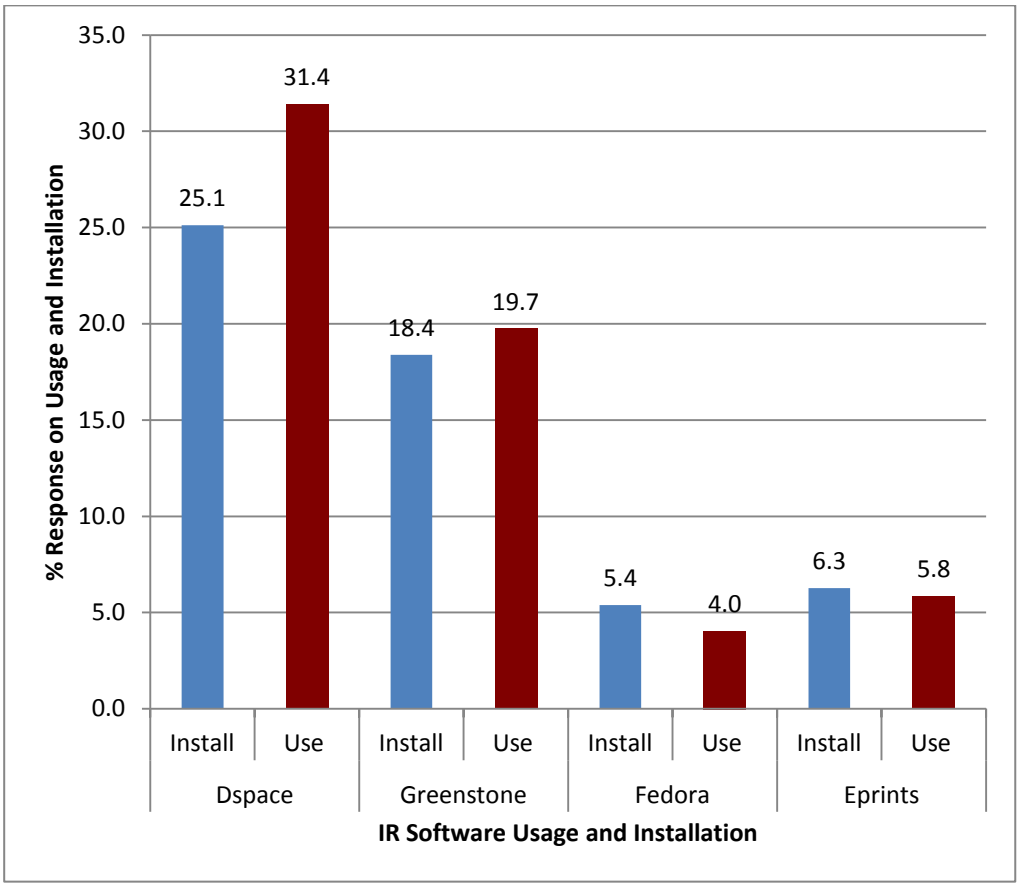


Figure 4.10: Digital Repository Usage and Installation

The findings above support the view expressed by Chiware (2007) that skills are needed to address the handling of resources and the technology context for digital libraries, tools and rules (protocols) of interoperability.

A further inquiry revealed that a very small percentage of the trained librarians can perform various activities connected with IR such as digitization, metadata

creation and uploading IR content (See Fig. 4.11)

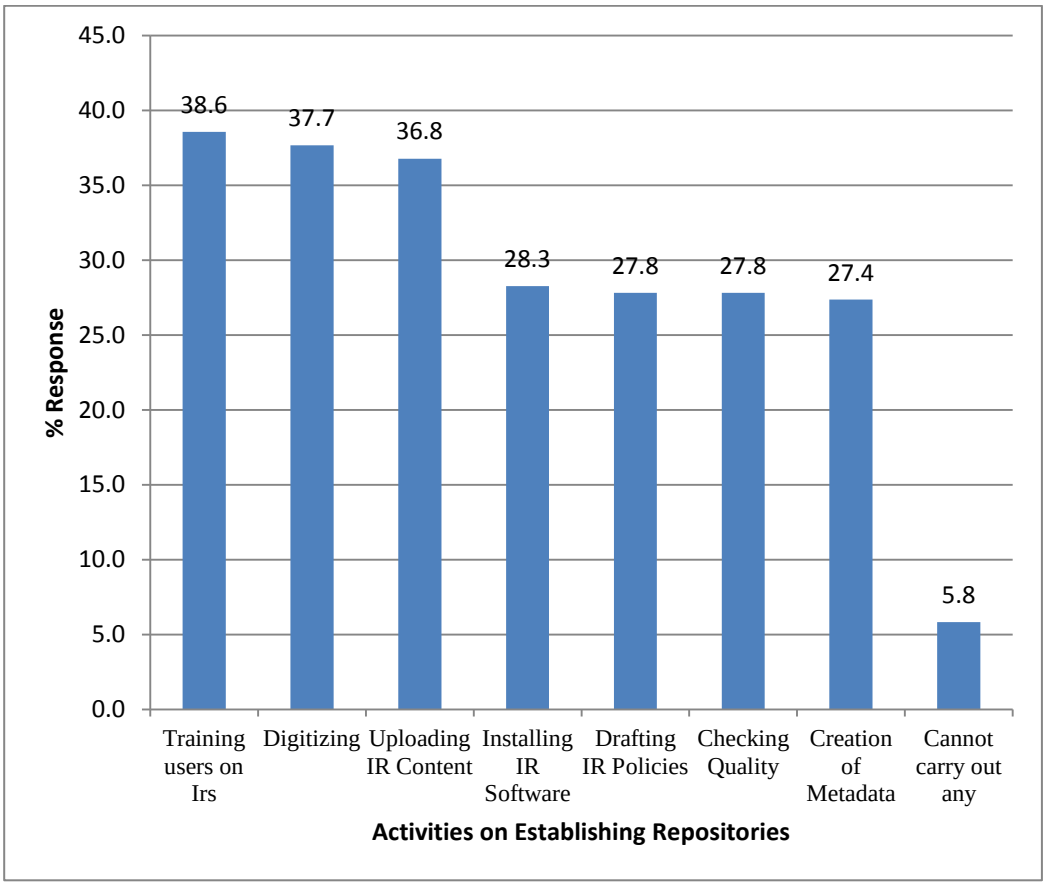


Fig. 4.11 Library Staff Skills in Carrying Out Various Activities

The relatively low level of skills related to IR on the part of librarians could be impacting negatively on the ability and willingness of academic staff to use IR facilities. Hence, it is not surprising that the use of IRs by academic staff is quite low (See Table 4.12)

4.7: Academic Staff Attitude Regarding OA Outlets

Individual attitudes are key in determining whether or not they adopt any innovation. Thus, the decision by academic staff to contribute or participate in OA is dependent on their attitude. Further, the attitude of library staff on various aspects of OA determines the support they provide towards their adoption. In order to establish the attitude of academic staff towards OA outlets, some statements on various aspects of OA were designed for the respondents. Their responses were summarized and presented in Table 4.19 below:

Table 4.19: Academic Staff Attitudes with Regard to OAJs and Repositories

Statements about OAJs and Repositories	Strongly Disagree (1)		Disagree (2)		Somewhat Agree (3)		Agree (4)		Strongly Agree (5)		Total		Mean Score
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
OAJ do not Offer Proper Peer Review	40	12.5	106	33.2	96	30.1	61	19.1	16	5	319	100	2.7
Cannot Publish Work in OAJs or IRs because it will be copied	82	25.3	116	35.8	57	17.6	42	13	27	8.3	324	100	2.4
Works published in conventional print journals more recognised than those in OAJs	34	10.4	69	21.1	68	20.8	78	23.9	78	23.9	327	100	3.3
Prefer to Publish Research Work in Printed Journals and Books other than in IRs and OAJs	23	7.1	75	23.1	57	17.5	94	28.9	76	23.4	325	100	3.4
Quality of Articles Published in OAJs is Lower than of works Published in Renown Printed Journals	54	17.1	102	32.4	60	19	64	20.3	35	11.1	315	100	2.8
Self-archiving my work in the IRs is Time Consuming	42	13.7	124	40.4	85	13.7	35	11.4	21	6.8	307	100	2.6

On the aspect of peer review, over half of the respondents (2.7) were skeptical that OAJs undergo rigorous vetting. This suggests that they were aware of the process of peer review in general, but do not think that OAJs undergo that (Hernández-Borges, 2006) or, as noted earlier they may be ignorant of the existence of peer review mechanisms for OAJs (Chang and Chung-Li, 2006). This skepticism over the rigour of review mechanisms coupled with ignorance of OAJ-specific review mechanisms has a negative impact on the uptake of OAJs.

The second statement revolved around copyright issues in publishing through OA outlets. Here, the overall tendency in the responses was that copyright issues exist but not so prominently (2.4). The interesting fact about copyright in dissemination is that publishing through OAJs implies opening up one's work even accommodating the risk of copying, yet the tendency to prefer other means of dissemination hints at resistance to change or a misconception of what OA is about. In other words, through their responses the respondents voiced their disagreement with the principle of OA of providing research works free of charge without restrictions on copying. To re-emphasize this discord between OA principle and researchers concerns about copyright undergirds a challenge to the adoption of OA outlets.

On the status associated with using a publishing outlet, a sizable number of

respondents (3.3) expressed preference for traditional print outlets as opposed to OA ones due to the recognition that comes with printed publications. This preoccupation with the prestige of traditional publishing outlets poses an observable threat to the need to shift to OA outlets. Further, the preference for traditional outlets is buttressed by their key role in upward mobility of academic staff. Bjork (2004) and Lang (2003) earlier observed that most universities promoted their academic staff based on the works they published in printed peer reviewed journals. This practice is linked to the issue of the prestige of traditional print-based outlets, and its attendant implications for adoption of OA outlets.

A similar pattern as that noticeable above recurs on the matter of preference for a particular dissemination outlet, with the majority of respondents (3.4) expressing preference for the traditional print-based outlets. This preference pointed to the lack of receptivity to alternative ideas and practices in trying out new avenues of dissemination. In literature review, Abdi (1991) pointed out that it is impossible to have advancement in any field without information and modern outlets of disseminating such information. However, this study revealed a preference for traditional outlets, indicating a tendency among academic staff to use outlets they know and have been used to before. This conservatism was considered a challenge that threatens adoption of newer outlets including the OA outlets.

On the quality of articles published, a slight majority of respondents (2.8) felt that the quality of articles published in OAJs was lower than that of articles published through traditional printed journals. This re-echoes the same sentiments expressed earlier on peer review issues raised about research works published through OA outlets. Thus the concern with quality standards associated with these outlets manifests itself in a similar way on a related issue, and raises a similar challenge to their adoption.

Finally, on the process of depositing research findings in an IR, a slight majority of respondents (2.6) thought that the process was time consuming. The time element is closely tied to the activities involved in self-archiving, which are inevitably considered to be complicated. Rogers (2003) in his theory, diffusion of innovations pointed out that an innovation with the attribute of ease of use was more likely to be adopted. The characteristic of complexity associated with self-archiving does not augur well for their use as dissemination outlets.

Results on the library staff attitude revealed a more general positive attitude compared to academics (See Appendix XV). Seventy seven (77%) agreed that the quality of OAJs was good. Over 70% were aware that were aware that open standards are used in archiving repository works. However, with respect to the question whether IR content must be peer reviewed or not, about 76% indicated

their agreement. Given that IR content belongs to the green open access, this result shows a high level of ignorance on the part of librarians.

Overall, these results indicate a dire need for training in order to inculcate positive attitudes on OA outlets among academic staff.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1: Introduction

This chapter presents the summary of the study, the conclusions and recommendations. It also suggests further areas in which research was found necessary in light of the study objectives.

5.2: Summary

The purpose of this study was to establish the challenges facing academic staff in adopting OA outlets for dissemination of research findings, with a view to improving the propagation of OA outlets whose adoption was low. Specifically, the study was guided by the following objectives: (i) Establish the outlets employed by academic staff in disseminating their research findings; (ii) Find out the awareness of OA outlets among academic staff; (iii) Determine use of OA outlets by academic staff in accessing and disseminating their research works; (iv) Establish academic staff skills and training with regard to OA, and (iv) Find out the attitude of both academic staff regarding OA outlets. In order to achieve these objectives, data was collected from 381 academic staff in selected university libraries using a questionnaire. The data was subsequently analyzed using descriptive statistics. The following is the summary of the findings.

1. The research sought to determine the outlets that academic staff used to disseminate their research findings. Firstly, the study revealed that traditional publishing outlets consisting of print journals and books were mostly used by senior members of academic staff. Thus, use by professors stood at 64.3 %, associate professors at 56 %, senior lecturers was at 62.4 %, and lecturers were at 56.4 %. Secondly, the results further revealed usage of the traditional publishing outlets consisting of print journals and books was greater among the academic staff who had a university teaching career of 6 years and above (63.3 % for 6-10 years range and 59.8 % for those above 10 years).These findings imply that adoption of OA outlets in Kenya is likely to depend on the willingness to change by the long serving academic staff. Another implication is that the transition by academic staff who have had a long teaching experience at the university from traditional outlets to OAP outlets which operate on computer platforms will depend on their orientation to ICT. Thirdly, it was revealed that print-based outlets were associated with problems related to accessibility, costs and delays in publishing while OA outlets were associated with low quality. The challenges associated with these findings include staff promotion criteria that are based on publishing in these traditional outlets and the pace of transition from these traditional outlets to OA outlets that are based on an ICT culture. Moreover, the findings revealed a challenge of the dilemma on

the basis of concerns about the quality assurance mechanisms associated with OA outlets vis-a vis their impact on access and cost. The resulting implication is that this scepticism over the quality of OA works is likely to deter many of the academic staff from using them in accessing or disseminating their works

2. The study also sought to find out the awareness of academic staff of the various aspects of OA outlets. Several findings were made. Firstly, the general awareness of OAP was high for academic (66 %). Secondly, it was found, however, that awareness of specific aspects of OAP among the academic staff was low. Thirdly, among the academic staff, awareness of the benefits of OAP ranged between 8.4 % and 30.1 %, while awareness of self-archiving stood at 34.6 %. The challenge associated with the low awareness by academic staff was the failure to ground benefits of OAP and the differential in status characteristics (*homophiles, heterophilous*) which impede the dissemination of information. Another challenge that resulted to the low awareness was ignorance among academic staff of self-archiving, leading to low populations of IR deposits which in turn signals poor adoption of OA outlets. It should also be noted that although the focus of this study was the academics' there was very low awareness of specific

aspects such as security measures, metadata, file format and preservation strategies.

Low awareness among academics implies that they cannot benefit from OA outlets because they cannot disseminate their research works using these outlets nor access important research findings from other scholars. They were therefore quite unlikely to quickly capitalize on OA outlets and that adoption of such outlets was likely to continue lagging behind.

3. Further, the study sought to find out the level of use of OAJs and IR content by the academic staff. (i). In general, a majority of academic staff were active consumers of OA works, but not prolific contributors to them. (ii). A majority of them (74.3 %) used materials deposited in IRs, but only 20.9 % deposited their works in the IRs. This picture was also true of the OAJs, where 75.7 % accessed these OAJs but only 27.5 % published their works through them. This was due to such challenges as (a) a failure to partner with academics in the African context in the development of IRs on the basis of sensitivity to their perceptions of African dignity (b) the relatively youthful stage of university libraries in establishing IRs (c) ignorance among academic staff on the existence of OA outlets as well as limited skills in their use due to few limited training opportunities (d) the volitional element in their introduction as alternative publishing outlets (e) limited marketing of

IRs by library staff and weak partnerships with academic staff (f) lack of interest to access research works from other available library sources on OA platforms among academic staff (g) concerns about copyrights with regard to OAJs (h) a failure to appreciate their benefits (i) and costs of publishing with OAJs.

The implication associated with increased use and reduced contribution is that OA outlets are likely to remain empty due to unavailability of important research works for dissemination. A further implication is that the unavailability of research works for dissemination is likely to result in duplication of studies conducted by other scholars due to lack of information on studies already conducted.

4. In addition, the study investigated the skills and training that academic staff had to enable them access and self-archive research works in IRs and OAJs. Only 20 % of the academic staff had received training in OAJs and also 20% had received training in IRs. However, data was also collected from a subsidiary group and comparing this finding to that of the subsidiary group, it is seen that a sizable number of library staff had exposure to training in OAJs and IRs, 66.4 % and 55.5% respectively. Hence, a discrepancy in training for the two groups. This was as a result of challenges such as limited training opportunities, the failure to harmonize training opportunities for

both categories of staff as well as within the various ranks of library staff, lack of partnerships between the academic and library staff in the establishment of IRs, and an appreciation of the benefits of OA outlets.

The implication of failure to have academic staff exposed to OAP related workshops and training is that this discrepancy is likely to result in low adoption of the outlets among academic staff who are key users. Additionally, the findings revealed that majority of both academic and library staff's lacked the capacity to carry out certain activities. This lack of capacity implies that they were unlikely to execute important activities relating to OA outlets.

5. Finally, the study sought to determine the attitude of academic staff regarding OA outlets. (i).The study showed that generally, academic staff's attitudes on OA outlets were not positive. For example, they agreed that research works published in conventional print journals were more recognized than those in OAJs (mean was 3.3), that they preferred to publish their research work in printed journals and books rather than in IRs and OAJ (mean was 3.4), and that the quality of articles published in OAJs was lower than that of articles printed in renown research journals (mean was 2.8). This was as a result of such challenges as skepticism over the rigour of

review mechanisms, ignorance of OAJ-specific review mechanisms and discord between OA principle and researchers concerns about copyright. Besides, there were other challenges such as the conservative preferences for traditional outlets over newer publishing avenues, as well as their attitude that the process of self-archiving is complex added to their negative attitude.

This preference by academic staff to use traditional outlets on the basis of quality implies that they were likely to continue using those outlets in disseminating their research works unless the quality of OAP outlets is improved.

5.3: Conclusions

This study resulted in five main conclusions drawn from the findings of this study as follows:

Firstly, on outlets used in dissemination, the study concluded that there was still a preference for traditional publishing outlets as opposed to OA outlets among Kenyan scholars. The pace of transition from these traditional outlets to OA outlets that are based on an ICT culture, and scepticism over the low quality of OA publications.

Secondly, on awareness of OAP aspects, the study concluded that there was low awareness of OAP, the benefits of OAP and self-archiving among academic staff was due to the failure to ground benefits of OAP, the differential in status characteristics between academic and library staff, and ignorance among academic staff of self-archiving.

Thirdly, regarding the aspect of the use of OA outlets by academic staff, the study concluded that academic staff did not publish research findings in OAJs or self-archive in IRs due failure of university librarians to partner with academics in the development of IRs as well as the relatively youthful stage of university libraries in establishing IRs. Ignorance among academic staff on the existence of OA outlets, limited training opportunities and the volitional element in their introduction as alternative publishing outlets also the failure to publish in OA outlets. Other reasons for non-publishing included limited marketing of IRs by library staff and weak partnerships with academic staff and lack of interest to access research works from other available library sources on OA platforms among academic staff. Finally, concerns about copyrights with regard to OAJs, a failure to appreciate their benefits, and costs of publishing with OAJs also accounted for the non publishing in these outlets.

Fourthly, the study also concluded that there were inadequate skills among academic staff in use of OA outlets as a result of limited training opportunities

Fifthly, the study concluded that academic staff have a negative attitude towards OA outlets. They were sceptical over the rigour of review mechanisms coupled with ignorance of OAJ-specific review mechanisms and discord between OA principle and researchers concerns about copyright.

5.4 Recommendations

In light of the foregone summary and conclusion, the following recommendations were made that universities can adopt to promote the uptake of OA outlets among scholars.

5.4.1: Recommendations Based on Outlet Used in Dissemination

The study established that traditional publishing outlets consisting of print journals and books were mostly used by members of academic staff who were more senior in rank. It was also established that the usage of the traditional publishing outlets consisting of print journals and OAJs was greater among the academic staff who had a university teaching career of 6 years and above Finally, the study also found out that OA outlets were associated with low quality. The challenges associated with this trend included staff promotion criteria that are based on publishing in these traditional outlets, the pace of transition from these traditional outlets to OA outlets that are based on an ICT culture, as well as a dilemma on the basis of concerns about the quality

assurance mechanisms associated with OA outlets vis-a vis their impact on access and cost.

The study recommends that universities promote OA outlets by mainstreaming them in their organizations including accommodating them in their academic staff promotion criteria. In order to hasten the transition from publishing through traditional outlets to doing so through OAS outlets, the study recommends that measures that market OA outlets as lucrative options be instituted. These include mainstreaming OA publishing in universities. Finally, the study recommends that university libraries and publishers of OAJs educate academic staff on existing mechanisms for assuring quality for OAJs to address the challenges of ignorance and indifference to these standards.

5.4.2: Recommendations Based on Awareness

The study established that there was low awareness of the benefits of OAP and self archiving among academic staff due to such challenges as failure to foreground benefits of OAP. The study recommends marketing of the benefits of OAP to academic staff, strengthening of partnerships in information sharing between academic and library staff, and awareness raising and capacity building for academic staff on self-archiving. The study also recommends a review of the user education programmes offered by libraries so as to infuse critical aspects of OA outlets and capacity building for academics.

5.4.3: Recommendations Based on Use of OA Outlets

The study also established that in general, a majority of academic staff were active consumers of OA works, but not prolific contributors to them**.** The challenges accounting for this pattern includes a failure to partner with academics in the African context in the development of IRs on the basis of sensitivity to their perceptions of African dignity, the relatively youthful stage of university libraries in establishing IRs, ignorance among academic staff on the existence of OA outlets as well as limited skills in their use due to few limited training opportunities, the volitional element in their introduction as alternative publishing outlets, limited marketing of IRs by library staff and weak partnerships with academic staff, lack of interest to access research works from other available library sources on OA platforms among academic staff, concerns about copyrights with regard to OAJs, a failure to appreciate their benefits, and costs of publishing with OAJs.

The study recommends that the benefits of disseminating research findings be emphasized through Current Awareness Services (CAS) and Selective Dissemination of Information (SDI) so as to interest academic staff to use these OA outlets, partnership with academics in the establishment of IRs that is context sensitive, the mainstreaming of OA as publishing outlets, up scaling capacity building efforts on various aspects of use of OA, and educating academic members on the real meaning and purpose of OA to correct

misconceptions about copyrights.

5.4.4: Recommendations Based on Training and Skills

The study established that there were low levels of training in OA among academic staff. Very few had attended training on OAJs and IRs than academic staff had. The challenges associated with this included limited training opportunities, and lack of partnerships between the academic and library staff.

The study recommends that training opportunities for academic staff be increased equitably, as those of librarians and that such training be geared toward the real skill needs, and closer interaction between both categories of staff in adoption of OA outlets. Specifically, academic staff need training in the benefits of OAP, the process of self-archiving and publishing with OAJs, copyrights issues among others. However, it was also noted that library staff require training in software installation and use, dimensions of metadata, digital content preservation and security, file formats for different digital objects, among others. These training needs can be significantly met through their early integration into the curricula processes in institutions that offer Library and Information Science (LIS) programmes.

5.4.5: Recommendations Based on Attitude

The study also established that generally, academic staff attitudes on OA outlets were not positive and that the attitude of library staff on various aspects of OA outlets was generally positive**.** For the academic staff, enthusiastic adoption was curtailed by skepticism over the rigour of review mechanisms coupled with ignorance of OAJ-specific review mechanisms, discord between OA principle and researchers concerns about copyright, promotional criteria within universities based on publishing in traditional prestigious print-based outlets, conservative preferences for traditional outlets over newer publishing avenues, as well as their attitude that the process of self-archiving is complex.

The study recommends a campaign to enlighten members of the academic community on the existing mechanisms for assuring the quality of OAJs. There should also be conscious efforts to recognize OA outlets as legitimate and of quality standards befitting benchmarked publishing outlets. Capacity building interventions should be instituted to simplify and make self-archiving process user-friendly.

5.4.6: Policy Recommendations

1. At the moment, many universities in Kenya appoint and promote academic staff based mainly on publication of research findings in refereed journals. There is therefore need for a policy shift to base appointments and or promotions on publications including those in open access outlets.

2. There is need to enhance awareness on copyright issues in Kenyan universities, and such awareness should start at the undergraduate level.

5.4.7: Recommendations for Further Research

The study looked at adoption of OA outlets among academic staff. It is apparent that taking up research in the following areas of study would be useful.

1. Determinants of adoption of ICT based outlets among academic staff who have long served long at the universities.

2. Considering that most long serving academic staff used traditional publishing outlets, it was necessary that a study is carried out to determine what would determine their shift to new publishing outlets

3. Existence of library- academic staff's collaborations. This was deemed important due to the high numbers of library staff who were aware trained

on IRs and OAJs as compared to the number of academic staff who undertaken similar training.

4. Determinants of depositing and publishing research works in OA outlets by academic staff. This was informed by the low numbers of academic staff who deposited and published their research works in OA outlets. While this study provided the participants with limited options to choose from, further studies need to be conducted to give a clear picture.

5. Effectiveness of OA workshops and seminars in equipping academic staff with practical skills for adoption of OA outlets. This is recommended based on the numbers of academic staff who could not carry out activities related IRs despite their attendance of workshops and seminars.

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Appendix I: Introductory Letter to Academic Staff Questionnaire

Kenyatta University
Department of Library & Info. Sciences
Po Box 43844
Nairobi.

Dear Sir / Madam

RE: REQUEST

My name is Caroline Mutwiri. I am a PhD student at Kenyatta University, Department of Library and Information Science. I am carrying out a study on the Challenges Facing Scholars and Librarians in Adopting Open Access Outlets for Disseminating Research Findings in Selected Universities in Kenya, in order to improve dissemination of research findings generated at the universities.

The purpose of this letter is to request you to complete the attached questionnaire which will enable me to collect data regarding the topic of investigation. From the findings, I hope to make achievable recommendations on what can be done to accelerate adoption of the OA outlets to improve dissemination of research findings. I also wish to inform you that the information provided will be treated with confidentiality and will be used only for purposes of the research.

Thanking you in advance

Yours faithfully

Caroline Muthoni Mutwiri

Appendix II: Questionnaire for Academic Staff

Section A: General Information (For all Questions Please Tick or Fill in the Gaps Appropriately)

1. a) Name of your University----------

   b) Faculty or School----------

   c) Department----------

   d) Academic Position (Please Indicate by Ticking in the Space provided Below)

Current Position	**Tick as Appropriate**
Professor	
Associate Professor	
Senior Lecturer	
Lecturer	
Assistant Lecturer	
Tutorial Fellow	
Graduate Assistant	

2. How long have you taught in this university? (Tick as Appropriate)

   a) Below 1 year ☐ b) 1-5 years ☐

c) 6-10 years ☐ d) Above 10 years ☐

3a) What outlet do you mostly use to disseminate your research findings?

Print journals with commercial publishers ☐

Print Books ☐

Open Access Journals (OAJs) ☐

Institutional Repositories (IRs) ☐

I have never published ☐

b) Does the outlet you use have any shortcomings? Yes ☐ No ☐

c) If yes, please name them----------

Section B: Academic Staff Awareness of Open Access Publishing

4a) Are you aware what Open Access publishing entails? Yes ☐ No ☐

b) If your answer to question (4a) above is Yes, which of the following benefits of Open Access are you aware of?

BENEFIT	**TICK (As Appropriate)**
Improved or Wider Dissemination of Research Works	
Visibility of Academic Staff	
Greater Citation of a Researcher's work	
Reduced Cost	
Retention Copyright by Authors	
I am not aware of any of the above benefits	

5a). Are you aware of Open Access Journals ? Yes ☐ No ☐

b. If your answer to question 5a above is yes, from where did you learn about the existence of Open Access Journals? From:

i) The Librarian ☐ ii) Colleagues ☐ iii) Workshop/seminar ☐

iv) Other sources (Please Specify)----------

6). Has your library provided a list of open access journals available in various disciplines to library users? Yes ☐ No ☐

7). Do you know what self archiving or self depositing of research works means?

Yes ☐ No ☐

Section C: Use of IRs and OAJs

8a). Does your university have an institutional Repository (IR)? Yes ☐ No ☐

b) If your answer to question 8a above is Yes, do you use materials deposited in the

Institutional repository of your university? Yes ☐ No ☐

c) If your answer to question 8a above is No, please give reasons.

……

……

9). Have you posted any of your research works in an Institutional Repository?

Yes ☐ No ☐

b) If your answer to question (9a) above is yes, how easy did you find the process?

Very Easy ☐ Easy ☐ Fairly Easy ☐ Not Easy ☐

c) If your answer to question (9a) above is no. why?

a) I do not know what a repository is ☐

b) I don't have the skills to post my work in a repository ☐

c) I am not farmiliar with the process of uploading my research works ☐

d) Any other reason please specify……

10a) Other than your University's repository, have you accessed content in repositories of other universities? Yes ☐ No ☐

b). If your answer to question (10a) above is yes, how did you find the process of access? Easy ☐ Complicated ☐

11a). Have you accessed research works published in Open Access Journals? Yes ☐ No ☐

b. If your answer to question (11a) above is No. why?

i) I am not aware of existence of such works ☐

ii) I don't have the skills to retrieve works in Open Access Journals ☐

iii) Works in OAJs are of low quality, not peer reviewed ☐

iv) Any other reason please specify…….

12). Have you published any of your research works with an Open Access Journals? Yes ☐ No ☐

b). If your answer to question (12a) above is No what prevents you from doing so?

a) I am not aware of their existence ☐

b) I don't know the process involved in publishing with an OA journal ☐

c) I fear my work will be copied ☐

d) Any other reason please specify……

Section D: Academic Staff Skills

13a). Do you think your computer skills are adequate to enable you to easily locate relevant research works contained in IRs and OAJs? Yes ☐ No ☐

b). If your answer to question (13a) above is No, what additional training skills would you require to help you fully exploit IRs and OAJs.....

14). Have you received any training by library staff with regard to posting your research works in a repository or accessing your institutions repository?

Yes ☐ No ☐

15a) Have you received training on how to access Open Access Journals?

Yes ☐ No ☐

b) If your answer to (15a) above is yes, how useful was the training?

Very Useful ☐ Useful ☐ Fairly Useful ☐ Not Useful ☐

c) If your answer to question 15a is No, does the lack of training hinder you from utilizing Open Access Journals? Yes ☐ No ☐

16). Which of the aspects of OA publishing would you require training in?

Aspect	**Tick (As Appropriate)**
Benefits of Open Access Publishing	
Process of Publishing with an Open Access Journal	
Procedure of depositing or self archiving research works in an Institutional Repository	
Copyright Issues as it relates to Open Access Works	
Any Other (Specify)	

Section F: Attitude of Academic Staff Regarding OAJs and IRs

28. Below are some statements about OAJs and repositories. Please indicate whether you Strongly Agree= 5, Agree= 4, Somewhat Agree=3, Disagree =2 or Strongly Disagree= 1 with the statements.

Statement	**Strongly Agree (5)**	**Agree (4)**	**Somewhat Agree (3)**	**Disagree (2)**	**Strongly Disagree (1)**
OAJs do not offer proper peer review					
I cannot publish my work in OAJs or repository because it will be copied					
Works published in conventional print journals are more recognized than those published in OAJs					
I prefer to publish my research works in printed journals and books other than in IRs and OAJs					
Quality of articles published in OAJs is lower than that of articles published in printed journals					
Self archiving is time consuming					

Appendix III: Introductory Letter to Library Staff Questionnaire

Kenyatta University,
Dept of Library & Info. Science
P.O Box 43844- Nairobi

Dear Sir / Madam

RE: REQUEST

My name is Caroline Mutwiri. I am a PhD student in the department of Library and Information Science, Kenyatta University. Currently, I am carrying out a research entitled: Challenges Facing Academic and Library Staff in adopting Open Access Outlets for Disseminating Research Findings in Selected University Libraries in Kenya in order to improve dissemination of research findings. The findings obtained from your responses will be used to make recommendations on what can be done in promoting adoption of Open Access outlets to improve dissemination of research findings. I am therefore kindly requesting you to complete the attached questionnaire. All the information you provide will be treated with confidentiality and will only be used for the purposes of improving dissemination.

Thanking you in advance,

Yours faithfully

Caroline Muthoni Mutwiri

Appendix IV: Questionnaire for Library Staff

(For all the Questions in all Sections, Please Tick or Fill in the Gaps Appropriately)

Section A: General Information

1. Name of your Institution----------

2. Respondents' Position/Designation (Indicate your Designation in the Library by Ticking in the Appropriate Box)

Respondents' Position/Designation	**Tick**
University Librarian	
Deputy University Librarian	
Senior Librarian	
Librarian	
Senior Assistant Librarian	
Assistant Librarian	
Senior Library Assistant	
Library Assistant	

3. Number of years you have worked in the library----------

Section B: Library Staff Awareness of Various Issues Relating to OAJs and IRs

4a). Do you know what open access publishing entails? Yes ☐ No ☐

b) If your answer to question (5a) above is Yes, please name at least one outlet

of providing open access to research----------

5a). Are you aware of your University Library having established an IR?

Yes ☐ No ☐

b). If your answer to question (5a) above is Yes, what challenges did your library encounter during its establishment? ----------

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c). If your answer to question (5a) above is No, what do you think has prevented your library from doing so?----------

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6). Are you aware of the availability of databases of Open Access Journals in your university library? Yes ☐ No ☐

7). Which of the following protocols or applications needed for establishment of institutional repositories are you aware of?

Protocol	**Tick as Appropriate**
Hyper Text Transfer Protocol (HTTP)	
Open Archive Initiative Protocol for Metadata Harvesting (OAI-PMH)	
Rich Site Summary / Syndication (RSS)	
Z 39.50	
Apache	
I am not aware of any of the above protocols	

8). Which of the following strategies of providing security to digital library systems and collections are you aware of?

Security Measure	**Tick as Appropriate**
Creation of Usernames and Passwords	
Use of Firewalls	
Encryption	
Digital Signatures	
Water Marking	
I am not aware of any of the above security measures	

9a). Do you know what Metadata refers to? Yes No ☐

b) If your answer to question (9a) above is Yes, which of the following metadata type are you aware of the contents?

Metadata Type	**Tick as Appropriate**
Descriptive Metadata	
Structural Metadata	
Administrative Metadata	
Preservation Metadata	
Technical Metadata	
I am not aware of the contents of any of the above metadata types	

10a). Do you know what File Format refers to? Yes ☐ No ☐

b). If your answer to question (10a) above is Yes, which of the following file formats do you consider suitable for storing digital objects?

Format	**Tick as Appropriate**
American Standard Code for Information Interchange (ASCII)	
Extensible Markup Language (XML)	
Joint Photographic Expert Group (JPEG)	
Movable Photographic Expert Group (MPEG)	
Tagged Image File Format (TIFF)	
Audio Interchange File Format (AIFF)	
I do not Know the suitability of any of the above formats	

11). Which of the following strategies adopted in preservation of digital content are you aware of? (Please tick appropriately)

Preservation Strategy	**Tick as Appropriate**
Migration and Refreshing	
Emulation	
Replication	
Encapsulation	
Use of Standard File Formats	
I am not aware of any of the above strategies	

Section C: Library Staff Skills and Training in Open Access Journals and Repositories

12). Have you had any training with regard to Open Access Journals?

Yes ☐ No ☐

13a). Have you attended any course, seminar, workshop or conferences relating to Institutional Repositories? Yes ☐ No ☐

b). If your answer to question (13a) above is Yes, how useful was the course,

seminar or workshop?

Very useful ☐ Useful ☐ Fairly useful ☐ Not useful ☐

14a). Have you had any training on Institutional Repository Software?

Yes ☐ No ☐

b). If your answer to question 14a) above is Yes, which of the following repository / digital library systems would you install or use? (Please tick against the system you can install in the column for would install and what you can use in the column for would use)

Repository Software	**Tick** **Would Install**	**Tick** **Would Use**
Dspace		
Greenstone		
Flexible Extensible Digital Object Repository Architecture (Fedora)		
Eprints		

15a) The following are activities involved in establishing an Institutional Repository. Which of them can you carry out without any difficulties?

Activity	**Tick**
Installation of Repository System	
Uploading Content in the Repository System	
Training Users on the Use of Repository to Access Research Works	
Digitization of materials	
Creation of metadata elements	
Drafting repository policies	
Checking the quality of scanned digital images and documents	
I cannot carry out any of the above	

Section D: Library Staff Attitude Regarding Open Access Outlets

17). The following are statements regarding various aspects relating to repositories and Open Access Journals. Please indicate whether you Strongly Agree= 5; Agree=4; =Somewhat Agree 3; Disagree=2 or Strongly Disagree=1 on each of the aspect.

Open Access Aspect	**Strongly Agree (5)**	**Agree (4)**	**Somewhat Agree (3)**	**Disagree (2)**	**Strongly Disagree (1)**
Drafting repository policies is easy					
Creation of metadata is not necessary					
Open Standards should be used in archiving digital objects					
Materials deposited in the repository can be downloaded, printed and used without any barriers					
The quality of Open Access Journals is not as good as that of print journals					
Contents deposited in an Institutional Repository can be accessed by anybody without access restrictions					
Repository content Must be peer reviewed					

Section E: Promotion of OA outlets

16. Based on your knowledge of Open Access Journals and Institutional Repositories, what would you suggest in order to promote their adoption and use of in dissemination of research findings in University Libraries?----------

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APPENDIX V: WORK PLAN

No.	Activity	Period	Time Frame
1	Proposal Development	Feb 2011- May 2011	6 Months
2	Proposal Defense- Departmental Level	April 2011	1 Month
3	Corrections / Submission of Proposal to Graduate School	May 2011-Sept 2011	5 Months
4	Pilot study / Data Collection	Nov 2011 - March 2012	4 Months
5	Data Analysis: Chapters 4 & 5	May 2012 – Dec 2012	8 Months
6	Submission of Complete Draft to supervisors (1^{st} draft thesis)	Jan 2013	1 Month
7	Submission of 2^{nd}& 3^{rd} drafts to supervisors	March – May 2013	3 Months
8.	Notice of Submission	July-Sept 2013	2 Months
9.	Submission of Thesis for Examination	Nov-Jan 2014	3Months
10.	Defense – School	March 2014	1 Month
11.	Corrections after Defense	March-July 2014	5 Moths
12.	Submission of Final Thesis	August 2014	1 Month

APPENDIX VI: BUDGET

No.	Activity	Cost in Kshs.
1.	Printing at kshs. 20 per page- proposal, questionnaires	40,000
2.	Typing at kshs.20 per page	20,000
3.	Editing- 10 times x5000	50,000
4.	Binding x 10 copies at 1,000	10,000
5.	Data Collection- 10 days Mileage 10 Night outs x 3000 per night 20 days Lunch Allowance x 500	 50,000 30,000 10,000
6.	Data Analysis	30,000
7.	Stationary	10,000
8.	Equipment- computer, printer	80,000
9.	Piloting	20,000
10.	Miscellaneous	50,000
	Total Cost	**420,000**

Appendix VII: Academic and Library Staff Designation, Target Population and Sample Size per Strata

Library Staff			**Academic Staff**		
Designation	**Target Population**	**Sample Size**	**Designation**	**Target Population**	**Sample Size**
University Librarian	19	7	Professor	300	8
Deputy University Librarian	6	3	Associate Professor	450	12
Senior Librarian	50	20	Senior Lecturer	1800	45
Librarian	13	5	Lecturer	6600	168
Senior Assistant Librarian	50	20	Assistant Lecturer	3150	80
Assistant Librarian	63	24	Tutorial Fellow	1800	45
Senior Library Assistant	175	70	Graduate Assistant	900	23
Library Assistant	249	99			
TOTAL	**625**	**248**		**15,000**	**381**

APPENDIX VIII: Library Staff Responses on Challenges in Creation of IRs and Reasons for Lack of IRs in some University Libraries

Library Staff Responses on Challenges in Creation of IRs

Challenge	Freq	%
Lack of ICT Skills	18	19.6
Lack of implementation of Policies	15	16.4
Cost of Infrastructures & Resources	14	15.2
Uploading Copyrighted Materials	7	7.6
Unwillingness to Learn	7	7.6
Staff Establishment	6	6.5
Software Choice, Installation & Uploading	6	6.5
Difficulties Obtaining Content	6	6.5
Lack of Awareness	5	5.4
Bureaucracy from the institution	5	5.4
Lack of Involvement of all library staff	3	3.3
Total	**92**	**100**

Library Staff Responses on the Reasons for Lack of IRs their University Libraries

Reasons for Lack of Repository	Freq	%
Lack of Finances/Cost	18	21.18
Management Issues	18	21.18
Policy Implementation Issues	17	20.00
Inadequate ICT Skills	11	12.94
Inadequate Infrastructure & Facilities for Establishment of IRs	9	10.59
Lack of Qualified and Adequate Staff	6	7.06
Library staff Lack of Awareness	3	3.53
Total	**85**	**100**

APPENDIX IX: Library Staff Awareness of Outlets for Providing OA and Recommendations for the improvement of OA Outlets

Library Staff Awareness of Outlets for Providing OA

Outlet for Providing OA	Freq	%
Digitize Documents	3	5.5
e-books	4	7.3
Internet	25	45.5
IR/Green OA	19	34.5
Journals	2	3.6
OAJ	2	3.6
Total	**55**	**100**

****Only 38.1% of the librarians were actually aware of the vehicles for provision of OAJs i.e. those who stated IR/ Green OA (34.5%) and OAJs (3.6%)***

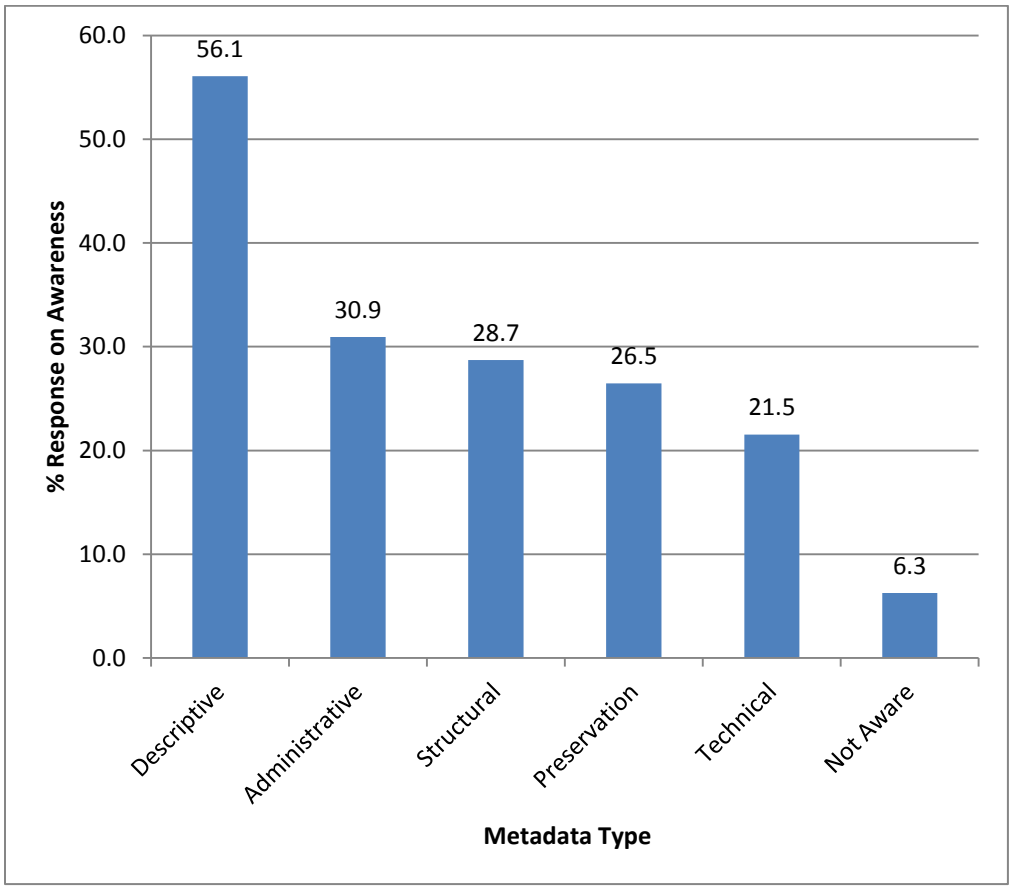
Suggestions for the Promotion of OA

Suggestion	Frequency	Percent
Provide training, skills	39	27.1
Create awareness and Market OA Outlets	38	26.4
Institutions to Establish Open Access Outlets	25	17.4
Be made Accessible	23	16.0
Create IR Policy	10	6.9
Adequate Funding	5	3.5
Support from Management	4	2.8
Total	**144**	**100**

APPENDIX X: Library Staff Awareness of Databases of OAJs

Name of University	Yes		No		Total	
	Freq	%	Freq	%	Freq	%
ANU	13	100.0	0	.0	13	100.0
BARATON	8	100.0	0	.0	8	100.0
CUEA	9	63.6	5	36.4	14	100.0
DAYSTAR	11	100.0	0	.0	11	100.0
EGERTON	11	90.0	1	10.0	12	100.0
JKUAT	16	80.8	4	19.2	20	100.0
KABARAK	6	75.0	2	25.0	8	100.0
KEMU	6	64.3	4	35.7	10	100.0
KU	21	100.0	0	.0	21	100.0
MASENO	13	91.7	1	8.3	14	100.0
MMUST	10	100.0	0	.0	10	100.0
MKU	8	100.0	0	.0	8	100.0
MOI	14	77.8	4	22.2	18	100.0
PACU	6	100.0	0	.0	6	100.0
St. PAULS	6	100.0	0	.0	6	100.0
STRATHMORE	4	60.0	2	40.0	6	100.0
UoN	27	97.4	1	2.6	28	100.0
USIU	9	91.7	1	8.3	10	100.0
Total	**198**	**88.8**	**25**	**11.2**	**223**	**100.0**

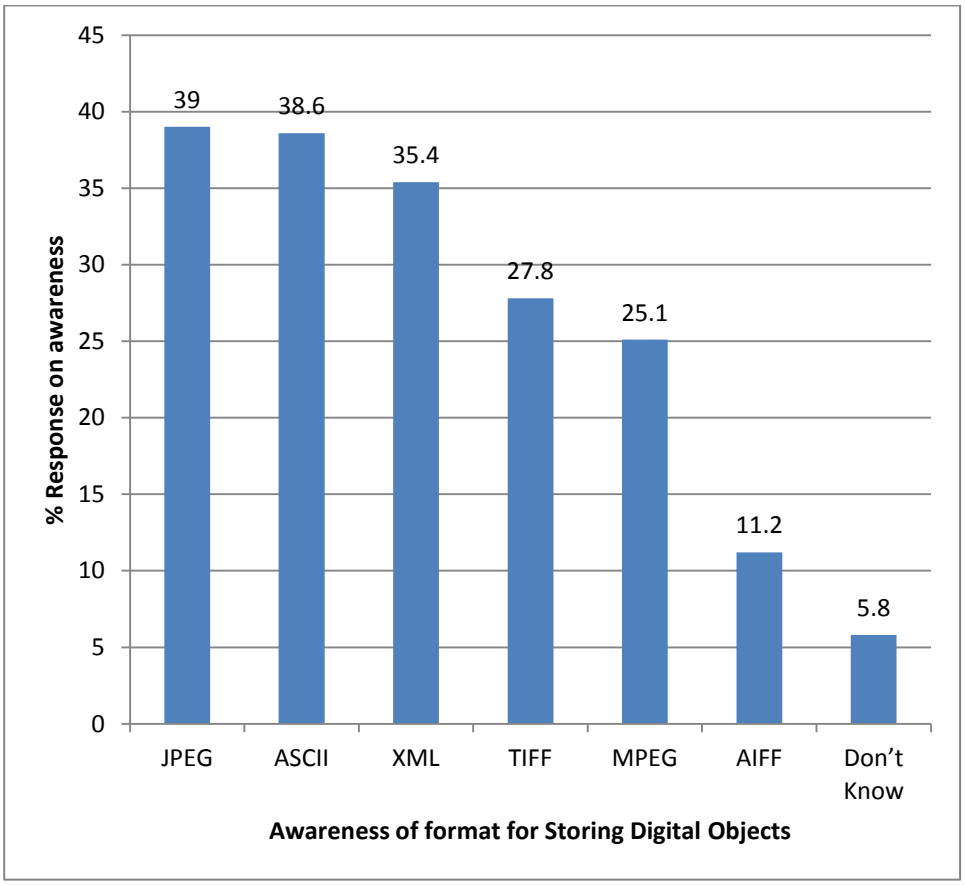
APPENDIX XI: Library Staff Awareness of the Content of Metadata Type



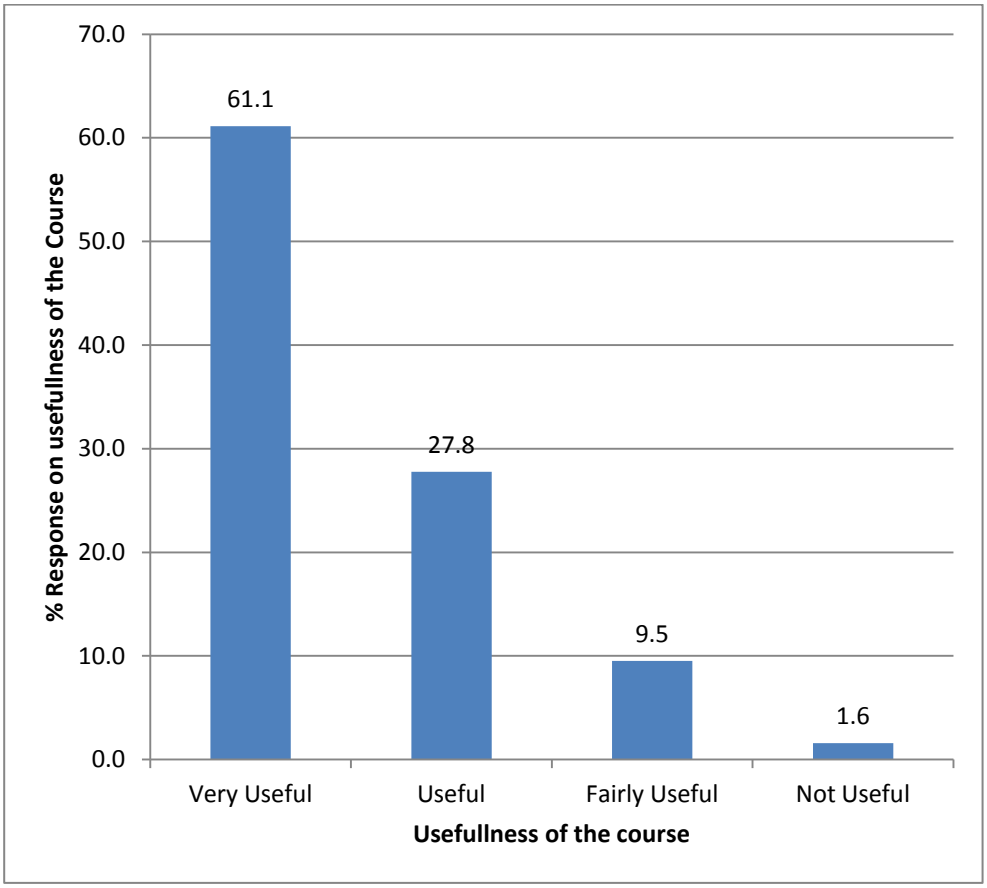
* ***With the exception of descriptive metadata at 56.1 %, an awareness of content for other metadata types was low at between 30.9 % and 21.5 % among the librarians.***

APPENDIX XII: Library Staff Awareness of File Format and Formats for storing Digital Content

Staff Designation	Yes		No		Total	
	Freq	%	Freq	%	Freq	%
University Librarian	6	85.7	1	14.3	7	100
Deputy Librarian	2	66.7	1	33.3	3	100
Senior Librarian	13	72.2	5	27.8	18	100
Librarian	4	80.0	1	20.0	5	100
Senior Assistant Librarian	16	94.1	1	5.9	17	100
Assistant Librarian	20	87.0	3	13.0	23	100
Senior Library Assistant	43	70.5	18	29.5	61	100
Library Assistant	56	62.9	33	37.1	89	100
Total	**160**	**71.7**	**63**	**28.3**	**223**	**100**



APPENDIX XIII: Library Staff Responses on Usefulness of IR course Training



**98.3 % found the training useful while a paltry 1.6 did not find the course useful at all*

Appendix XIV: Library Staff Training on Institutional Repository Software

	Training on IR Software					
	Yes		No		Total	
Designation	**Freq**	**%**	**Freq**	**%**	**Freq**	**%**
University Librarian	5	71.4	2	28.6	7	100.0
Deputy Librarian	2	66.7	1	33.3	3	100.0
Senior Librarian	12	66.7	6	33.3	18	100.0
Librarian	3	60.0	2	40.0	5	100.0
Senior Assistant Librarian	11	64.7	6	35.3	17	100.0
Assistant Librarian	15	65.2	8	34.8	23	100.0
Senior Library Assistant	22	36.1	39	63.9	61	100.0
Library Assistant	33	37.1	56	62.9	89	100.0
Total	**103**	**46.2**	**120**	**53.8**	**223**	**100.0**

Appendix XV: Library Staff Attitude on Various Aspects of Open Access Outlets

Aspects of OA Outlets	Strongly Disagree (1)		Disagree (2)		Somewhat Agree (3)		Agree (4)		Strongly Agree (5)		Total		Mean
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	
Drafting IR Policy is Difficult	31	15.1	81	39.5	17	8.3	56	27.3	20	9.8	205	100	2.8
Creation of Metadata not necessary	60	29.7	86	42.6	31	15.3	15	7.4	10	5	202	100	2.2
Open Standards should be used in Archiving	13	6.5	20	10.1	18	9	82	41.2	66	33.2	199	100	3.8
Materials Deposited in the IR can be Downloaded	33	16	52	25.2	7	3.4	44	21.4	70	34	206	100	3.3
Quality of Open Access Journals is not good	71	34.5	88	42.7	14	6.8	20	9.7	13	6.3	206	100	2.1
Contents Deposited in an IR can be accessed without restrictions	53	25.9	72	35.1	8	3.9	30	14.6	42	20.5	205	100	2.7
IR content must Peer Reviewed	18	8.9	16	7.9	15	7.4	69	34	85	41.9	203	100	3.9

Appendix XVI: Research Authorization

REPUBLIC OF KENYA

NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telegrams: "SCIENCETECH", Nairobi
Telephone: 254-020-241349, 2213102
254-020-310571, 2213123.
Fax: 254-020-2213215, 318245, 318249
When replying please quote

P.O. Box 30623-00100
NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref: NCST/RRI/12/1/SS-011/1564/4

Date: 21st November, 2011

Caroline Muthoni Mutwiri
Kenyatta University
P. O. Box 43844
NAIROBI

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "***Challenges facing scholars & librarians in adopting open access model for disseminating research findings in selected universities in Kenya***" I am pleased to inform you that you have been authorized to undertake research **in Kenyan Public & Private Universities in Nairobi & Rift Valley Provinces in Kenya** for a period ending ***31st March 2012.***

You are advised to report to **the Vice Chancellors in the selected Kenyan public & private universities in Rift Valley & Nairobi Provinces** before embarking on the research project.

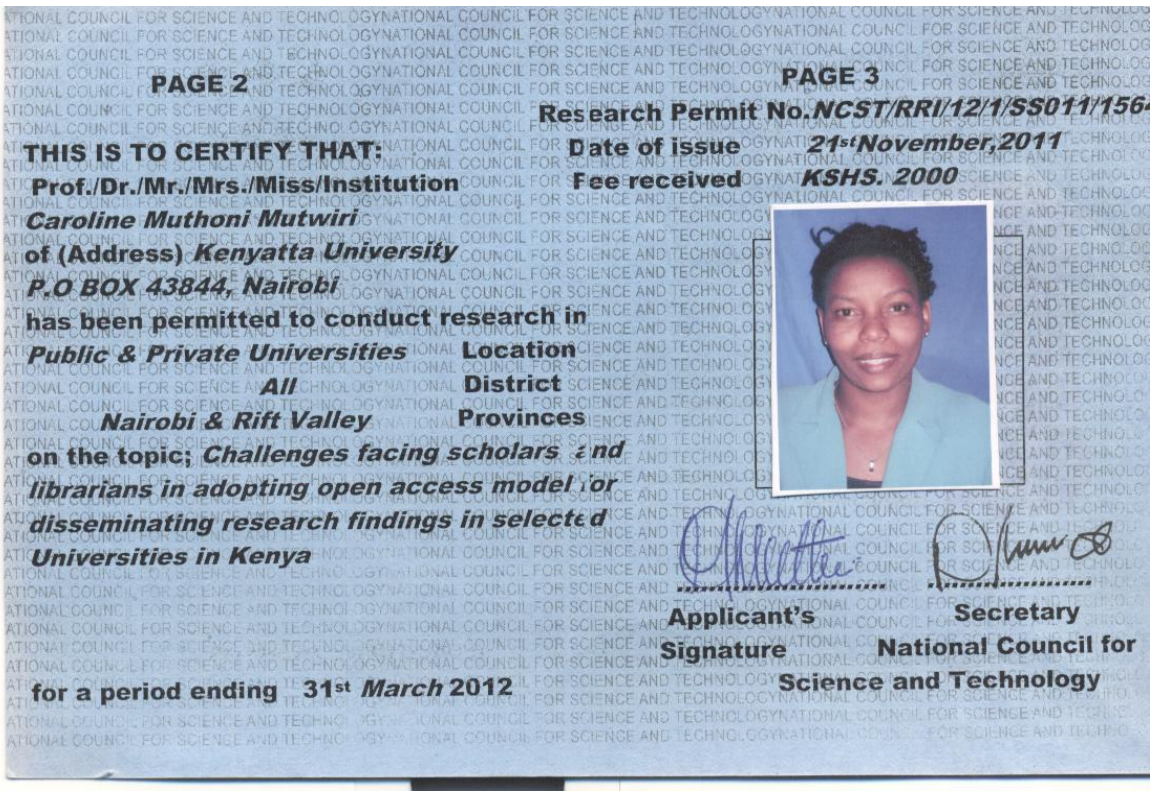
On completion of the research, you are expected to submit **one hard copy and one soft copy** of the research report/thesis to our office.

P. N. NYAKUNDI
FOR: SECRETARY/CEO

Copy to:

The Vice Chancellors
Selected Public Universities in Kenya
Selected Private Universities in Kenya

Appendix XVII: Research Permit



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THIS IS TO CERTIFY THAT:

Prof./Dr./Mr./Mrs./Miss/Institution *Caroline Muthoni Mutwiri*

of (Address) *Kenyatta University P.O BOX 43844, Nairobi*

has been permitted to conduct research in *Public & Private Universities*

Location *All*

District *Nairobi & Rift Valley*

Provinces

on the topic; *Challenges facing scholars and librarians in adopting open access model for disseminating research findings in selected Universities in Kenya*

for a period ending *31st March* 2012

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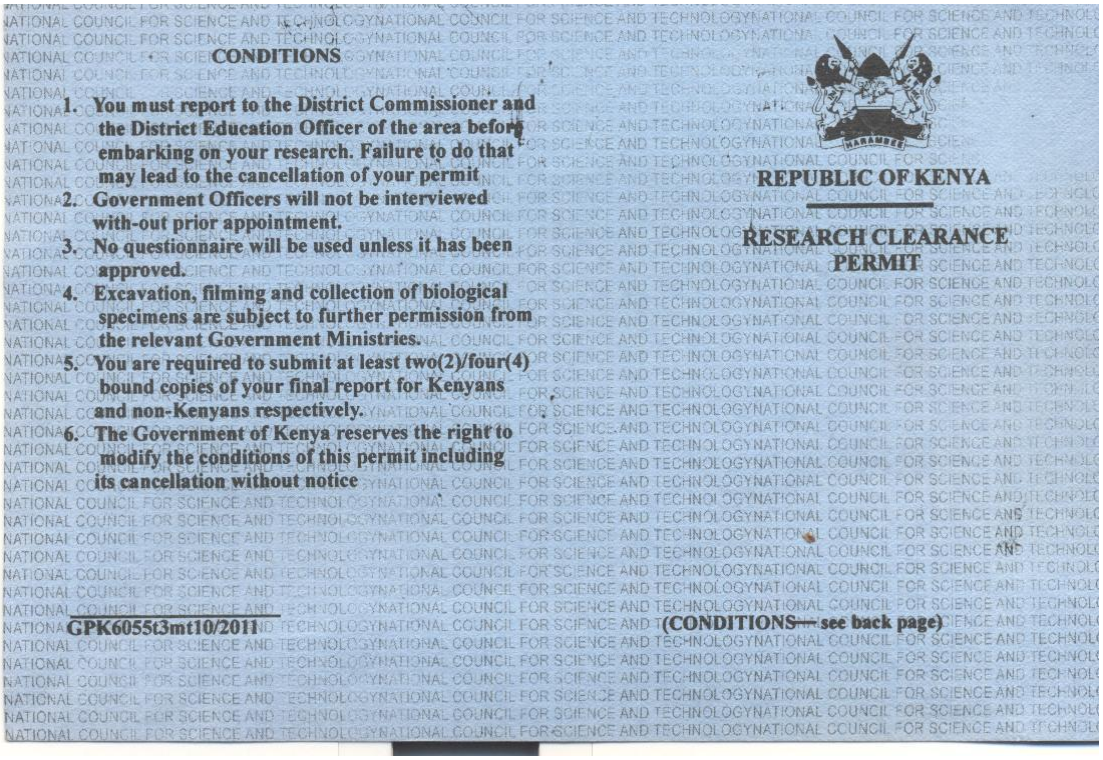
Research Permit No. *NCST/RRI/12/1/SS011/156*

Date of issue *21st November,2011*

Fee received *KSHS. 2000*

Applicant's Signature

Secretary National Council for Science and Technology



CONDITIONS

1. **You must report to the District Commissioner and the District Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit**
2. **Government Officers will not be interviewed with-out prior appointment.**
3. **No questionnaire will be used unless it has been approved.**
4. **Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.**
5. **You are required to submit at least two(2)/four(4) bound copies of your final report for Kenyans and non-Kenyans respectively.**
6. **The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice**

REPUBLIC OF KENYA

RESEARCH CLEARANCE PERMIT

GPK6055t3mt10/2011

(CONDITIONS— see back page)