

**THE UNIVERSITY OF ZAMBIA**  
**SCHOOL OF EDUCATION**  
**DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE**

**BARRIERS TO OPEN ACCESS PUBLISHING AT THE UNIVERSITY OF ZAMBIA**

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## **ABSTRACT**

There is currently a significant amount of locally relevant research conducted at The University of Zambia, The University of Zambia has a total of six official journals and three associated with postgraduate students however, most of the research output is published in print-based media, making it difficult for the output to be easily available to a much wider audience. Open access publishing provides a potential solution for increasing the visibility of such research output. The University of Zambia has six local publication venues and only two of the six are found online which is on the directory of open access journals. There are barriers as to why this is so and among them are legal framework, Cost, policies and infrastructure.

## **CHAPTER ONE**

### **INTRODUCTION**

Over the years, electronic publishing has significantly revolutionized the mode of access and use of information in research at universities since books and journals are now being published on the Internet and are referred to as e-books and e-journals (Ani, Ngulube, and Onyancha, 2015). One of the most important benefits of Electronic resources provides efficient access to research information beyond institutional boundaries. Another benefit of electronic resources is increased efficiency in the research process at universities. This is because with electronic resources, access to information is faster, which invariably promotes efficiency in the research process and definitely lead to an increase in research productivity (Ng Tye and Chau, 1995).

#### **1.1 BACKGROUND OF THE UNIVERSITY OF ZAMBIA**

The University of Zambia is a public university located in Lusaka, Zambia. It is the largest learning institution. The University of Zambia was established in 1965. Open access is online research output that are free from all restrictions on access and free of many restrictions on use. Open access can be applied to all forms of published research output, including peer-reviewed and non peer-reviewed academic journal articles, conference papers, theses, book chapters and monographs. Despite the provision of open access, there is a problem with the number of published work online at the University of Zambia.

#### **1.2 STATEMENT OF THE PROBLEM**

There is currently a significant amount of locally relevant research conducted at The University of Zambia, currently The University of Zambia has a total of seven official journals and three associated with postgraduate students however, most of the research output is published in print-based media, making it difficult for the output to be easily available to a much wider audience. Open access publishing provides a potential solution for increasing the visibility of such research output, however, while there have been efforts made to advocate for open access publishing, the uptake has been noticeably low at The University of Zambia. This study aims to uncover potential underlying barriers associated with open access publishing.

## **1.3 RESEARCH OBJECTIVES**

### **1.3.1 GENERAL OBJECTIVE**

Identify the barriers associated with open access publishing.

### **1.3.2 SPECIFIC OBJECTIVES**

- To determine how much of locally generally scholarly output is visible on open access platforms.
- To identify local publication venues associated with The University of Zambia.
- To identify the barriers associated with open access publishing.

### **1.3.3 RESEARCH QUESTIONS**

- What proportion of locally generated research output is available on online open access platforms?
- What are the barriers associated with open access publishing?

## **1.4 SIGNIFICANCE OF THE STUDY**

This research is important because its findings will enable the university management and research staff to have more information about open access publishing. Most importantly it will help them know the barriers to open access publishing. Open access publishing platforms benefit Research and publication; through open access researchers have wider visibility and usage of their research findings. They have a significantly larger and more diverse audience. Increased exposure to research also increases citation rate. Open Access provides an avenue to connect with a global society more easily and researchers can publish without printing costs. Open Access provides free articles for teaching and learning to teaching staff and students by putting rich and poor on an equal footing. It also benefits authors, open access gives authors a worldwide audience larger than that of any subscription based journal, no matter how prestigious or popular, and demonstrably increases the visibility and impact of their work (Suber, 2010).

Additionally, open access benefits the readers around the globe that can have barrier free access to the latest literature and research findings. While Journals and publishers make their articles more visible, discoverable, retrievable, and useful. If a journal is open access, then it can use this

superior visibility to attract submissions and advertising, not to mention readers and citations. Furthermore, open access gives citizens access to peer-reviewed research, which is unavailable in public libraries, and gives them access to the research for which they pay taxes. It accelerates not only research but the translation of research into new medicines, useful technologies, solved problems, and informed decisions that benefit everyone (Suber, 2010). Universities benefit from their researchers' increased impact and increase their visibility. Increases impact of local research, providing new contacts and research partnerships for authors.

## **1.5 ETHICS**

Ethics are the norms or standards for conduct that distinguish between acceptable and unacceptable behaviors. Research produces knowledge and certainty that goes beyond established facts. However, research is a process involving human subjects or people. This involvement creates complicated and extraordinary issues that are ethical, legal, political and social. Research ethics applies the fundamental of ethical principles to a variety of topics involving scientific research. To peruse knowledge and truth which is the primary goal of research. This research will adhere to all the research ethics or research standards. In this research the respondents will be respected, the research consent process will ensure autonomy for individuals (informed consent, confidentiality of data). Beneficence will be present, this is the intention to do no harm, to maximize possible benefits and minimize possible risks to people involved in the research and justice/fairness in the distribution of research inclusion and exclusion.

## **1.5 DEFINITION OF KEY TERMS**

An electronic journal is a periodical publication which is published in electronic format, usually on the Internet (Tenopir et al., 2000). In this proposed research, the term e-journal is used to mean journals that published online or on the internet.

An open access publication is a publication that provides immediately free online access to all users worldwide. There are many web sites (directories) which list open access journal collections and individual journals. Some of these directories like Biomed Central and Public Library of Science have very strict peer review processes.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 OVERVIEW**

The purpose of this chapter was to review relevant literature on the barriers of open access publishing at the University of Zambia and the feasibility of using open access publishing platforms to increase the visibility of local relevant research output. This involved reviewing various literatures written on the research topic with the aim of finding out existing literature on the topic. The reviewing of the literature was done in order to avoid researching on topics that had already been exhaust fully researched on. Furthermore, reviewing of the literature aided the research in gathering new information on the topic. The literature reviewed was searched at the University of Zambia Library as well as on Google search engine and was guided by the themes drawn from the specific objectives which include barriers to open access publishing and the feasibility of using open access publishing platforms to increase online visibility of University of Zambia"s research outputs.

#### **2.1. Open access publishing**

Suber, P. (2010) stated that Open Access Publishing (OAP) has been emerging as a global movement that drives the renewed emphasis on open science and the global request for access to knowledge. According to Suber, Open access publishing or open access to scholarly work endorses the goal of allowing information to flow more freely among researchers and the public at large as a reaction to perceived pitfalls in the present system of circulation of academic knowledge and the dematerialization of scholarly publishing after the advent of electronic publishing and Internet distribution. Suber P. also noted that open access OA Literature is not only free of charge to everyone with an internet connection, but free of most copyright and licensing restrictions. Suber further explained that OA literature is barrier-free literature produced by removing the price barriers and permission. Barriers that block access and limit usage of most conventionally published literature, whether in print or online". Other authors have stressed that the extent of the OAP notion should be „very wide indeed" and that „whenever possible neither use, nor the ability to participate in the fine-tuning of the system, should be restricted to professional scholars". This notion goes hand in hand with the idea of



„democratizing innovation“, initially developed in software communities, meaning a world „of potential colleagues rather than a universe of passive consumers“.

Two main routes exist for open access to scientific peer-reviewed publications:

- Open Access publishing (also called “Gold” Open Access) means that an article is immediately provided in Open Access mode by the scientific publisher. The associated costs are shifted away from readers, and instead charged to (for example) the university or research institute to which the researcher is affiliated, or to the funding institutions for supporting the research.
- „Green“ Open Access refers to publications which are placed in institutional or subject repositories, often after a publisher imposed embargo period. Publishers often impose copyright and re-use restrictions on such publications • „Gold“ Open Access refers to publications where „Article Processing Charges“ (APCs) are paid to the publisher, in return for immediate and unrestricted access to the full text to anyone in the world. From this narration by Suber (2010) it is clear that the only set of people that will greatly benefit from this open access crusade are readers. This is so because all costs associated with access to these publications are shifted away from readers to universities or research institute to which the researcher is affiliated, or to the funding institutions for supporting the research.

The Budapest Open Access Initiative (BOAI) of (2002), issued a public statement of principles relating to open access to the research literature, the aforementioned initiative was released to the public February 14, 2002. It arose from a conference convened in Budapest by the Open Society Institute on December 1–2, 2001 to promote open access at the time also known as Free Online Scholarship. On the occasion of the 10th anniversary of the initiative, it was reaffirmed in 2012 and supplemented with a set of concrete recommendations for achieving "the new goal that within the next ten years, OA will become the default method for distributing new peer-reviewed research in every field and country. The declarations that open access will become the default method for distributing or publishing new peer-reviewed research in every field and country was indeed a good thing in itself. However, this declaration lacked a proper roadmap on how this open access publishing would be achieved.

## **2.2. Barriers to Open Access Publishing**

The literature reviewed shows that one of the effects of the Internet is that the dissemination of scientific publications in a few years has migrated to electronic formats. The basic business practices between libraries and publishers for selling and buying the content, however, have not changed much. In protest against the high subscription prices of mainstream publishers, scientists have started Open Access (OA) journals and e-print repositories, which distribute scientific information freely. The reviewed literature further showed that despite widespread agreement among academics that OA would be the optimal distribution mode for publicly financed research results, such channels still constitute only a marginal phenomenon in the global scholarly communication system. The preceding text explores some of the barriers to open access publishing.

According to the literature reviewed, barriers to open access publishing have been classified into six different categories: legal framework, information technology infrastructure, business models, indexing services and standards, academic reward system, marketing and critical mass.

### **2.2.1. Legal framework**

Björk and Turk, (2000), observed that, in the case of traditional journals, typically published by commercial publishers or learned societies; the author usually grants the publisher a rather exclusive copyright, in return for the services that the publisher renders the author. It must be stressed that contrary to what proponents of OA often state, authors do not give away the product for free. Instead, they trade their papers without specific payment in exchange for the services that the publisher renders them (peer review, quality labelling, marketing, and dissemination). The fact that some publishers have charged page charges to authors in addition to charging subscribers is one indication of this. Björk and Turk also noted that the surrender of copyright is so total that, for instance in Finland, where it is rather common for a PhD thesis to consist of four or five previously published journal articles plus a summary, the author is usually forced to ask written permission from the publishers to publish copies of his own papers as part of his thesis (the thesis is usually published as a monograph by his own university and is mainly distributed for free). The author of this paper certainly had to do this for his own thesis. In the case of two articles it was even difficult to find out who owned the copyright at the time of printing of the thesis, since their publishers had been bought up in the meantime.

Björk and Turk further stressed that many copyright forms grant the author the right to limited distribution of copies to colleagues. The duo further noted that the emergence of the Internet has brought into light a particular problem, concerning the non-commercial distribution by posting copies on the Web. In many of the copyright forms which publishers ask authors to sign, this area is not properly addressed and constitutes a grey zone. The gap between the above study and this study is that the above study does not categorically site copyright as a barrier to open access publishing. This study sites copyright as a barrier to open access publishing.

Odlyzko, (1998,) observed that Open access journals, on the other hand, have, from the start, adopted a rather liberal approach reminiscent of the licensing schemes used by the open source programming community (often referred to as 'copy left'). As a rule the author retains the copyright to the work. What the open access journals typically are interested in is that the paper, if made available elsewhere in the exact format of the journal, is attributed to primary publication in the journal, and also that no one (except the author) can resell the content. In conclusion, the copyright issue does not constitute an obstacle for the proliferation of open access journals. Currently used copyright agreements for OA journals are quite satisfactory from both the author's and the journal's viewpoint. With due respect, the author of the above study did to a large extent ignore the fact that once work is published online and made available to the public, it is at same time made available for pirates to make duplicates for monetary gains. This study therefore critically considers all forms of vulnerability that work published in an open access platform suffers.

### **2.2.2. Information Technology Infrastructure**

According to the literature reviewed, the information technology infrastructure of electronic peer-reviewed journals can include a wide spectrum of different features such as the following;

- Storage mechanism for the papers and the metadata (static Web pages vs. database)
- Format of the papers (HTML, PDF, XML etc.)
- Treatment of graphics and hypermedia content
- Management of drafts and the review process
- Indexing and linking to external publications

- Alerting and personalisation services for readers
- Hyperlinked discussion threads
- Statistics on readings, citations etc., for authors Security back up, mirror sites, etc.

Kvaendrup, (2003) observed that most open access journals to date have been individual efforts created by single academics and groups of academics, often managing the journals on a part-time basis. Hence, the information technology infrastructure of these journals is quite varied, ranging from rather rudimentary, static HTML-versions to quite sophisticated database driven systems, depending on the skills and resources of the creators. Kvaendrup also noted that, these platforms have seldom been bought from outside companies or larger publishers. One of the drawbacks of these systems is that they are very vulnerable, in case the person in charge for some reason or other stops working with the journal.

The notable exceptions to this are provided by two major efforts utilising new business models for running portfolios of OA journals. The technical infrastructure of Biomed Central is on a par with the leading commercial publishers and includes coding of the papers in XML as well as workflow management of reviews. Biomed Central gets considerable economies of scale since they publish almost one hundred journals. The Public Library of Science recently launched its first journal. Both publishers plan to finance the operations through author charges, but have invested considerable sums in the developing the infrastructure.

Kvaendrup further noted that, In the longer run the publishers of individual journals would benefit a lot from pooling resources, for instance by sharing software applications, or using collaborative Web hosting. Such discussions are under way in the Nordic countries for smaller national or Nordic peer-reviewed journals. Another possibility is to use open source applications for running such journals.

### **2.2.3. Business Model**

Goode, (2003) examined that most open access journals have so far been established by individual pioneers or groups of academics. The main business model has been to minimise costs and to fund the operations as a form of open source project, where hardly any transfer of money

is involved and all costs are absorbed by the employers of the individuals participating. A recent Web survey involving the editors of fifty-five open access journals carried out by Hanken confirmed this to be the predominant business model: only approximately ten percent of the journals had explicit budgets.

Goode further noted that the business model is very vulnerable in respect of sustaining operations in the longer term and for scaling up from a few papers a year to larger publication volumes, since that might necessitate employing staff. It is also not well suited for journals where copy-editing and layout work for graphics etc., cannot be handled by the authors themselves.

Goode also noted that other possible business models, which would provide more funding for professional-level operations (such as the employment of staff) include advertisement, subsidies from learned societies or research funding agencies, or author charges, in order to keep the end product freely available on the Web, rather than take recourse to subscription fees. All of these have and are being tried out, in different combinations. The most controversial is the one involving author charges (for instance used by the BioMed Central journals) since this reverses the role of a publisher from a seller of a commodity to consumers to a provider of services to authors. Getting individual researchers to pay sums in the order of 500-1500 Euro for publication might be very difficult unless a journal already is regarded as a top-level journal in its field. A way around this dilemma which is being tried out by BioMed Central is for the publisher entering into 'umbrella agreements' with universities who pay a yearly fee covering all submissions from their own faculty.

Yet another model is to publish in a hybrid way, through a mixture of subscription only and open access. Goode, also noted that each author decides whether his article will be open access, by paying an author charge. This business model is currently being pioneered by Oxford University Press who recently announced that they will start using this model for one of their most prestigious journals, Nucleic Acids Research.

Advertisement can work in some limited fields of science such as medicine, where drug companies, for instance, may have an interest. A very important group of players is the learned societies, which, historically, were the ones to start scientific journals as we know them. They

could see open access as an important service for their constituency and society in general. Unfortunately many learned societies see journal publishing as an internal profit centre generating finance for other activities or an activity, which at least should generate income enough to cover its cost. From this perspective open access through author charges would still be acceptable. A further problem, however, is that many offer journal subscriptions bundled with their membership fees and fear that going open access would threaten the income from such fees.

The business model issue is central to the further proliferation of open access journals. The currently dominating, volunteer work model does not easily scale up to large-scale and sustainable operations and the other business models need yet to demonstrate their strengths. Through co-operation or outsourcing of part of the work to commercial companies the publishers of individual journals could obtain the same economies of scale, branding etc, which large commercial publishers have today. This would however require changing the business model from the currently dominating open source model.

#### **2.2.4. Indexing Services and Standards**

Guédon, (2001) observed that one of the major drawbacks of open access journals so far has been that they rarely have been indexed in the commercial indexing services for searching quality-assured publications, which universities provide to their researchers and students. Information about the publications in the journals has instead been spread through direct e-mail marketing among select communities of academics and through being indexed by general Web search engines. Partly this has been because of a view that existing scientific indexing services belong to the old establishment and that there is no need for their intermediation. Partly editors of relatively young and experimental journals have had a hard time getting their journals included in such services.

Guédon also noted that Indexing services fulfill in this connection a dual role in helping the marketing of the journal and its content. First, they help in attracting occasional readers who may not even be aware of the journal's existence. Secondly, the fact that a journal can claim being 'indexed in' lends prestige to the journal and thus helps in attracting more and better submissions. A particularly important one is the Science Citation Index (and the accompanying Social Sciences and Arts and Humanities indexes). This service regularly monitors a selection of a few

thousand of the most important refereed journals and counts statistics of the citations in the articles that these journals publish. The more citations there are to a journal's articles in the other journals in this 'core selection', the higher is a journal's impact factor. Academic appointment and grant committees take these impact factors into consideration when ranking the output of academics and, thus, there are high rewards for publishing in such journals.

The use of SCI by university administrations as a decision support tool has become one of the strongest barriers to the success of open access journals, since it tends to strongly favour old established journals (Guédon, 2001). It is very difficult to get new journals accepted in SCI before they have established a reputation, and being outside the 'core literature' of SCI makes it very difficult to get good submissions and establish a reputation.

### **2.2.5. Academic Reward System**

Cox, (2003) examined that the behaviour of academics as they choose to which journals and conferences they submit their papers is conditioned, to a very high degree, by the academic reward system. In most universities, publishing in the leading established journals in one's field is highly rewarded. Often, the systems are quite explicit and include shortlists of journals, numerical weighting schemes etc. Cox points out that prestige counts much more than wide and rapid dissemination, and easy access. It has been pointed out that the growth in the number of journal titles and the emergence of strong commercial players in scientific journal publishing in the latter half of the 20th century was due more to a demand from authors for outlets for the papers they needed to have published in peer-reviewed serials, than for a need of readers of additional titles. The tenure systems in many countries and periodic comparisons of the

scholarly output of university departments are strong motivating forces for this demand. This system naturally puts academics (and in particular the younger ones) in a situation where primary publishing of their best work in relatively unknown open access journals is a very low priority.

A system such as this places any new journals, whether subscription-based or open access, in a disadvantaged position. Only if the journal manages to get a sufficient influx of high-quality papers does it stand a chance of entering into the group of journals with high prestige, and even then after a delay of several years.

It is probably idealistic to expect the whole academic community to change its evaluation system, to take better account of the benefits offered by open access. The experiences of the past ten years show also that it is very difficult for new OA journals to become first rank journals in their fields. An obvious shortcut is if established journals would change their business models and become open access, but despite isolated examples, this is unlikely to happen on a larger scale as long as publishing is as profitable a business as it is today.

### **2.2.6. Marketing and Critical Mass**

Gustafsson, (2002) examined that since journal publishing is dependent on getting authors to submit their best papers to the journal in question, marketing and branding are very important for long-term success. The leading journals in many disciplines are brands as strong as Coca-Cola and Mercedes-Benz for other types of products. In addition to individual journals a publisher can also become a brand. In this respect the leading commercial publishers, learned societies and leading universities in particular from the US and UK has an enviable position. Libraries and authors alike find it much easier to accept a new journal from a well-established publisher.

Gustafsson further noted that, most OA journals have not yet been established as brands and on the whole the marketing of such journals has been very poor, partly due to lack of resources for marketing, partly because of a lack of understanding of the need for marketing. Many editors of OA journals have idealistically believed that the merits of Open Access and spreading the word by e-mail lists etc., are enough. The recent launch of BioMed Central, which houses around a hundred OA journals, is an exception and this hub might, in the near future, become a sort of brand in itself. Even more spectacular has been the start of the Public Library of Science journal of Biology in October 2003, which managed to become headline news in many media. PLoS has, however, used millions of dollars of its initial grant funding on marketing and includes several Nobel laureates on its editorial board.

There are many ways in which newly established journals can build their prestige. First, the reputation of the editor and the constitution of the editorial board are important. Secondly, attracting enough papers from leading academics early on is important. This can again lead to a positive chain reaction of citations in other articles and journals and eventually (in the long term) inclusion in the SCI.



In the summer of 2002 researchers at Hanken identified 317 active OA-journals. In the study three different sources were used, the most important of which was the UlrichsWeb database. By comparing the number of journals with the total number of scientific peer review journals in UlrichsWeb, it was found that the share of OA-journals of the total number of journals was only 0.7 % and of electronically available titles 1.5 %. Of the new journals founded in the period 1996-99, about every tenth was, however, open access.

### **2.3. Online Visibility of UNZA Research Outputs:**

The Scholarly Communication in Africa Programme (SCAP) was a three-year initiative aimed at increasing the publication and visibility of African research through harnessing the potential for scholarly communication in the digital age. Jointly led by the Centre for Educational Technology and the Research Office at UCT, the project engaged four African universities in action research to better understand the ecosystem of scholarly communication in Africa and address the scholarly communication needs and aspirations at the various participating institutions.

Kakana, F. and Makondo, F., (2014) observed that the desire to increase online visibility of UNZA research outputs dates back to the year 2010 when the University decided to setup an Institutional Repository (IR). An IR is an infrastructure for preservation of digital content, lowering the barrier to document distribution, creating a centralised digital showcase in which research, teaching, and scholarship can be highlighted, and facilitating wider distribution (Alhawary, Irtaimah and Hamdan *et al.* 2011). A digital repository can be described as digital collections of an organisation's research output, which may include teaching materials. Material in these collections can be in many forms: it may be published articles, pre-prints, book chapters, theses, or even audio-visual material. The materials are centrally stored, indexed, preserved and redistributed. It is also imperative that repositories are created in a way that they are open and interoperable, allowing open access<sup>1</sup> to the material. The gap between the above study and this study is that this study has gathered information which shows how many publications published by the University of Zambia are visible online.

According to Yeates (2003), the benefits of IRs are: extension of the range of knowledge sharing, and a means by which investment in information and content management systems can be influenced; and facilitating flexible ways of scholarly communication. It is argued by IRs

proponents that institutional repositories form the infrastructure for a new scholarly publishing pattern that gives publishing control into the hands of the academician instead of the publishers. Further, IRs increase visibility, prestige, and public value of contributors. Chan, (2004) also noted that IRs are well known for their function of maximising access to research results, and help to diversify scholarly materials collected and preserved by academic institutions. Some of the benefits of establishing IRs are clearly identified in the literature as including increased knowledge sharing, control over the digital assets of the university, and preservation. It is against this background that UNZA, like many academic institutions, has deployed IRs to manage and facilitate easy access to a variety of digital content of scholarly nature. Despite a number of advantages that an Institutional Repository provides to hosting institution, a good number of University of Zambia's publications are still not visible online.

Kakana, F. and Makondo, F., (2014) further stated that, in an effort to increase online visibility of UNZA research output, the University sent staff from the Centre for Information and Communication Technologies (CICT) and Library to Netherlands under the sponsorship of the Netherlands Universities Foundation for International Cooperation (NUFFIC), to undergo training in various aspects of implementing the IR at the University of Zambia.

#### **2.4. Summary**

This chapter was organized into three (3) main themes namely: Open Access Publishing, Barriers to Open Access Publishing and Online Visibility of UNZA Research Outputs.

The setting up of an IR UNZA-DSpace, The establishment and subsequent migration of the Zambia Library and Information Science Journal, which is under the armpits of the School of Education, are very good steps towards increasing online visibility of the University's research outputs. However, the University still needs to pay attention to the barriers identified in this paper.

## **CHAPTER THREE**

### **Methodology**

This chapter includes the various methods and techniques that were used to collect the data and to analyze the data. These include the research design, target population, sampling procedure, data collection, research instruments, data analysis methods, thereafter a summary of the chapter will be given.

This research used questionnaires to get information from the target population which was The university of Zambia teaching and research staff. The questionnaire used was a soft copy and was administered to the respondents through email. A random sampling was used; lecturers emails were obtained from various unza sites. Lime survey is the app that was used to administer the questionnaires; lime survey is a free and open source online statistical survey web app. As a web server-based software it enables users using a web interface to develop and publish online surveys, collect responses, create statistics, and export the resulting data to other applications. 53 questionnaires were sent through email to different lecturers from different schools at the university of Zambia, out of the 53 sent 33 were answered fully while 20 were partially answered.

#### **3.1. Publication venues**

The research found out that the University of Zambia has six local publication venues, which are African social research, Journal of science and technology, Zambia papers (monographs), Zambia law journal, Journal of humanities and Zango. To obtain this information, we visited the unza printers which is located at the University of Zambia at the school of education. Here information was obtained from the editor that six publication venues existed at the University of Zambia.

The research found out that none of the six publication venues are visible online. This was discovered by searching for them online, this was done by checking for them on the internet using directory of open access journals. Directory of open access journals is a community-curated online directory that indexes and provides access to high quality, open access, peer-reviewed journals. All DOAJ services are free of charge including being indexed in DOAJ. All data is freely available.

<b>Publication venues at the University Zambia</b>	<b>Presence(✓) or absence(×) of the publication venues on the directory of open access journals</b>
African social research	×
Journal of science and technology	×
Zambia papers (monographs)	×
Zambia law journal	×
Journal of humanities	×
Zango	×

### **3.2. Online open access publishing barriers**

The cost of open access is too high for the University of Zambia so publishers need to consider alternative arrangements. Publishing documents through open access depends upon the journal, the research field, funding levels and other important factors. However, in the majority of cases, authors do not have the funding to enable open access in this way and need a solution. Therefore, they have opted to cost effective alternative arrangement.

The University of Zambia does not have policies or a policy that ensures that researchers are trained on copyrights, publishing in journals, online visibility, new techniques of publishing and also improvements in output contents. This hinders open access publishing because knowledge about it is little if not none. Information about open access publishing can be given through author workshops to help researcher understand how to publish in journals, the ethical dimensions of publishing, and the emergence of new publishing possibilities, such as open access.

Infrastructure to enable access to research needs to be assessed because this is an important factor and is a leading barrier to open access. Internet is rarely available at the University of Zambia. Infrastructure here refers to the technology available or in place to facilitate Open Access Publication by researchers. These include electronic media printers, fully serviced internet availability at high speed and also software to enable the converting of documents easily.

Infrastructure is a barrier to open access at the University of Zambia because the university does not have the appropriate infrastructure for open access publishing.

### **3.2.1. Context selection, participant's selection and Sampling**

Target population refers to the entire group of individuals or objects to which researchers are interested in generalizing the conclusions. The study population of this research was the University of Zambia academic teaching and research staff. Additionally, this target population was the best for this research because they were conversant with the subject matter because they are involved/engaged in teaching and research.

The sample size for this research was 33 lecturers and research staff and the sampling method used was a random sampling. Random sampling is a part of the sampling technique in which each sample has an equal probability of being chosen. This was used as it is one of the simplest forms of collecting data from the total population. Additionally, it was used as it eliminates bias by giving all individuals an equal chance to be chosen. ( Sang Gyu and Jong Hae Kim 2017).

The reason for choosing 50 lecturers as our sampling size was because according to the Central Limit Theorem a sample equal or above to 30 respondents was able to provide a normal distribution of the characteristics of the population under consideration hence a sample size of 50 respondent's was adequate to make generalization on the target population.

### **3.2.2. Survey design**

The research design for this research was a case study explained as an in-depth study of a particular situation. A case study was used because it helped us explore and investigate this temporally contemporary real-life phenomenon through detailed contextual analysis of a limited number of events or conditions, and their relationships. It was chosen because we wanted to understand the real phenomenon relating to the barriers associated with open access publishing at the University of Zambia.

Furthermore, a quantitative approach to research was used in this research. The quantitative approach to research facilitated the collection of quantitative data. This type of data was used to construct graphs and tables of raw data. Quantitative approach and data alone helped us achieve

high level of reliability of gathered data due to controlled observations and other form of research manipulations.

### **3.2.3. Procedure**

The research collected Primary data. Primary data contained first-hand information obtained by the researcher from respondents through a questionnaire which was sent to the emails of the respondents. An application called lime survey was used to create the questionnaires and send them using a link to the respondents. Using this technique of data collection each person chosen was given the same questionnaire type and required to answer the questions by choosing their own options or giving their own answers. Therefore, questionnaires were used to obtain the data that was needed.

Questionnaires were suitable as the data collection technique for this research as they facilitate the collection of data through the use of both open ended and closed ended questions correspondingly. The reason why closed ended questions were used is because closed ended questions helped us to obtain fairly straight forward data thereby making analysis of the responses easy whereas open ended questions permitted the participants to answer freely and express their opinion in their own words.

Questionnaire`s helped us to collect large amounts of data from a large number of people within the shortest possible time and it was a cheaper way of collecting data. Sending the questionnaires via email was very helpful as it saved as time and money, this is so because we did not have to print out the questionnaires neither did we have to give them to the lecturers hand to hand.

### **3.2.4. Data analysis**

Data Analysis was the strategy that was used by the researcher to process and analyze the data that will be collected from respondents. This research used quantitative data collection techniques. Quantitative data was analyzed by the use of Statistical Package for Social Sciences (SPSS). SPSS was used to analyze Quantitative data because it is a comprehensive and flexible statistical analysis and data management software program that allows for simple creation of frequency tables, descriptive statistics, exploratory statistics and cross-tabulation tables. SPSS was also a user friendly Software and was capable of automatically converting data into

percentages and other Statistical interpretations and easier to analyze the different variables involved and assess their effect on each other.

## CHAPTER FOUR

### RESULTS

In establishing the barriers to open access publishing, the respondents (University of Zambia teaching staff) were asked a number of questions and their responses are shown in the tables and charts below:

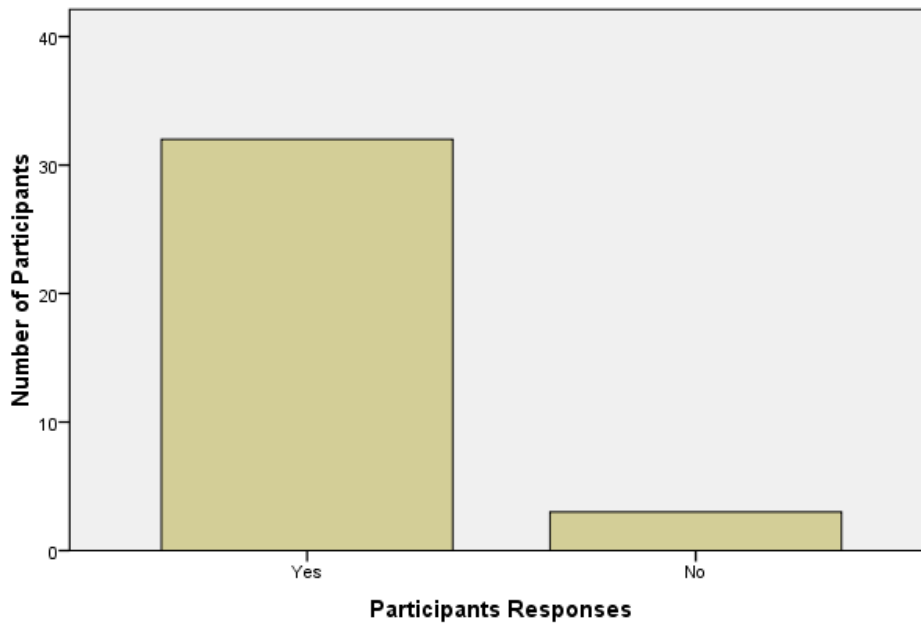
#### 4. Findings and Discussions

In establishing the barriers to open access publishing, the respondents (University of Zambia teaching staff) were asked a number of questions and their responses are shown in the tables and charts below:

**Do you consider yourself as an open access publishing advocate?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	32	76.2	91.4	91.4
	No	3	7.1	8.6	100.0
	Total	35	83.3	100.0	
Missing	System	7	16.7		
Total		42	100.0		

**Do you consider yourself as an open access publishing advocate?**



On advocacy for open access publishing, the research revealed that 76.2% of the respondents were advocates for open access publishing.

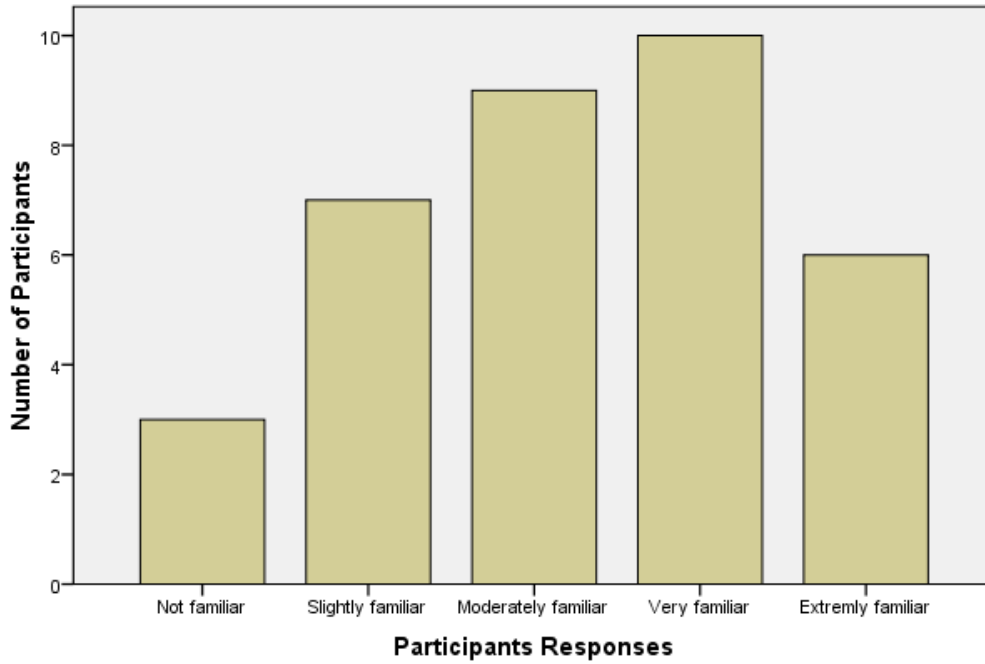
**How familiar are you with open access publishing?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not familiar	3	7.1	8.6	8.6
	Slightly familiar	7	16.7	20.0	28.6
	Moderately familiar	9	21.4	25.7	54.3
	Very familiar	10	23.8	28.6	82.9
	Extremely familiar	6	14.3	17.1	100.0
	Total	35	83.3	100.0	
Missing	System	7	16.7		
Total		42	100.0		

On familiarity with open access publishing, the researcher found out that 76.2% of the respondents were familiar with open access publishing while 7.1% were not familiar.



**How familiar are you with open access publishing?**



**Which of the following local publishing venues have you published in?**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid The Zambia Journal of Education	3	7.1	8.6	8.6
Zambia Journal od Library and Information Science	5	11.9	14.3	22.9
Zambia Journal of Languages Studies	1	2.4	2.9	25.7
Journal of Law and Social Sciences	1	2.4	2.9	28.6

Journal of Agricultural and Biomedical Sciences	2	4.8	5.7	34.3
Journal of Natural and Applied Sciences	2	4.8	5.7	40.0
No answer	21	50.0	60.0	100.0
Total	35	83.3	100.0	
Missing System	7	16.7		
Total	42	100.0		

On the use of local publishing venues by the respondents, this researcher found out that only 33.4% of the respondents (lecturers) were using local publication venues to publish their research outputs.

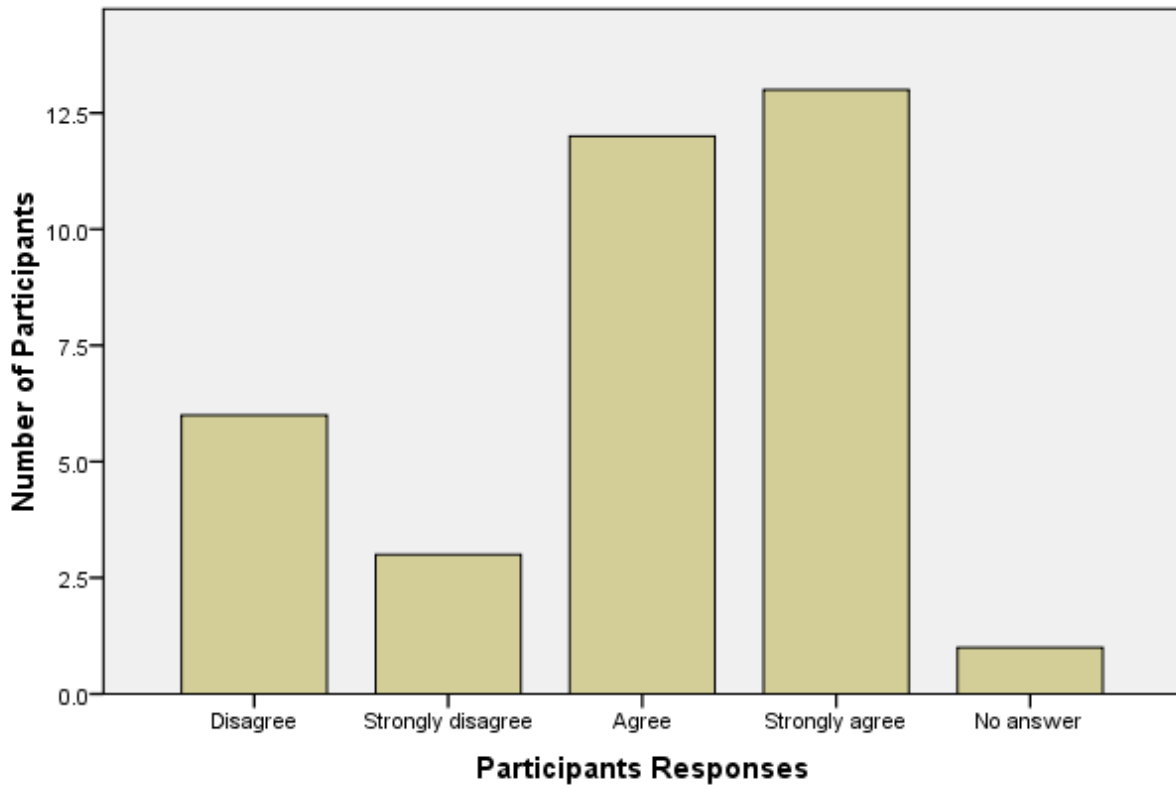
**To what extent do you agree with the following statements? (a). There is very little locally generated research output by the the University of Zambia researchers that is visible online.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	7.1	8.6	8.6
	Strongly disagree	1	2.4	2.9	11.4
	Agree	21	50.0	60.0	71.4
	Strongly agree	9	21.4	25.7	97.1
	No answer	1	2.4	2.9	100.0
	Total	35	83.3	100.0	
Missing	System	7	16.7		

To what extent do you agree with the following statements? (a). There is very little locally generated research output by the the University of Zambia researchers that is visible online.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	7.1	8.6	8.6
	Strongly disagree	1	2.4	2.9	11.4
	Agree	21	50.0	60.0	71.4
	Strongly agree	9	21.4	25.7	97.1
	No answer	1	2.4	2.9	100.0
Total		35	83.3	100.0	
Missing	System	7	16.7		
Total		42	100.0		

To what extent do you agree with the following statement? (a). Lack of enough Information and Communication Technology infrastructure at the University of Zambia is the reason why there are few locally generated research outputs that are visible online.



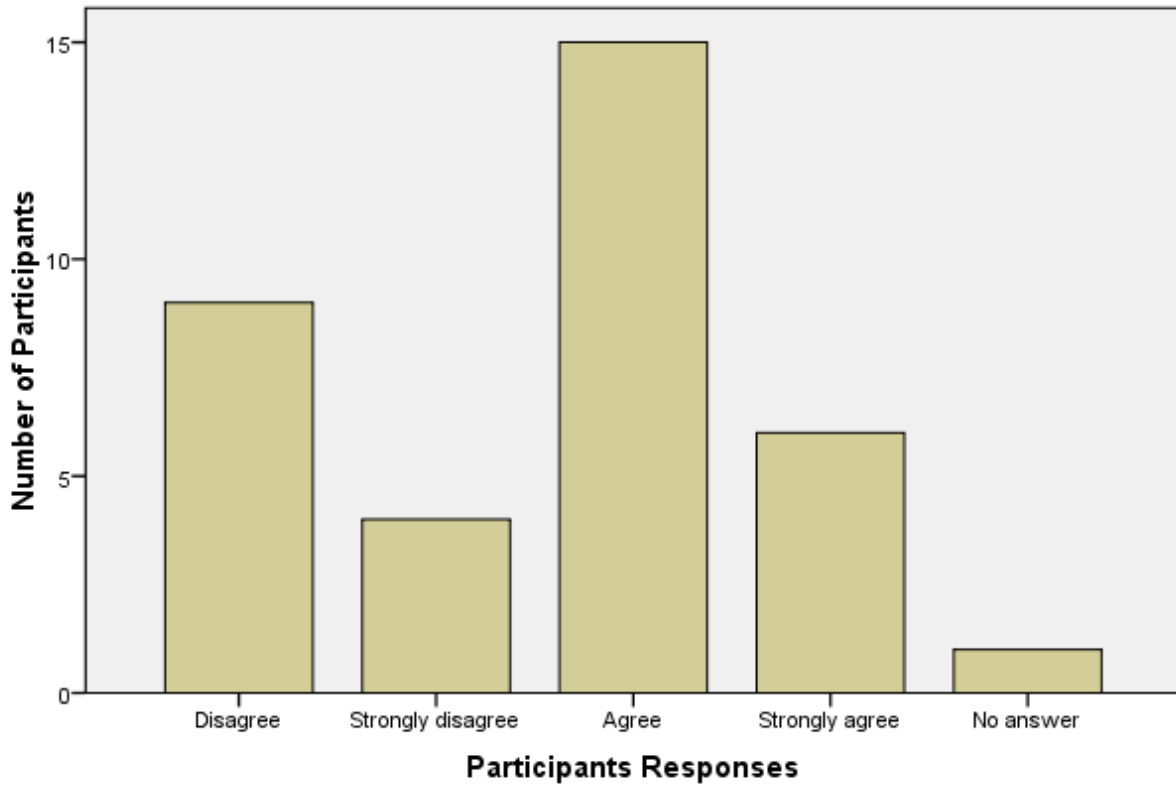
On online visibility of University of Zambia research output, it was discovered that, 71.4% of the respondents either agreed or strongly agreed with the assertion that there is very little locally

generated research output that is visible online while 9.5% of the respondents either disagreed or strongly disagreed with the above assertion.

**To what extent do you agree with the following statement? (b). Research out puts can easily be accessed when they are visible online.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	4.8	5.7	5.7
	Agree	7	16.7	20.0	25.7
	Strongly agree	26	61.9	74.3	100.0
Total		35	83.3	100.0	
Missing	System	7	16.7		
Total		42	100.0		

To what extent do you agree with the following statement? (b). Publishing in prestigious and well established journals is beneficial and highly rewarding to the researcher or article depositor than publishing on an open access platform.



This research also found that 78.4% of the respondents, either agreed or strongly agreed with the assertion that research outputs can easily be accessed when they are visible online while 4.8% strongly disagreed with the assertion.

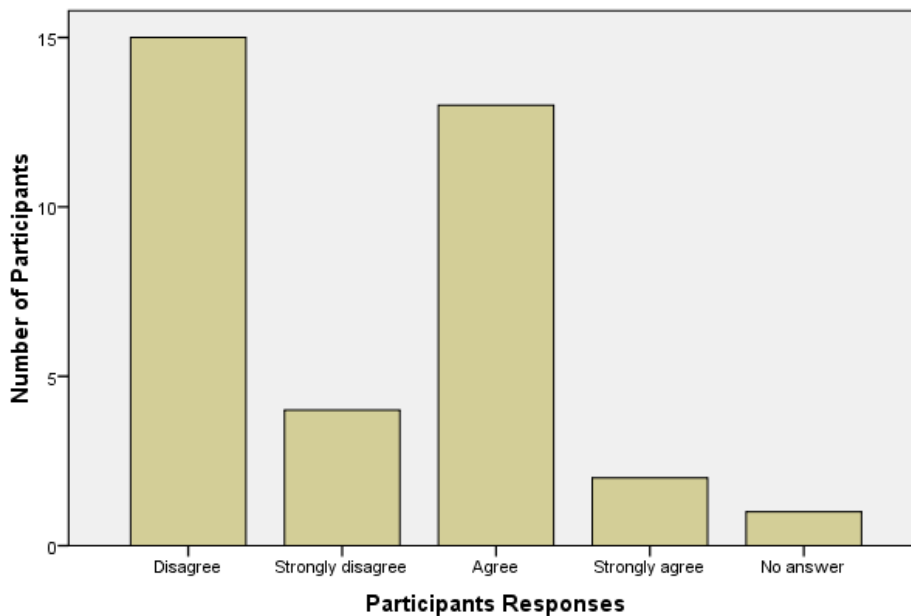
To what extent do you agree with the following statement? (c). It is easy to publish research out puts online.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	10	23.8	28.6	28.6
	Strongly disagree	5	11.9	14.3	42.9
	Agree	16	38.1	45.7	88.6
	Strongly agree	3	7.1	8.6	97.1
	No answer	1	2.4	2.9	100.0
	Total	35	83.3	100.0	
Missing	System	7	16.7		

To what extent do you agree with the following statement? (c). It is easy to publish research out puts online.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	10	23.8	28.6	28.6
	Strongly disagree	5	11.9	14.3	42.9
	Agree	16	38.1	45.7	88.6
	Strongly agree	3	7.1	8.6	97.1
	No answer	1	2.4	2.9	100.0
Total		35	83.3	100.0	
Missing	System	7	16.7		
Total		42	100.0		

To what extent do you agree with the following statement? (c). Most researchers prefer using popular and fee paying e-journals to publish their work as publishing on such platforms increases the readership of one's articles.

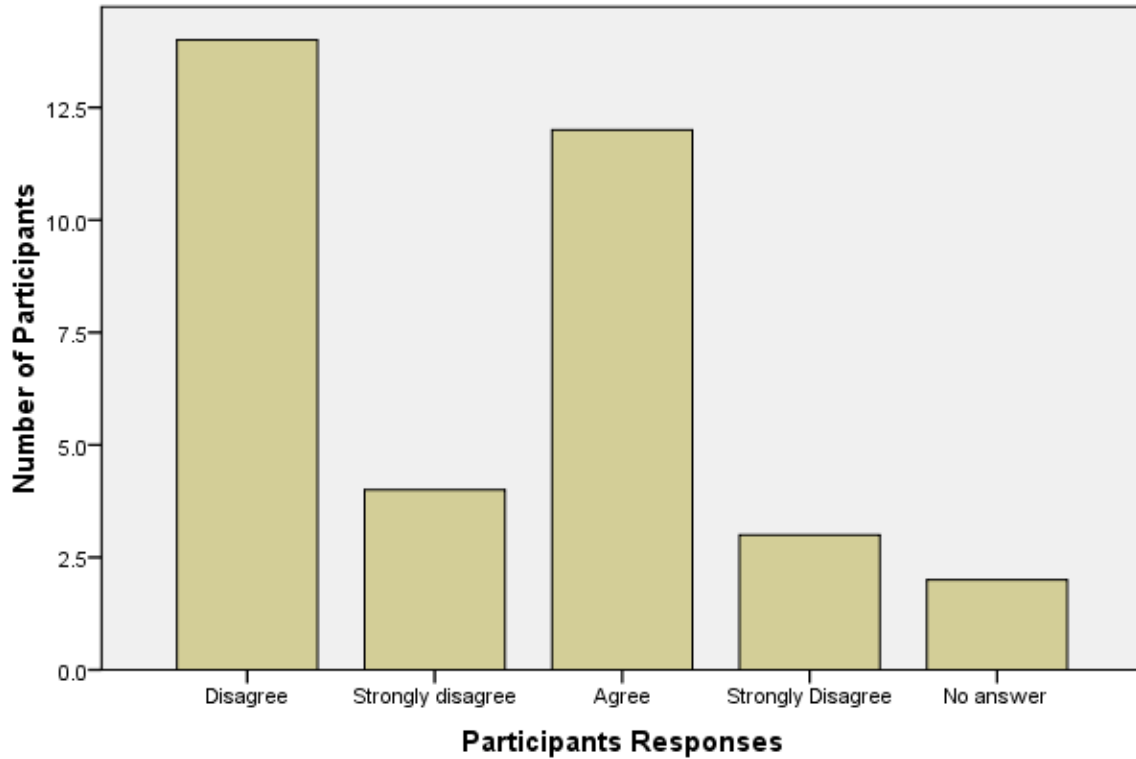


The research also found that 45.2% of the respondents either agreed or strongly agreed with the assertion that it is easy to publish research outputs online while 35.7% either disagreed or strongly disagreed with the assertion.

**To what extent do you agree with the following statement? (d). Lack of proper legal framework on issues to do with copyright is one of the reasons why most researchers opt to publish their work using commercial e-journals.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	14	33.3	40.0	40.0
	Strongly disagree	4	9.5	11.4	51.4
	Agree	12	28.6	34.3	85.7
	Strongly Disagree	3	7.1	8.6	94.3
	No answer	2	4.8	5.7	100.0
	Total	35	83.3	100.0	
Missing	System	7	16.7		
Total		42	100.0		

To what extent do you agree with the following statement? (d). Lack of proper legal framework on issues to do with copyright is one of the reasons why most researchers opt to publish their work using commercial e-journals.



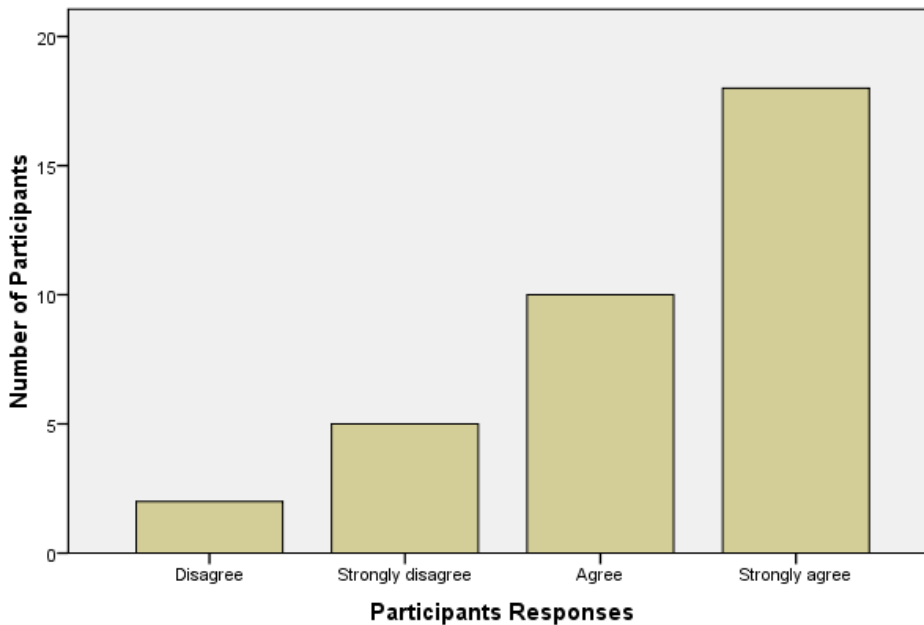
The above table reveals that 35.7% of the respondents either agreed or strongly agreed with the assertion that lack of enough Information and Communication Technology infrastructure at the University of Zambia is the reason why there are few locally generated research outputs that are visible online while 42.8% either disagreed or strongly disagreed.



**(e). As way of increasing online visibility of the University of Zambia's research out puts, the University should consider to subscribe to reputable and well established journals, and implore it's researchers to publish their articles on such platforms as well.**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	4.8	5.7	5.7
	Strongly disagree	5	11.9	14.3	20.0
	Agree	10	23.8	28.6	48.6
	Strongly agree	18	42.9	51.4	100.0
	Total	35	83.3	100.0	
Missing	System	7	16.7		
Total		42	100.0		

**(e). As way of increasing online visibility of the University of Zambia's research out puts, the University should consider to subscribe to reputable and well established journals, and implore it's researchers to publish their articles on such platforms as well.**



The researcher also found that 64.3% of the respondents supported the suggestion of increasing online visibility of university of Zambia research output by subscribing to reputable and well established journals while 16.7% either disagreed or strongly disagreed with the suggestion.

## **CHAPTER FIVE**

### **DISCUSSION**

Having collected the data from the respondents (University of Zambia teaching staff) and analyzed it, the researcher found out that a larger percentage which was 76.1% of the respondents were familiar with open access publishing and 7.1% of the respondents were not familiar with open access publishing, this entails that the majority of the University of Zambia teaching staff know about open access publishing. Additionally 90.5% of the respondents consider themselves as open access publishing advocates, this means that 90.5% of the respondents support or recommend open access publishing. Despite having large percentage of advocates, The researcher discovered that only 38% of the respondents use local publication venues. 78.6% of the respondents either agreed or strongly agreed to the assertion that there is very little locally generated research output that is visible online while 9.5% either disagreed or strongly disagreed to the mentioned assertion, this may confirm the assertion that there is little locally generated research outputs. The research also found out that 83.3% of the respondents agreed or strongly agreed to the assertion that research output can easily be accessed online while 4.8 disagreed to the assertion, this concludes that having a very little locally generated research outputs visible online, makes it difficult to access information that is in print based format.

The researcher found out that 59.5% of the respondents either agreed or disagreed to the assertion that it is easy to publish research outputs online while 26.2% either disagreed or strongly disagreed to the assertion. The research found out that 42.85 of the respondents either agreed or strongly agreed to the assertion that there is lack of enough information and communication technology infrastructure at the University of Zambia that's why there are a few locally generated outputs that are visible online while 35.7% either disagreed or strongly disagreed. 61.9% of the respondents either agreed or strongly agreed to the assertion that publishing in prestigious and well established journals is beneficial and highly rewarding to the researcher than publishing in an open access platform. Another assertion was that most researchers prefer using popular and fee paying e-journals to publish their work as publishing on such platforms increases the readership of one's articles, to which 47.6% of the respondents either agreed or strongly agreed to the assertion. The research found that lack of proper legal

framework on issues to do with copyright is one of the reasons why most researchers opt to publish their work using commercial e-journals. It was also suggested that 64.3% of the respondents supported the suggestion of increasing online visibility of University of Zambia research output by subscribing to reputable and well established journals while 16.7% either disagreed or strongly disagreed with the suggestion.

The literature reviewed, a number of factors as barriers to open access publishing, the next paragraph will reflect the discussion of the literature on each factor.

### **legal framework**

The copyright issue does not constitute an obstacle for the proliferation of open access journals. Currently used copyright agreements for OA journals are quite satisfactory from both the author's and the journal's viewpoint. With due respect, the author of the above study did to a large extent ignore the fact that once work is published online and made available to the public, it is at same time made available for pirates to make duplicates for monetary gains. This study therefore critically considers all forms of vulnerability that work published in an open access platform suffers. The gap between the above study and this study is that the above study does not categorically site copyright as a barrier to open access publishing. This study sites copyright as a barrier to open access publishing

### **Information Technology Infrastructure**

Kvaendrup, (2003) observed that most open access journals to date have been individual efforts created by single academics and groups of academics, often managing the journals on a part-time basis. Hence, the information technology infrastructure of these journals is quite varied, ranging from rather rudimentary, static HTML-versions to quite sophisticated database driven systems, depending on the skills and resources of the creators.

### **Indexing Services and Standards**

Guédon, (2001) observed that one of the major drawbacks of open access journals so far has been that they rarely have been indexed in the commercial indexing services for searching quality-assured publications, which universities provide to their researchers and students. Information about the publications in the journals has instead been spread through direct e-mail

marketing among select communities of academics and through being indexed by general Web search engines. Partly this has been because of a view that existing scientific indexing services to the old establishment and that there is no need for their intermediation.

### **Academic reward belong system**

It has been pointed out that the growth in the number of journal titles and the emergence of strong commercial players in scientific journal publishing in the latter half of the 20th century was due more to a demand from authors for outlets for the papers they needed to have published in peer-reviewed serials, than for a need of readers of additional titles. The tenure systems in many countries and periodic comparisons of the scholarly output of university departments are strong motivating forces for this demand. This system naturally puts academics (and in particular the younger ones) in a situation where primary publishing of their best work in relatively unknown open access journals is a very low priority. A system such as this places any new journals, whether subscription-based or open access, in a disadvantaged position.

### **. Marketing and Critical Mass**

Gustafsson, (2002) examined that since journal publishing is dependent on getting authors to submit their best papers to the journal in question, marketing and branding are very important for long-term success. He further noted that, most OA journals have not yet been established as brands and on the whole the marketing of such journals has been very poor, partly due to lack of resources for marketing, partly because of a lack of understanding of the need for marketing.

The research found out that there is a percentage of University teaching staff that don't know about open access publishing, that don't consider themselves as open access publishing advocates. These factors are a result of lack of marketing about open access publishing. If marketing was undertaken individuals would know about open publishing, its importance and its benefits. Sensitizing researchers about open access publishing would result into a lot of locally generated research outputs online. Technological infrastructure is another barrier that has been pin pointed in the research. From the research it's been discovered that individuals don't have the infrastructure and are finding difficulties in publishing research outputs online. There is need for adequate technological infrastructure and to educate individuals on how to use the infrastructure.

Most researchers prefer using popular and fee paying e-journals to publish their work as publishing on such platforms increases the readership of one's articles. The research found that lack of proper legal framework on issues to do with copyright is one of the reasons why most researchers opt to publish their work using commercial e-journals. It's safe to say that the above factors are the main barriers to open access publishing.

## **CHAPTER SIX**

### **CONCLUSION**

The study pointed out that, the majority of the University of Zambia teaching staff are familiar with open access publishing and are advocates, despite these facts there is still little locally generated research visible online. This is a result to many factors which are: lack of proper legal frame work on issues of copyright, lack of information and communication technology

infrastructure at the University of Zambia. A percentage of the respondents don't consider publishing research outputs online being easy, this maybe because of lack of "how to" knowledge and another percentage of the respondents don't consider that the visibility of the research output being online is an easy way of accessing them. These are the barriers that are faced amongst the University of Zambia teaching staff.

## **6.1 RECOMMENDATIONS**

Open access publishing is an important platform that maybe beneficial to both the researchers (University of Zambia teaching staff) and the students at the University of Zambia. Based on the findings the following recommendations emerged from the study.

1. There should be proper legal frame work on the issues of copyright.
2. The University of Zambia should facilitate adequate information and communication technology to enable the University of Zambia teaching staff to publish using open access publishing.
3. There should be sensitization amongst the university of Zambia teaching staff about what open access publishing is about, how to publish online and inform them about the benefits.
4. There is need to make the University of Zambia teaching staff aware of how easy it is to access research output when they put online.

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## ANNEXIES

### ANNEX 1: PROPOSED BUDGET

<b>Serial Number</b>	<b>Research Activity</b>	<b>Proposed Amount</b> <b>K</b>
1	Printing and Binding of Proposal	50

2	Printing of Data collection Instruments together with the final report	200
3	Binding Research report	20
<b>Total Amount</b>		k 270

ANNEX 2: PROPOSED TIME FRAME

Activity	MONTHS 2018									
	30 <sup>th</sup> April	18 <sup>th</sup> May	8 <sup>th</sup> June	22 <sup>nd</sup> June	13 <sup>th</sup> July	Aug	Sept	Oct	Nov	Dec

Submission of research proposal										
Submission of chapter 1										
Submission of chapter 2										
Submission of chapter 3										
Submission of full proposal										
Print data collection instruments										
Collect data										

Edit, code and enter data										
Analyze data										
Writer report										
Submit report										

