ADOPTION OF OPEN ACCESS PUBLISHING FOR SCHOLARLY COMMUNICATION BY ACADEMIC STAFF AT THE UNIVERSITY OF LIMPOPO

By

SHOROMA MORITIDI ABIGAIL

RESEARCH DISSERTATION

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DECLARATION

I declare that the **"Adoption of Open Access publishing for Scholarly Communication by The Academic Staff at the University of Limpopo"** dissertation hereby submitted to the University of Limpopo, for the degree of Master of Information Studies has not previously been submitted by me for a degree at this or any other university; that it is my work in design and in execution, and that all material contained herein has been duly acknowledged.

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Shoroma Moritidi Abigail   Signature

Date: ……………………………

DEDICATION

This dissertation is dedicated to my parents, the late **Mr Rutang Nicodemus Shoroma** and **Mrs Virginia Samartjie Shoroma**, my daughters **Mahlatse Kayleigh, Mpho Ivana** and **Thato Asante** for their perseverance and patience when I was busy with this project; and my entire family for their continued support.

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ABSTRACT

This study aimed to examine the extent of awareness and the adoption of Open Access (OA) publishing for the purpose of scholarly communication by academic staff at the University of Limpopo (UL). The study was guided by Rogers' Diffusion of Innovation theory (1) to measure the level of awareness of academics on the availability and use of OA resources; (2) to determine the adoption and usage levels of OA publishing as a platform for information sharing by academics in scholarly communication; (3) to establish academics' attitudes towards the use of the OA publishing platforms; and (4) to identify perspectives of academic staff with regards to challenges and benefits presented by OA publishing. A dominantly quantitative research approach was adopted using a google forms questionnaire with closed ended questions to collect data from 250 academics at the University of Limpopo. Academics were selected using the systematic simple random sampling method. To ensure the survey instrument's reliability and validity, the researcher conducted a pilot study through a web-based survey. A descriptive statistics method of the Statistical Package for Social Sciences (SPSS) was used to analyse data.

The study established that the majority (82%) of academics were aware of OA publishing platforms. The internet and subject librarians were the main communication channels through which they became aware of OA publishing. The study also found that there was minimal the adoption and usage of OA publishing among academics. Their attitudes towards OA and their perceptions of the benefits and challenges of OA. The general attitudes of academics about OA were positive, signifying the acceptance of this scholarly communication mode. However, some of the challenges encountered in adopting and using OA publishing include slow internet connectivity and access, publication charges by some publishers, lack of skills to publish online, power interruptions, lack of policies on OA, fake and predatory

publishers and OA articles not being peer-reviewed. These were reported as problems that directly or indirectly hinder academics from publishing in OA platforms. The study recommends the institutionalisation of OA publishing at UL to improve research output dissemination. An area for further research will be to establish more insights regarding the feasibility of OA development and possible ways of dealing with article processing fees.

Keywords: Open Access publishing, scholarly communication, Academic staff, Institutional Repositories, Rogers' Diffusion of Innovation theory, University of Limpopo.

TABLE OF CONTENTS

PRELIMINARY PAGES

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY   **1**

CHPATER TWO

THEORETICAL FRAMEWORK AND LITERATURE REVIEW   20

CHAPTER THREE

RESEARCH METHODOLOGY   41

CHAPTER FIVE

LIST OF APPENDICES

LIST OF ACRONYMS

APC   Articles processing costs

ACRL   Association of College and Research Libraries

ASSAF   Academy of Science of South Africa

BOAI   Budapest OA Initiative

DOAJ   Directory of OA Journals

DOAR   Directory of OA Repositories

DOI   Diffusion of Innovations

ETDs   Electronic Thesis and Dissertations

ICTs   Information and Communications Technologies

IR   Institutional Repository

ITS   Integrated Tertiary System

LIS   Library and Information Services

NRF   National Research Foundation

OSI   Open Society Institute

ORCID   Open Researcher and Contributor ID

SciELO   Scientific Electronic Library Online

SPSS   Statistical Package for the Social Sciences

SSRN   Social Science Research Network

TREC   Turfloop Research Ethics Committee

UL   University of Limpopo

UNESCO   United Nations Educational, Scientific and Cultural Organisation

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION AND BACKGROUND TO THE STUDY

1.1   INTRODUCTION

Unrestricted and Open Access(OA) to scientific information and knowledge via the internet plays a significant role in the development of research and innovation in institutions of higher learning across the world. South Africa and other developing African countries are not an exception. This is largely because of developments in Information and Communications Technologies (ICTs), more especially the internet and the World Wide Web. Computers and the World Wide Web have greatly contributed to the evolution of scholarly communication by changing the way documents are produced, organised and disseminated in the scientific research community (Luzón, 2017). Johnson (2014) remarks that today's scholarly content is born-digital, digitally organised, processed, produced and disseminated. By implication, the impact of the internet and digital technology in the creation and dissemination of new information and knowledge is enormous.

Furthermore, it is beneficial and advantageous that new advances in ICTs have changed the approach in which academics and researchers in tertiary or higher learning institutions access, disseminate and share information and knowledge to advance the scholarly communication process. The new developments in ICTs, especially the internet and web technology have also changed research practices by enhancing communication and collaboration amongst scientists (Muriithi, Horner and Pemberto, 2016). Similarly, Orffer, Airey and Botha (2017) acknowledge that "the internet revolution has availed information and knowledge sharing in an openly accessible fashion". The world has entered a new era where printed materials have been displaced by electronic materials that can be accessed via the internet (Cull, 2011). Developments in ICTs, specifically the internet and web technology have

introduced a new approach to access information, although Africa is yet to completely embrace the latest technology (Ezema, 2013: 324).

Scholarly communication is defined by the Association of College and Research Libraries (ACRL 2003, in Xia 2017: 34) as "the system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community and preserved for future use" This system refers to the process whereby academics and researchers, scholars and researchers attached to higher education or research institutions share and publish their research findings in scholarly journals or publications such as books, chapters in books, conference proceedings, theses and dissertations. This process involves a stage when new knowledge produced by researchers, academics and scholars is presented to their peers. Scholarly communication, therefore, is about how individuals engage in academic research and creative endeavours to inform their peers, formally and informally, of the work they have accomplished (Johnson, 2014:521).

The most common scholarly communication or publishing method is conducting research, and writing articles and research papers deriving from research findings, and publishing them in scholarly journals or periodicals. This entails that research is conducted in different academic disciplines, and findings and results are published in scholarly publications, referred to as scholarly journals or periodicals. The ACRL (2003, in Finlay, Tsou and Sugimoto, 2015: 2) Association of College and Research Libraries pronounces scholarly communication as the system which includes both formal means of communication, such as publication in peer-reviewed journals, and informal channels, such as electronic theses and dissertations".

Although a lot of information is accessible online or through the internet and the World Wide Web (World Wide Web), it is unexpected that most of the scholarly and peer-reviewed literature is still in printed format, and accessible

2

through commercial publishers who produce databases to which libraries should subscribe to get access to scholarly literature. Tennant, Waldner, Jacques, Masuzzo, Collister and Hartgerink, (2016) argue that learned societies and other scholarly communities historically, and scientifically use journals for reporting the results of concluded research works or scientific discoveries. However, today many for-profit or commercial publishers have started publishing these research journals to gain profit. From the time when the publishing of scholarly journals was in the hands of commercial publishers, their costs have risen above inflation rate because of their quality and unique content. This has led to academic libraries not being able to afford to subscribe to the journals that they require, and what is referred to as crisis in scholarly communication.

As a result of both financial and serial crisis, academic librarians, together with producers of scholarly literature, were prompted to explore avenues that would ensure that information provision and access to scholarly literature is achieved at a minimal cost. Xia (2013) attests that in the early 1990s, academics began self-publishing their research findings within their institutions on their departmental sites or in pre-print servers on the internet. Subsequently, the idea of OA publishing came into the picture to make scholarly content freely available via the internet. OA as an issue therefore was initiated for two main reasons: the escalating costs of subscription-based journal databases and as a movement or initiative arguing for publicly funded research to be made accessible freely to the public who had paid for it (Czeniewicz and Goodier, 2014: 1). Scholars are seeking better ways to disseminate their intellectual and research outputs. They want to share their ideas and to expand the body of knowledge in their attached disciplines.

> Open Access as an issue came into existence for two main reasons: the expense of subscriptions to bundled journal databases (known as 'the serials crisis'), and, simultaneously, a movement arguing for publicly funded research to be made available freely to the public who had paid for it (premised on the existence of the Internet making this possible in ways previously impossible). These two reasons are

aligned with different philosophical approaches: one economic and the other democratic (Czerniewicz and Goodier, 2014: 1)

Therefore, OA is an initiative that seeks to make available and free, research outputs of online and scientific literature (Chilimo and Onyancha, 2018:11). OA is a means for the free availability of scholarly content via the internet. It is an emerging opportunity for a more comprehensive and unlimited access to scholarly literature. OA to scholarly publications involves leveraging technology and author rights management to enhance the benefits of new knowledge (Johnson, 2014:413).

In the present knowledge-based society, all countries across the world spend a good portion of their budget on research. The major regions of the world have reserved a fixed percentage of their Gross Domestic Product (GDP) on Research and Development (R and D) activities (Blanco, Prieger and Gu, 2013). As the Library and Information Services (LIS) organisations are continually working towards creating connections between information and researchers, most of the times they are hampered by continuous escalating prices for information resources. The resource sharing, library consortia, inter library loan, scheme initiatives, as well as document delivery services, photocopy or printout of articles, pay per use or purchasing single articles, and cancellation of subscriptions to the less used and non-used or least cost-effective journals are noteworthy steps to tackle challenges associated with the rising prices of academic library materials that are above inflation rate. The OA publishing of electronic publishing is also indicated as a potential solution to overcome maximum barriers in connecting researchers and emerging information. The pen access models have reduced the monopoly power of the commercial scholarly journal publishers in the dissemination of scholarly information

The main reason behind the initiation of OA publishing is that researchers produce a lot of intellectual assets in the form of research papers or scholarly

articles, which should be made freely accessible. Hill (2016) argues that publishing articles in scholarly journals is a way to communicate advances in knowledge, to register a researcher's priority of discovery, to submit findings to the critical examination of the researcher's peers, and to achieve recognition for verified original findings, primarily through enhanced career prospects or further research grants. Through the internet, access to scholarly information is very fast and free, but still a large amount of scholarly information is only available at high prices through commercial publishers.

Because of this reason, academic libraries are incapable of providing satisfactory access to scholarly literature to their users (Surendra and Satish, 2013:6). Africa as a continent is prosperous with local content, yet it is challenged to manage this abundancy of information in its local information resources, and to make it accessible to global scholarly community. As a result, it becomes difficult for developing countries to make scholarly literature accessible to others. Therefore, in the past three decades, academic institutions have been experiencing challenges concerning the price of journals which has risen dramatically. Rich countries such as the United States (US) were also challenged, which means that the implications were worse for academic libraries not only in Africa (Ghamandi, 2018). The ability to digitise information, has therefore not only changed the knowledge and information landscape permanently, but also changed the publishing industry. It is through the internet that scholars are able to share their knowledge with the ability to replicate and disseminate information and services at no cost (Gonzalez and Martins, 2017). The only requirement is access to the internet and relevant websites. This new model has led to the global OA movement; whose main aim is to distribute scholarly journals free of charge to end users.

The effects and benefits of OA to research and innovation are growing at an impressive rate. According to the Directory of OA Journals (World Wide Web.doaj.org), which has become the official index of OA journals, there are already at least 7 252 full-text OA journals (Laakso, Welling, Bukvova,

Nyman, Björk and Hedlun, 2011:6). The annual growth rate of new OA articles published varies between 20% and 30%, against the backdrop of an annual growth rate of only 3.5% in new research articles. It is therefore probable that by 2029, almost all new research articles will be published as OA . Chadwell and Sutton (2014:225) attest that academic libraries as catalysts for OA are advocating for opening up access to research outputs that can be freely accessible online with full reuse rights. The fundamental role of the academic library in this initiative is to remove barriers in the free exchange of information by transforming the landscape of scholarly communication in building institutional repositories.

OA publishing is therefore an emerging opportunity for a wider and unlimited access to scholarly literature via the internet. This mode of publishing presents a number of benefits to the scholarly community, which may also afford relief to financially struggling academic libraries. Ellers, Growther and Harvey (2017) acknowledge that the demand for OA is great in the developing world as it can contribute to solving problems related to access gaps. OA to scholarly publication is about leveraging technology and author rights management to enhance benefits to scholarly content access and dissemination. It is through this OA model of scholarly communication that academics and researchers can get free access to scholarly content though they might be subjected to article processing fees when they decide to publish in OA. Kelly, Sadeghein and Adeli (2014) also opine that publishing articles in scholarly journals is a way to communicate advances in knowledge, to register a researcher's priority of discovery, to submit findings to the critical examination of the researcher's peers, and to achieve recognition for verified original findings, primarily through enhanced career prospects or further research grants. Suber (2015) explains OA as an online free of charge, free of most copyright and licensing restrictions. Furthermore, that there is less academic freedom when researchers worked for royalties and made their research articles into commodities rather than gifts (Suber, 2015).

However, the acceptance and validation of the OA publishing model is dependent upon academics and researchers who are involved in information and knowledge exchange through scholarly communication processes in their institutions (Ellers et al, 2017). Awareness, understanding or perception, as well as support for OA publishing by academics and researchers will determine the status of OA adoption in institutions of higher learning in South Africa. It is therefore the desire of the researcher to find out if academics at the University of Limpopo (UL) are aware of the OA publishing platforms available and if they have adopted and are leveraging such platforms for the dissemination of their research findings to a wider community of readers and their peers.

1.2   BACKGROUND INFORMATION

Ever since the initiation of OA, research organisations and academic libraries in different countries across the world have been advocating for its purported benefits, without reporting how this innovation is being adopted in their environments. OA in South Africa is also propagated by some research organisations and institutions, such as the National Research Foundation (NRF) which adopted a statement on OA to science and research. In its statement, the NRF purports to be:

> "[T]he same time appreciating that OA will continue to evolve in response recognising the importance of OA to science and research while at to societal needs, achieving overarching policy harmonisation and new innovative publishing business models. From 01 March 2015, authors of research papers generated from research either fully or partially funded by NRF, when submitting and publishing in academic journals, should deposit their final peer-reviewed manuscripts that have been accepted by the journals, to the administering institutional repository with an embargo period of no more than 12 months. Earlier OA may be provided should this be allowed by the publisher. If the paper is published in an OA journal or the publisher allows the deposit of the published version in PDF format, such version should be deposited into the administering institutional repository and OA should be provided as soon as possible" (NRF, 2015: par 4-5).

Another institution that supports for the adoption of OA in South Africa's research environment is the Academy of Science South Africa (ASSAF), which makes available South African journals accessible through the (Scientific Electronic Library Online (SciELO) SA platform. ASSAF website shows that:

> SciELO SA is an OA (free to access and free to publish) searchable database of selected, high quality South African scholarly journals". Furthermore, the website shows that by the end of March 2019, the collection had grown to 76 titles with an average of eight new titles being added and made available on the SciELO SA platform. It is expected that at least 180 journals will eventually be published on the platform. The SciELO SA collection was certified in April 2013 as a regular operational national collection indexed in the SciELO Network Global Portal. This greatly enhances the visibility of South African journals and will increase the global impact of our local journals. All SciELO journals appear on the Web of Knowledge (WoK) search portal within the SciELO Citation Index" (ASSAF, 2019: par 1-2.

Researchers that examined the benefits of OA have emphasised cost savings in terms of journal subscription, journal impact and visibility, as well as wider access to the most current information and scientific ideas (Tennant …et al, 2016). Several institutions in countries across the world have also adopted some policy frameworks by which OA should take place. However, Czerniewicz and Goodier (2014) remark that OA in South African higher education is not shaped by any policy framework, and further that South African researchers encountering OA for the first time are negative towards it. The reasons behind their negative attitudes towards OA are expensive article processing charges, inaccurate definition of gold OA as the author pays, as well as on the basis of academic freedom and rigour (Czerniewicz and Goodier, 2014).

Most universities in South Africa, UL included, have signed the Berlin Declaration on OA to Knowledge in the Sciences and Humanities and the Budapest OA Initiative. However, it is unclear whether or not all universities in South Africa have their own OA policies. Driving factors behind the non-

availability of policy framework on OA in universities may include a decline in government subsidy, increase in journal subscriptions, depreciation of the South African currency, and addition of Value Added Tax (VAT) of 14% on electronic resources by the South African taxman. Enabling factors include the international OA mandates, the Carnegie Foundation grants, and the National Research Foundation (Bangani, 2018:39). Universities and research centres that support and encourage OA to scholarly outputs have created institutional repositories to facilitate the dissemination, access, reuse and preservation of the work arising from the scientific and academic activity of their staff (Vicente, Melero and Abadal, 2016: 595).

Therefore, the most predominant and prevailing content in South African public university collections are electronic theses and dissertations (ETDs). However, this is changing as more academic libraries cover research outputs proceeding conference papers and research articles. Vicente et al. (2016) further argue that although universities have adopted their own institutional OA policy, it is not sufficient to create change in the habits of researchers. Yang and Li (2015:2) concur that institutions should make their constituents aware of the existence of such initiatives and tools as part of the scholarly communication.

UL also established its electronic thesis and dissertation portal in 2009 through its institutional repository (IR). The IR archives provide OA to digitised special collections and research materials from UL and affiliated institutions. It is through this platform that the library and some academic staff are able to contribute their publications, and in the long run, contribute to the OA movement. The contribution is in the form of research outputs and conference proceedings. Although the institution has had the repository for almost 10 years, the policy to guide what should and is being deposited in the repository was only drafted in 2017 (UL library Annual Report, 2019). The OA policy has been reviewed to keep up with changes and improvements within the OA movement. It is also in the same year that the institution signed the Berlin Declaration.

Research institutions and universities across the world participate in OA week. "Universities, colleges, research institutes, funding agencies, libraries, and other interested parties have used OA week as a platform to host faculty votes on campus OA policies, to issue reports on the societal and economic benefits of OA, to commit new funds in support of OA publications, and more" (LIASA, 2019: page number). Through the IR, UL library also contains and preserves theses and dissertations, research articles, conference papers, rare and special materials and many other digital information generated within the institution. Currently, the IR at UL library has 2145 theses and dissertations that have been listed (UL Institutional Repository, 2020).

UL library has also participated annually in celebrating OA week. Despite these efforts to promote OA by the library, it is still blurry as to how academics at the university have embraced this innovation. Although academics, researchers and scholars at university have been in support of OA by contributing articles, conference proceedings, theses and dissertations to the IR, there is still a need to investigate how they became aware of OA as well as the extent to which they are contributing to the initiative. As the literature is growing in every field, it is also important to reveal how this literature is made freely available to other academics and researchers, students, researchers and scholars in the midst of escalating costs for information resources, coupled with the world economic meltdown.

It has not as yet been established as to whether academics at UL are aware of the OA platform as this study is the first to investigate OA at UL. However, the IR has been available and functional since 2010 and there are conference proceedings which are deposited there. Although the conference proceedings were deposited on the IR (ULspace), there was no policy to guide and ensure understanding of their availability.

1.3   RESEARCH PROBLEM

Challenges of accessing scholarly literature have become the driving force behind the initiation of OA publishing. As an innovative way to freely disseminate scholarly literature and information, OA publishing offers many benefits that would have been impossible in traditional scholarly journal publishing modes in as far as access to scholarly literature is concerned (Parker, 2013:112). Nonetheless, despite the increasing popularity and benefits of OA publishing, it is still not known how academics at UL became aware of this OA publishing and to what extent they have adopted such innovation in their scholarly communication process. Murray and Clobridge (2014 and ASSAF (2019) point out that researches carried out in Africa are still disseminated using the traditional scholarly publishing that is less efficient than electronic systems and the internet. This results in African academics and scholars as readers of scholarly content having limited access to limited scholarly publications produced in Africa Source. Dulle, Minishi-Majanja and Cloete (2011:113) acknowledge that despite the promising potential for OA to improve scholarly communication, "this mode of publishing is not yet widespread in developing countries." Abrizah, Hilmi and Kassim (2015) attest that lack of awareness can also be attributed to tenure track in some faculties. Lack of awareness and understanding of OA publishing might perhaps be contributing to the reluctance on the part of academics attached to universities in developing countries such South Africa to adopt this innovation. Therefore, more research still needs to be conducted on their awareness, understanding, usage of and their attitudes towards OA publishing. Factors that influence academics and researchers' intention to adopt or not to adopt OA warrant investigation, hence this study.

1.4   PURPOSE OF THE STUDY

1.4.1 Aim
The aim of this study is to examine the extent of awareness and adoption of OA publishing in scholarly communication process by academics at UL, Limpopo Province, South Africa.

1.4.2 Research objectives

The objectives of the study are as follows:

- To describe the models of OA publishing models

- To measure the extent of awareness of academics at UL on the availability and use of OA resources.

- To determine the adoption level of OA publishing as a platform for information sharing by academics at UL.

- To establish attitudes of UL academics towards the use of OA.

- To identify perspectives of UL academics on challenges and benefits which OA publishing presents for academic research.

1.5   SIGNIFICANCE OF THE STUDY

The focus of this study is to determine the adoption of OA for scholarly communication process by academics and researchers at UL. The expected outcomes of the study are therefore to assist academics to understand the role of OA publishing in academic research.

To the library management, it is important to understand how academics perceive OA publishing.   Therefore, this study will enable the library management to understand perceptions of academics towards the use of OA in research and benefits thereof.

The study will also be of help in building the foundation upon which the management of the institution develops programmes that will promote OA publishing and help academics develop strategies on how to adopt and use the relevant OA publishing platforms that will enhance research dissemination.

Divided opinions in the academic community regarding suitability of OA publishing against the existing business mode of scholarly communication cannot be ignored. This study will contribute to the ongoing debate by shedding light on attitudes of academics in the study area towards OA and perceptions of those who had encounter with platforms. The study will furthermore contribute to body of knowledge in the field of library and information science regarding OA publishing, particularly within Africa.

1.6   DEFINITION OF CONCEPTS

In this study there are concepts that will frequently appear. It is therefore very important that the concepts that frequently appear in the study should be defined and contextualised. Among some of the concepts that require contextualisation are OA, scholarly communication and academics and researchers.

1.6.1. Open Access

Orffer, Airey and Botha (2017) note that misunderstandings of what OA means may have added to the slow embracing and application of OA publishing in academic institutions in Africa. Bopape (2016) notes that there are varied definitions of OA, while Mammo and Ngulube (2015: 2–3) also note that various authors, declarations and statements about OA have provided different definitions of OA publishing. The Budapest OA Initiative (BOAI) (2002) was the first to define the principles of OA as:

> free availability on the public internet, permitting any user to read, download, copy, distribute, print, search or link to the full text of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the Internet itself (Budapest OA Initiative, 2002).

Martin (2015:718) notes that OA publishing simply refers to the economic reconfigurations of removing price tags and permission barriers to scholarly research. It is basically the dissemination of scholarly research on the internet

to allow readers to access work without paying. This is an important process in fostering the growth of, and OA to, information through science and technology. OA literature is digital, online, free of charge and free of most copyright and licensing restrictions (Suber, 2015: 4). Johnson (2014: 516) defines OA publishing as a condition in which scholarly content is made available to users without charge and needless of copyright and licensing restrictions via the internet.

According to Jain (2012: par 6), OA has the following characteristics:

> It is free availability of scholarly publications; It is free of copyright and licensing restrictions; Materials are available online or on the internet; Materials are full text; Materials can be accessed by anybody from anywhere without any discrimination; Materials can be freely used by anyone; OA contents can be in any format from texts and data to software, audio, video, and multi-media, scholarly articles and their preprints.

Based on the aforementioned definitions, to scholarly publications, OA is about leveraging technology and author rights management to enhance benefits to scholarly content access and dissemination (Tennant et al., 2016). It is through this model of scholarly communication that academics are able to get free access to scholarly content. However, academics and researchers may still be subjected to article processing fees when they decide to publish in OA. Suber (2015) explains OA as an online, free of charge, free of most copyright and licensing restrictions, and that there is less academic freedom when researchers worked for royalties and made their research articles into commodities rather than gifts.

1.6.2. Scholarly communication

Scholarly communication refers to the process whereby academics and researchers and scholars share and publish their research findings in scholarly journals (Czerniewicz and Goodier, 2014). The European Commission (2019) clarifies that scholarly publishing involves a stage when new knowledge produced by researchers, academics and scholars is presented to their peers; and further that the most common method of scholarly publishing is writing articles and publishing them in scholarly journals or periodicals (deriving from research findings). This entails that in scholarly publishing, research is conducted in different academic disciplines, and findings and results are published in scholarly publications or periodicals, as well as in theses, dissertations and conference papers by postgraduate students and academics (Johnson 2014). In this study scholarly communication refers to the production of scholarly journals as a means of sharing research findings in different academic fields or disciplines. In this study, the concept "scholarly communication" is used interchangeably with "scholarly publishing"

1.6.3. Academic staff and researchers

A definition of an academic has something to do with being scholarly. Despite the wealth of literature on academic work, Rosewell and Ashwin (2018) acknowledge that people 's knowledge of being an academic is limited. Even though an academic can be defined as a person who is involved in teaching, learning and research, being an academic goes beyond these pre-defined roles. Boyd and Smith (2016:681) indicate that being academic is associated "to a varying degree with autonomy and freedom, intellectual stimulation, teaching and research, and ideas around making a difference, and a sense of calling". Academic staff spend most of their time in teaching and research. Therefore, the words "academic" and "researchers" are used together in this study.

1.7 RESEARCH METHODOLOGY

1.7.1 Research approach and design

The study adopted the quantitative research approach to measure awareness and the adoption level of OA publishing by academics and researchers. The research design followed was descriptive research design using the survey data collection method.

1.7.2 Population and sampling

The population of this study consisted of academics from all faculties at UL. The study adopted systematic simple random sampling in which participants were selected and the sample frame was reached by picking each and every third element from the list of six hundred and eighty-seven (687) academics from the faculties.

1.7.3 Data collection method

An online self-administered questionnaire (attached as appendix D) was used as a data collection instrument of the study.

1.7.4 Reliability and Validity

The researcher confirmed both reliability and validity of the research instrument by conducting a pilot project prior to the main study. This was done by distributing the preliminary questionnaire to ten (10) academics and researchers, five to the School of Languages and Communication, two to the School of Mathematics and Computational Sciences, two to the School of Law and one to the School of Physical and Mineral Sciences. This was done in order to identify questions that might need to be clarified to respondents.

For validity purposes, experts in the field were used to ensure that the questions asked address the objectives of the study. Studies that used

16

Diffusion of Innovation (DoI) theory to explain factors affecting the adoption of new innovations will be identified and their research instruments will be applied in the study.

1.7.5 Ethical considerations

The researcher adhered to ethics as outlined by the University of Limpopo postgraduate manual. This will be discussed in more detail in chapter three of this dissertation.

1.7.6 Data analysis

Data was analysed using the Statistical Package for the Social Sciences (SPSS) software. Bar graphs, tables and pie charts were used to present the data. Data is presented statistically and descriptively and then interpreted in chapter four of this dissertation.

1.8 SUMMARY OF CHAPTERS

The dissertation comprises FIVE chapters as outlined below.

Chapter One: Introduction and background to the study

This chapter introduces the problem, the aim and research objectives that will guide the study. It also introduces the concept or phenomenon of scholarly communication and OA before stating the problem statement of the study. The chapter also presents the significance of the study, its structure as well as the research methodology that was adopted to realise the aim and objectives of this study.

Chapter Two: Theoretical framework and literature review

The theoretical model on which this study is based, namely, Diffusion of Innovations (DoI) theory, is first discussed in chapter two. The chapter also presents the review of literature related to OA in accordance with the research objectives of the study. The purpose of this review is to position the study within similar works as well as to explore available knowledge in the study discipline.

Chapter Three: Research methodology

This chapter presents the procedures that were used to carry out this study and the reasons behind the adoption of certain research methodologies over others to enhance understanding of the research problem. It presents details of the entire research process, including research paradigms, research approaches, research design, sampling procedures, data collection methods and statistical procedures used in data analysis. Validity, reliability and ethical issues or considerations are also discussed in this chapter.

Chapter Four: Data Presentation, Analysis and Interpretation

This chapter presents the data from descriptive analysis and inferential statistics. Various formats of data presentation such as figures, tables and narrations are used for clear understanding of research findings. The chapter also interprets and discusses findings emerging from the study. Also explained in this chapter are implications of the findings and possible reasons for the specific findings obtained.

Chapter Five: Major findings, conclusions and recommendations

As the final chapter of this dissertation, this chapter presents the overall summary, key conclusions and recommendations of the study, including recommended and suggested areas for further and future research.

CHAPTER TWO
THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter has introduced the reader to the background and context of the study. The current chapter presents the theoretical framework and an in-depth review of literature related to the concept of OA publishing in academic institutions, particularly academic libraries. The purpose of literature review is to position the study within similar works as well as to explore available knowledge on the topic. A literature review helps in bolstering confidence that the research topic is worth studying, because one finds that others have invested considerable time, effort and resources in studying it.

Leedy and Ormrod (2014) also state that review of literature describes theoretical perspectives and previous research findings regarding the problem at hand. It demonstrates that the researcher has read extensively and intensively about the topic. Literature is therefore indispensable for the credibility of a well-written, informed thesis. It involves identifying scholars, researchers and research managers within higher education institutions who have studied the topic. Furthermore, literature review needs to draw on and evaluate a range of different types of sources, including academic and professional journal articles, books and web-based resources. It helps to identify and locate relevant documents and other sources (Pickard, 2013).

The research problem can only be formulated by setting the objectives of the study. Therefore, review of literature is aligned to these objectives. This entails that the literature review of this study will follow subheadings derived from the research objectives which the study seeks to achieve. The review will first discuss models of OA as discussed in the literature, and then it will look at the literature related to awareness of academics towards OA, followed by the extent to which they have adopted OA publishing in different universities

across the world. This will be followed by challenges that they encounter in higher education institutions when adopting OA publishing. However, before coming to this, it would be necessary to discuss the theoretical framework in which this study is based, namely, Diffusion of Innovations (DoI).

2.2 THEORETICAL FRAMEWORK

An extensive number of studies and researches have been conducted about interactions between people and new information technology applications. Several models were developed to provide the theoretical basis or framework for research on the adoption of information technology and information systems, including new innovations. Among some of the models that were developed with regards to interactions between people and new information technologies are the Theory of Reasoned Action (TRA) developed by Fishbein and Ajzen (1975), the Theory of Planned Behaviour (TRB) by Ajzen (1995), Rogers' (1995) Diffusion of Innovations Theory and the Technology Acceptance Model (TAM) advanced by Davis (1989).

The adoption of OA publishing in the higher education environment can best be studied if looked upon from the perspectives of the Diffusion of Innovations (DoI) theory developed by Rogers in 1995. Rogers (1995) explains that DoI is a theory that analyses and helps explain the adoption of new innovations in a social system. An innovation is an idea, practice or object. In the case of this study, innovation is OA publishing, which is perceived as new by an individual or a group of people. Diffusion is the process by which an innovation is communicated through certain channels over time among members of a social system. Therefore, four main elements identified in this theory are innovation, communication channel, time and the social system (Roger, 1995).

A communication channel is the means by which messages get from one individual to another about the new innovation in the social system. The time dimension in the DoI theory is involved in diffusion in three ways, namely, the innovation-decision process, innovativeness, and the rate of adoption. The

fourth main element in the DoI theory is the social system, which is defined as a set of interrelated units engaged in joint problem-solving to accomplish a common goal (Rogers, 1995:10).

The DoI theory postulates that certain characteristics, namely, relative advantage, compatibility, complexity, trialability and observability as perceived by members of the social system determine the rate at which an innovation is adopted. All these characteristics influence decisions by members of the social system to adopt or reject a new innovation. In this study, OA publishing as an innovation is studied to find out how it has been communicated to academics' and the extent to which these characteristics influence its adoption by academics and researchers at UL.

The justification for using this theory in this study lies in the fact that many studies that attempt to explain factors affecting whether an innovation will be shared and adopted by a group of individuals or organisations have been based on Rodgers' DoI theory (Ward, 2013). The DoI theory is relevant in this study because the four main elements of the theory are discussed:
- Innovations: OA publishing as a new innovation to make scholarly literature accessible to wide a range of users.
- Communication channels: channels through which OA is made known to academics and researchers.
- Time: The rate of adoption of OA by academics and researchers.
- Social system: Academics and researchers who should be aware of OA publishing and adopt it as their new mode of publishing their scholarly content.

The DoI theory can further be regarded as a continuum which consists of two extremes. On one extreme, there are "innovators" (pathfinders) who are risk-takers and pioneers in adopting an innovation very early when it is introduced in the diffusion process. On the other extreme, there are "laggards" who resist adopting an innovation until very late when everybody has adopted it in the diffusion process. According to Rogers (1995), innovators are in most cases

few individuals who constitute only 2.5 % of adopters, while the laggards constitute 16% of adopters. In between the two extremes, there are early adopters who constitute 13.5 % of adopters, and the early majority and the late majority who each constitute 34% of adopters. This is shown in Figure 1.1:
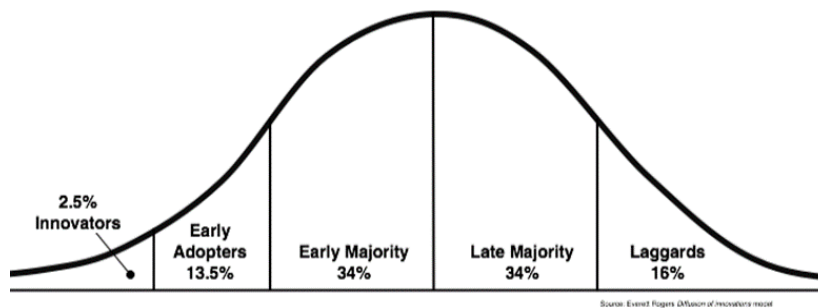
Figure 1.1. Diffusions of innovations theory continuum

According to Rodgers (1995:17), the DoI (Figure 1.1) indicates that in instances where a new product or innovation first appeals to a few individuals, known as innovators or pathfinders who in turn adopt it, it is then escalated to early adopters. These early adopters subsequently influence a larger group called the early majority, who in turn influence the late majority, and soon only a few laggards remain. "Innovations are, therefore, spread over time in a pattern that is similar to s-shaped bend, whereby an idea or new product first goes through sluggish embracement, then a steady growth before experiencing a period of relatively dramatic and rapid escalation, the stabilisation and finally decline" (Rodgers 1995:17).

2.3 MODELS OF OA PUBLISHING

There are different models in which OA publishing can be achieved. The two most common models are self- archiving and OA journals. In self-archiving, also known as green OA, authors are given a green light to self-archive their papers or articles in a publicly accessible web site such as the author's personal website, institutional web site or organised institutional repository, e.g. Social Science Research Network(SSRN). Björk, Laakso, Welling and Paetau (2014) briefly define green OA as self-archiving. Green OA refers to self-archiving in disciplinary or institutional repositories (Johnson, 2014:511). With green OA, also referred to as self-archiving, authors publish their work in their preferred platform, and related research data in an institutional repository.

On the other hand, in OA journals, known as gold OA, publishers archive all their articles publicly on their websites. Laakso (2014) briefly defines gold OA as publishing in OA journals. Johnson (2014:511) attests by defining gold OA as publishing through journals available online without financial, legal or technical barriers. In Gold OA, authors publish their scholarship in an OA journal or monographic series, and copyright is retained by the author. Publishing is done in fully OA journals or in hybrid journals (subscription base journals that offer OA option). The publisher of the scholarly journal provides free OA to the full content of the journal (Johnson, 2014).

Furthermore, there are three shades of OA journals, namely delayed OA journals, partial OA journals and purely OA journals. Laakso and Björk (2013:1323) opine that delayed OA refers to scholarly articles in subscription journals made available openly on the web directly through the publisher at the end of a set embargo period. Although a significant number of journals have practised delayed OA since they started publishing e-versions, empirical studies concerning OA have often disregarded this body of literature.

According to University of Minnesota Libraries (2018), partial OA means the journal's primary research articles are freely available, but access to other value-added content such as editorials and review articles requires subscription. However, the total or purely OA approach is one where all articles in the journal are completely accessible on the internet with no restrictions.

Article processing fees are regularly required to cover the costs of peer-review and online publication and are paid by the author, the author's institution or the author's research grant. Many OA journals offer institutional memberships where, based on the level of membership, article processing fees are either reduced or entirely waived (University of Minnesota Libraries, 2018). Another means of achieving the OA dream is through the establishment of IR. The IR contains and preserves theses and dissertations, research articles, conference papers, rare and special materials and many other digital information generated within an institution. Through the IR, institutions showcase their research and provide a means for institutions to create a central record of their research output and make available their wealth of knowledge. IR's can be searched through different search engines. Therefore, they are accessible to people outside the institution and help to preserve the intellectual wealth of institutions.

In whatever way it is organised, OA means a gain in the dissemination, exchange and advancement of knowledge. OA is changing the public and scholarly presence of the research article, and its increased presence is arguably good for the state of knowledge and the support that it receives from the larger society. OA is providing free access to scholarly literature that has been arguably expensive to access. It began with the fact that researchers get engaged in expensive, labour-intensive work that often employs highly sophisticated equipment, and fully equipped and staffed laboratories. These researches are mostly funded by institutions and thus it cannot be expected that the same institution pay to access that which it has funded.

2.4 AWARENESS OF OA PUBLISHING BY ACADEMIC STAFF

For an individual academic to publish their works in OA publishing platforms, prior knowledge of this mode of publication is important. This has subsequently raised interest of many scholars and researchers of OA adoption or embracement studies to address the awareness aspect before further examining the acceptance and usage of this mode of scholarly communication by the scholarly community. Issa and Igwe (2014: 57) note that academics' awareness towards the OA initiative is key to sound academic calling. They further argue that knowledge and awareness of OA might be limited to the information environment and information seeking behaviour as a contemporary method of scholarly communication.

Non-usage of OA was probably due to lack of OA awareness by respondents, and this has been acknowledged by studies that have not assessed awareness (Munikwa, 2018). Serrano- Vicente, Melero and Abadal (2016) argue that the usage of OA is highly dependent on scholars and researchers being aware of this mode of scholarly communication. Kaba and Said (2015) opine that there are situations where users benefit from OA initiatives without prior knowledge of this form of scholarly communication. This is especially true when users gain access to both free and subscribed content while searching for information on the internet.

Fullard (2007:43) raised concerns about the awareness and support for OA amongst local researchers and policy makers in South Africa. His study found that within the predominant framework, there was little prospect that academics would choose to publish in OA journals. The study did, however, recommend that libraries should advocate for OA publishing. It is therefore, important for libraries and research offices or departments within the university to take the initiative to make users aware and to educate academic staff and researchers about OA resources and trends in OA. This is partly

because the library is in charge of the IR. It is also the knowledge hub of the institution whilst the research office is in charge of maintaining and improving the research output.

Taylor, Morrison, Owen, Vézina and Waller (2013: 42) attest that one of the disciplines where OA is accepted quite readily is medical science, and significant contributions made to the extent where one could theorise that academic libraries at universities with medical schools might have a greater propensity to host OA journals than other academic libraries, possibly due to heightened awareness. This denotes that there is a steady improvement in people's knowledge of OA. This helps to necessitate the speedy acceptance, adoption and organisation of OA in information and knowledge in order to provide, share and exploit recorded knowledge without barriers (Sambe and Raphael, 2015:7).

A study by Mammo and Ngulube (2015:24) also looks at awareness of OA publishing in selected higher education institutions in Ethiopia. The study attests that awareness and accessibility of OA journals among users should be made through promotion and training. The concept of OA is still not widely known among researchers from different geographical locations and research disciplines as some studies indicate. A study in Canada reveals that from among 27 universities surveyed, 66% of respondents had some kind of familiarity with the term OA (Mammo and Ngulube, 2015). Dulle et al (2010) also attest that "studies reporting some kind of OA awareness reveal that it is below or slightly above 60% of respondents that are aware of OA. It should be noted that even where OA awareness is reported, the level of understanding was not uniform for different OA terms".

IRs appear to be the most commonly known mode of OA among academics and researchers. In their study, Swan and Brown (2004) establish that respondents who claimed to be aware of OA repositories than OA journals

were obviously more familiar with the subject repositories or archives. A similar study conducted by Allan (2005) found that among 24 randomly displayed terms related to OA, only general terms were found to be well known while specific ones were not. Likewise, in most respondents who claimed to know something about OA, only a few were aware of digital repositories. Utulu and Bolarinwa (2009) also acknowledge that among 189 respondents in their study, 65% were aware of pre-prints as compared to 60% and 48.3% who reported to know OA journals and post prints, respectively.

Gross and Ryan (2015:66) assert that in humanities, there appears to be less awareness of OA as well as less support for the idea than in the sciences field, which can be attributed to a general lack of awareness. There is, however, willingness to explore OA publishing platforms. The same study by Gross and Ryan (2015) also indicates that 93% of respondents were in favour of openly accessible research that adheres to publishers' protocols. Studies show that for some researchers, OA is an entirely unfamiliar term, and only a few researchers indicate that they understood the basic concepts and practices of OA. Across the US, awareness of OA was greater among mid and late career researchers and less developed among early career researchers (usually within five years of receiving their doctoral degrees) and postgraduates (Gross and Ryan, 2015:67).

Amongst several international studies that have addressed awareness and usage of OA at a global level, only a few similar studies focused on African countries (Belhammel, 2016; Munikwa, 2018; Obuh and Bozimo, 2012). Swan and Brown's (2004) study denotes that among 1296 respondents, Africa was represented by only 4% as compared to countries such as the UK and US, which were represented by 18% and 21% of the total respondents, respectively. It is thus noted that despite covering Africa and other developing countries, these studies are more skewed towards developed countries due to a small sample of respondents drawn from the former countries as compared to African countries. From these observations, it is difficult to obtain a clear

picture of OA awareness and usage in Africa without reviewing specific studies in such countries.

A study by De Beer (2005), however, assesses "awareness and levels of investment in OA modes of information dissemination to create a benchmark of South Africa's current involvement in various OA initiatives." The study used a self-administered questionnaire to assess levels of awareness of OA initiatives as well as to ascertain the degree of OA usage. The data were collected from 300 purposively selected individuals in the computer/information systems and library/information sciences at the University of Stellenbosch. A structured record review was used to assess the extent of research output made available on websites of academic departments and units at Stellenbosch University. The study concluded that respondents were well informed about OA scholarly communication, but generally lacked extensive awareness of specific OA initiatives as they seem more familiar with self-archiving.

A study by Fullard (2007) which involved 145 respondents among 500 targeted South African biomedical authors investigated the extent to which stakeholders in the local research system were aware of OA publications and the prospects for the adoption of the new scholarly communication system in South Africa. The study found that close to 61% of the biomedical researcher group could not properly define what OA implies. Only 3 of the 8 official research organisations were clear about what OA means. With regard to the prospects of OA, the findings reveal that there was little likelihood for academics to publish in OA journals in the near future. Given respondents' knowledge of repositories, the prospects for self-archiving is revealed. Fullard (2007) recommends the need for further research within local settings in order to provide a firm standing for the advocacy of OA.

In 2008, The Southern African Regional Universities Association (SARUA) conducted a study entitled "Opening access to knowledge in Southern African Universities from selected Eastern and Southern African countries". The study

examined issues of access to knowledge constraints and the possible involvement that OA methods can make to increase research output. The qualitative approach was adopted in the study as a way to explore views, perceptions and attitudes of respondents and key concerns they have had in respect of constraints to accessing and disseminating knowledge through OA. Eight universities, including the University of Botswana (Botswana), University of Dar es Salaam (Tanzania), Eduardo Mondlane University (Mozambique), University of Malawi (Malawi), University of Mauritius (Mauritius), University of South Africa (South Africa), University of Pretoria (South Africa) and the University of Zambia (Zambia) were selected for the study. A purposive sampling method was used. Out of 104 targeted interviewees, 89 (85.5%) respondents participated in the interview.

The study revealed that 71% of respondents reported to have been aware of OA. It was also established that 77% of respondents stated their explicit support for introducing OA approaches to promoting access to knowledge. Some of the respondents reported their concerns with regards to recognising the research output published in OA publishing platforms, perceptions of poorer quality in publications associated with OA, concerns about copyright and intellectual property rights and the fear of their research being plagiarised. They echoed their concerns as the main barriers for their adoption of OA. It was recommended in the study that measures to create favourable university policy environments with respect to how policies on promotion and reward will recognise OA published output should be introduced. The need for the development of institutional and technical capacities to empower universities to publish their research output in the electronic environment was also emphasised in the study.

Czerniewicz and Goodier (2014) opine that South African research funders either in or outside of government structures – including the NRF, the Department of Science and Technology (DST) and the Department of Higher Education and Training (DHET) need to take a definitive stand on OA, and

how open-access publishing requirement is exercised on South African funded research. Universities will thus be able to make some strategic decisions at the institutional level, shaped partly by global research funding contracts and individual institutional missions. A number of South African universities have adopted OA policies, including the University of Cape Town whose policy sets the scholarly dissemination default to open. The policy encourages all scholarships to be made available, and requires journal articles, theses and dissertations to be deposited in the repository and other OA publishing platforms. On the other hand, the University of Pretoria and Stellenbosch University have led the way in developing open repositories for infrastructure and content, thus allowing faculties to self-archive whilst providing data management services. It is thus argued that if the research funders take a stance in support of the OA initiative, it will be easy for the institutions to adopt it.

A study by Alemu (2010) examines the role of OA in fostering knowledge sharing and collaboration in Ethiopia. Using the qualitative approach, the study reported that 14 respondents (researchers and librarians) were purposefully selected from four organisations based in Addis Ababa, the capital city of Ethiopia with the aim of finding out respondents' awareness and the state of OA uptake at respective institutions. The general findings revealed that respondents unfortunately had very low awareness of OA, and that this mode of scholarly communication was not practised in the institutions under the study. Despite the fact that this study targeted a small sample size of researchers and librarians that were purposively selected from among many research institutions in Ethiopia suggest the need for a more comprehensive study for better understanding of OA adoption in this country.

Van Wyk and Mostert (2014) indicated that the IRs as major OA publishing platforms in institutions of higher learning have assisted with the dissemination of research outputs and have seen an increase in access of OA resources. Knowing the importance of OA, some institutions went as far as

harvesting articles through platforms such as Directory of OA Repositories (DOAR). This move has seen the adoption of OA going smoothly within those institutions. The advancement of the OA rests upon the acceptance, adoption and endorsement of OA journals and open archives or IRs by the academic mainstream, particularly publishing researchers (Fullard, 2007).

Bopape (2016) posits that legal scholars as advocates for free access to information and knowledge have had a steady developing trend towards the adoption of OA for legal scholarly literature internationally, while in South Africa legal scholarly literature is under the control of commercial publishers. This goes to show the extent of difference in the adoption of OA across countries, institutions and disciplines. Bopape (2016) further professed that although there is a proliferation of free legal information on the internet in the form of cases and legislation, which forms part of primary information sources in law, it appears that there is insufficient legal scholarly literature on OA resources, which form part of secondary information sources in law on the internet.

Among some of the dimensions of the DoI theory, there is a channel through which a new innovation is spread among individuals in a group. Tyungu and Okplogidi (2015) indicate that libraries have been advocating for OA, with colleagues, and professional literature within institutions as the main sources of knowledge of OA to those who claimed to be aware of it. On the other hand, through benchmarking, self-archiving by peers, OA discussion, institution or library and established subject-based archives promotions were established as the main means through which researchers were exposed to OA (Bjork et al, 2014).

2.5 ADOPTION OF OA BY ACADEMICS

The rate of adoption among potential adopters of a given product within a particular social system or geographical setting varies. This situation similarly

applies to the adoption of electronic journal publishing which includes OA. Diffusion studies have reported that the rates of adoption of technologies channelled through the internet are moving faster than other media (Park, 2010; Bogea and Brito, 2019). However, there is a significant difference in diffusion patterns and processes across innovation types. Electronic publishing platforms come with a great deal of responsibility for publishers, editors and users, as compared to other internet platforms such as Facebook, blogs and Twitter services (Kleis and Ganter, 2018). This is due to the fact that content generated and disseminated, especially scholarly communication needs to be edited and peer reviewed.

The adoption of OA by academics is important in that it can help leverage the research output of institutions. Macklin (2014) pronounces that OA is one solution to problems faced by university libraries in terms of the rising price of work published in academic journals. It is in view of the importance of OA that a good number of information service-oriented institutions such as university libraries are speedily accepting and adopting OA scholarly communication. Explaining the need to accept and adopt OA resources in university libraries, Steele (2013) notes that the current system of scholarly communication is changing in a way that libraries and their parent institutions can no longer keep up with the increasing volume and costs of scholarly resources.

Academics as readers and authors of scholarly resources require information to be provided timely without restrictions and delays. Yet at times, they are the ones guilty of restricting information access by publishing in commercial journals that are sometimes not even subscribed to by their institutions (Tennant et al, 2016). The adoption of OA can be determined by factors such as existing scholarly publication culture, scholars' perceptions of electronic publishing and the availability of influence to take up new electronic publishing models (Lwoga and Questier, 2014). Hawkins, Kimball and Ives (2013:33) attest that in a bid to promote and adopt OA scholarly communication, most

institutions have made it mandatory for their theses and dissertations to be digitally available. Gross and Ryan (2015:65) note that the rate of adoption of OA models in the Humanities and Social Sciences has historically been lower than Science, Technology and Medicine disciplines. This raises the question of exposure and research domination within certain disciplines, institutions and countries.

Raju, Classen and Moll (2017) opine that as leading research university on the African continent with relatively high research output, the University of Cape Town (UCT) has an obligation to disseminate its scholarly research freely, thus enabling the widest audience access possible. Contributing to the social justice obligation, the sharing of research output via OA publishing platforms was made part of the university's progressive OA policy. To ensure roll-out of the policy as well as its commitment to support article processing charges (APCs), the university had to follow the global trend with regard to OA publishing. Using a case study design, the authors report that these factors have contributed to the adoption by UCT researchers to publish their journal articles on OA publishing platforms. The investigation concludes that in an era of fiscal constraints, the visibility of research is important to source funding and to meet the institution's social justice obligation; and therefore, adopting to new publishing trends is an imperative for UCT researchers (Raju, Classen and Moll, 2017).

Shin (2012:102) argues that the adoption of OA in conjunction with publishing in English is a potential strategy for broadening the distribution of this content and increasing visibility internationally. Sanni et al. (2013:250) attest that although the rapid adoption of new technologies is due to the fulfilment of users' needs and when the technology is perceived as superior to other alternatives, a lack of enthusiasm towards some potentially beneficial innovations also exists even in social systems that are thought to be characteristically fertile for diffusion.

2.6 ATTITUDES OF ACADEMIC STAFF TOWARDS OA

Depending on the encounters, either positive or negative, they can influence the attitudes. Rowley, Johnson, Sbaff, Frass and Devine (2017) express the feeling that despite significance progress with policies and interesting debates on the future and impact of OA publishing, there is a dearth of studies that examined the behaviour and attitudes of academics towards OA publishing in scholarly journals. This prompted them to commission a study on their usage of and their intention regarding OA publishing, their perceptions regarding the advantages and disadvantages of OA publishing, journal article publication services, peer review process and reuse of journals published in OA. It was found that most academics are more positive about the benefits than they were negative about OA disadvantages. In Pakistan, a study by Sheik (2017: 612) also found that "the attitudes of faculty members towards OA were very positive in all contexts". Furthermore, key motivational factors that encouraged most of the faculty members to publish in OA journals were "large readership, impact factor, free access to readers and no publication fee" (Sheik, 2017:612).

Attitudes towards OA are often informed by perceptions and encounters of academics with the innovation. An insight into the range of perceptions, opinions, and behaviours of university academics toward OA is crucial in that academic librarians who assess the fashion in which OA serves the academic and research communities can prepare for an OA future, and to gain an understanding of how OA has an impact on the role of the academic library (Tenopir, Dalton, Christian, Jones, McCabe, Smith and Fish 2017). Negative criticisms towards OA publishing by most academics arise as a result of the authors required to pay article processing charges. It can be tough for researchers from countries where resources are limited to publish their own articles in OA journals, as they need to pay APCs. A study by Togia and Korobili (2014) confirms that despite OA being perceived to have more benefits that the traditional mode of publication, it also raises some concerns regarding the author-pays model, the quality of peer-review and the impact of the journals.

In their study, Dulle et al (2011:119) attest that attitudes of about 80% of their respondents towards OA was positive. Respondents considered OA beneficial to the scholarly community, access and use. Most (82%) respondents who evaluated the publications believed that they are of adequate standards and high-quality research. They further indicated that most respondents are in favour of OA scholarly communication (Shuva and Taisir, 2016; Vicente, Melero and Abadal, 2016). Sambe and Raphael (2015:9) assert that "attitudes towards usage and intentions to use may be ill-formed or lacking in conviction or else may occur only after preliminary strivings to learn to use the technology evolve".

Gross and Ryan (2015:80) note that shortly after the successful inception of settings to their institutional repository, researchers in the Faculty of Education and Arts, including staff and postgraduates, were surveyed for their understandings and misconceptions about OA journal publishing in their fields. Respondents ranked their responses according to a Likert scale of 5 for strongly agree and 1 for strongly disagree. Within the attitudes and values section of the survey, 49% of authors strongly agreed that OA makes possible broader circulation of research than subscription models. Moreover, 35% strongly agreed that OA results in greater visibility, but only 15% strongly agreed that OA stimulates innovation. Contrary to these positive conceptions, 27% agreed that OA journals are of lower quality than their pay-to-read counterparts. 24% agreed that OA journals have lower production standards, and 25% were not aware of the general benefits of OA. Gross and Ryan (2015:83) further attest that in terms of the conception of quality in OA publishing, only 9% of OA journals are considered to be of lower quality than subscription publications, whilst 46% of the journals are regarded to be of equal quality, with 0% of OA journals regarded to be of higher quality than subscription journals. Sixty-six percent (66%) of researchers who had previously published in OA journals regard the peer review process as rigorous, and 34% considered the process to be comparable to subscription

based. However, none of the researchers described the peer review as inferior to subscription journals.

2.7.   PERSPECTIVES OF ACADEMIC STAFF ABOUT OA BENEFITS AND CHALLENGES

2.7.1. Benefits of OA to academic staff

Sambe and Raphael (2015:9) argue that the acceptance decisions of OA resources will always be influenced by its benefits and perceived usefulness. The top three benefits of OA known to most academics are higher research impact, greater dissemination and greater public access to research within specialist academic areas. Depending on what academics receive and perceive OA resources to be, it will determine its usage as a new innovation. For instance, most library managers believe that the use of OA would support teaching, learning, research and community services and assist in saving cost for the acquisition of journals in libraries. Peekhaus and Proferes (2015:643) note that: "researchers have similarly ascertained that the realities of the tenure and promotion system exercise a strong braking effect on the uptake of open-access publishing among faculty". Hahn and Wyatt (2014: 95) also note:

> Such institutional inertia, coupled with the perception that electronic publishing lacks rigorous peer review and is thus of lower quality and prestige, has meant that conventional, high status print publications remain the preferred scholarly communication venue among a majority of academics and researchers.

A study conducted by Bosah, Okeji and Barow (2017) revealed that a huge number of academic librarians have published only one paper in OA journals and that the reputation of a journal and its impact factor were seen as very important among factors that inform them about the choice of OA journals. Shuva and Taisir (2016:41) have, however, shed some positive insight emanating from their research, citing the following reasons from respondents:

OA journals ensure that their articles are cited often, and open doors for collaborative research and faster publication.

2.7.2. OA access challenges to academic staff

Baro and Eze (2017:154) argue that identifying factors involved in author decisions to publish in OA journals helps illuminate concerns that may encourage or discourage author support of OA publishing models. Further understanding of these concerns can assist efforts to expand authors' confidence in OA publications. The major challenges of publishing in OA journals were established to be author fees and lack of stable internet connectivity. Macklin (2014) opines that OA is also one solution to problems in university libraries; a problem that affect all of us in academia, whether we are aware of it or not. That problem is the rising price of work published in academic journals.

Due to some of the concerns, criticisms regarding quality and reputation in OA publications also continue as a major challenge to accepting OA, as compared to traditional and established journals (Rowley et al, 2017). Publication quality appears to be based on various factors, including the peer-review process and the reported impact factor of a journal (Togia and Korobili, 2014). The Joint Information Systems Committee (JISC) report established that while traditional and OA authors are aware that the peer-review quality of OA is perceived to be lower. OA authors are of the view that the peer-review process within OA journals is quite similar to that of traditional publications (Swan and Brown, 2004). Most academics seem to continue to stress the importance of retaining peer review to maintain the quality of all publications and if impact factor continues to strongly influence authors' choice of quality of journals. Therefore, OA publications will have to establish credibility through this measure and remain competitive with the more traditional high impact publications (Tijssen and Kraemer-Mbula, 2018).

Sanni et al (2013) state that moving online has transformed the face of journal publishing and presents opportunities for journal publishers, but not without some challenges due to the emergence of new roles, routines, values, attitudes and patterns of user and author behaviour. These challenges have influenced decision-making and time taken for the adoption of electronic journal publishing in many developing countries. As such, researchers are conflicted in their opinions on the benefits of OA with the misunderstanding of article processing costs (APCs) and copyright hanging in their minds. Björk, Shen and Laakso. (2016) attest that there is an on-going debate about how OA journals should be operated. A model proposed by big professional publishers where publishing activities are funded by authors paying expensive APCs has been deemed unfavourable with suggestions made to source research funding or having institutions from their research funds. Because of OA, some publishers have resorted to set up bogus journals with the promise of quick peer review process and publication turnaround times to the authors. Beall (2017: 54) defines predatory journals as:

> low-quality open-access journals that seek to earn revenue from scholarly authors without following scholarly publishing best practices. Seeking to accept as many papers as possible, they typically do not perform a standard peer review, leading to the publication of improperly vetted research. Some predatory journals repeatedly use templates as their peer review reports.

Shuva and Taisir (2016:36) also argue that it is difficult for some academics to identify OA journals in their fields of research when there is a rise in predatory journals. Some institutions do not encourage publishing in OA journals as an alternative for research promotion and tenure because of fake publishers. The indifference brings forth the question of how OA publishing is perceived by such institutions.

2.7 CHAPTER SUMMARY

The purpose of this chapter was to discuss the theoretical framework and literature review that underpinned the study. Literature review was guided by the research objectives of the study. It has been established that even though academics are aware of OA, most of them have not embraced the innovation to the maximum. Despite the benefits of OA publishing, literature shows that there are still some doubts from most academics to adopt this mode of publication because of the APC, concerns with the peer review process and the emergence of predatory publishes.

The next chapter will delve into the research methodology that was followed to collect data for the study.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1.   INTRODUCTION

This chapter presents the research methodology that was used to carry out this study. The chapter presents a detailed account of the entire research process adopted in this study, including the reasons behind the choice of research processes and procedures followed in the study, such as research approaches, research design, sampling and sampling techniques and procedures, data collection instruments or tools and statistical procedures used in data analysis. Research methodology is a systematic way to solve a research problem scientifically. This chapter embraces the adopted research methods and tools, as well as reasons behind the adopted research methods of the study. The chapter first introduces the scientific research process, the purpose and approach that was adopted in conducting the study within the framework of research paradigm. This is followed by a discussion of the research approach employed in the study. Thereafter, follows a presentation of the selection and justification of various research methods that were employed in executing the study. Ethical issues that were adhered to while conducting the research are highlighted at the end of the chapter, including the testing of the instrument used to collect data.

3.2.   RESEARCH PARADIGM

Research is guided by a pattern of set of assumptions when collecting, analysing and interpreting data to answer research objectives. This is commonly referred to as a research paradigm in research (De Vos, Strydom and Delport, 2011a; Du Plooy-Cilliers, Davis and Bezuidenhout, 2014). Bryman (2004) defines a research paradigm as a cluster of beliefs that direct researchers in a specific discipline, views and standards they must follow when conducting research. The paradigm influences what should be considered in a research study, how it should be researched, how findings

should be interpreted and how researchers select both research questions that they want to study and methods that they intend use in the study to understand the research problem (Kivunja and Kuyini, 2017). A paradigm provides the basis for understanding the nature of reality and provides guidance on how this reality can be known and understood (Bazeley, 2013).

Therefore, in research there are two basic paradigms, namely, positivist and interpretivist research paradigms. Pickard (2013: 7) notes that each paradigm has its own ontological, methodological, epistemological position and its own purpose. The best way to distinguish between the two is to view the positivist researcher as believers in tangible, social reality which exists independently and naturally, while the interpretivist believes in multiple, constructed realities that cannot exist outside the social context that creates them. Maree (2016: 23) suggests that positivism postulates that only objective, observable facts can be the basis of science, while interpretivism foregrounds the meaning that individuals or communities assign to their experiences. This entails that positivism takes things as they are, and is based on laws of nature, while in interpretivism, subjective meanings are crucial to achieving understanding and meaning (Maree, 2016: 23).

This study is based on the positivist research paradigm, which postulates that the world and its phenomenon cannot be considered meaningful unless it is verified through measurement and direct observation (Fraenkel, Wallen and Hyun, 2012). The philosophy behind the positivist paradigm lies in the fact that in this study, knowledge is generated and gained through quantifiable and measurable observation that leads to statistical analysis. Positivism is rooted in quantification of variables that can be expressed in terms of numbers and frequencies (Balarabe-Kura, 2012). Positivism is appropriate in this study because it deals with measurement in numbers, awareness levels and the extent of adoption of OA publishing of academics and researchers. This

ensured that this research is presented objectively in an accurate manner and without bias.

3.3. RESEARCH APPROACH

A research paradigm can assume qualitative, quantitative or mixed-method research approach, depending on the researcher's point of view of how he or she views reality. Successively, there are three main distinctive research approaches in social sciences research, namely, the qualitative, quantitative and the mixed method research approaches. The latter combines the first two approaches (Timans, Wouters and Hwilbron, 2019). Any research can be conducted by researchers, scholars, scientists and academics using one of these approaches or a combination of both approaches.

3.3.1. Qualitative research approach

Qualitative research involves specialised techniques to obtain in-depth responses about what people think, enabling researchers to gain insights into attitudes, beliefs, motives and behaviours of the target population as well as gaining an overall understanding of underlying processes. The qualitative research approach is concerned with subjective assessment of attitudes, opinions and behaviour. Maree (2016) defines qualitative research as an approach which is concerned with understanding the process and social context which underlie various behavioural patterns, and is mostly concerned with exploring the why questions of research. This approach of enquiry aims to gather an in-depth understanding of human behaviour and the reasons behind that behaviour. One of the major weaknesses of qualitative research is that it is time consuming, especially when the researcher has to analyse data derived from open-ended questions (Bless, Higson-Smith and Sithole, 2013).

3.3.2. Quantitative research approach

The quantitative research approach is based on the measurement of quantity or amount. Creswell (2009) defines the quantitative research approach as a scientific method for testing theories by examining relationships between variables. It is applicable to phenomena that can be expressed in terms of numbers. Goertzen (2017) indicates that this research approach is more concerned with finding out about the research phenomenon relating to how much, how many, how often, and to what extent. Quantitative research relies more on statistical and mathematical techniques to answer research questions (Allen, 2017). Babbie (2013) confirms that quantitative methods emphasise objective measurements and the statistical, mathematical or numerical analysis of data collected through polls, questionnaires and surveys, or by manipulating pre-existing statistical data using computational techniques. Quantitative research focuses on gathering numerical data and generalising it across groups of people to explain a particular phenomenon.

3.3.3. Mixed methods research approach

A combination of both research approaches and designs is commonly referred to as the mixed methods research approach (MMR). Creswell and Plano-Clark (2011: 5) define MMR as a research approach which focuses on collecting, analysing and mixing both quantitative and qualitative data collection approaches in a single series of study. Its central proposition lies in the fact that the combination of quantitative and qualitative approaches provides a better understanding of research problems than a single research approach. Therefore, an MMR design is useful to capture the best of both quantitative and qualitative approaches (Creswell, 2009:22). Using both research approaches in a single study validates research findings (De Vos et al., 2011a). The mixed method employs both qualitative and quantitative research approaches simultaneously to create a research outcome stronger than either method individually.

3.3.4. Choice of research approach

Out of the three research approaches, the researcher opts for the quantitative research approach as the dominant research approach and design of this study. However, the qualitative research approach was slightly adopted for a specific objective of determining academics and researchers' general comments and views on challenges and benefits encountered in adopting OA publishing. The approach was dominant because the study sought to measure statistically the level of awareness, usage and rate or level of adoption for OA publishing among academics and researchers at UL.

This study adopts the quantitative research approach because it is concerned with measuring the extent to which academics at UL are aware of OA publishing and the extent to which they have adopted it as a mode of publishing their research findings. Therefore, using the quantitative approach enabled the researcher to measure awareness levels of academic staff towards OA publishing, and the extent to which academics have adopted OA publishing. Quantitative research is also useful in conducting a study with large and heterogeneous populations, in this case UL academics belonging to different faculties and schools forming the academic structure of this institution. The use of the quantitative research approach allows greater precision in reporting findings and can use computer software packages when analysing data to allow more objectivity (Fox and Bayat, 2012: 78).

3.4. RESEARCH DESIGN

A research design involves a series of decisions regarding the way the research is expected to be conducted. According to Mertler (2014), a research design is an assemblage of conditions for specifying relationships among variables in a study. It also involves operationalising these variables and controlling effects of peripheral variables as well as a plan for picking the sources and types of information to be used in achieving research objectives. Furthermore, a research design is a blueprint indicating the way the research is intended to be conducted in order to achieve its aim and objectives. It is

also considered important in that it facilitates the smooth conduct of various research operations. Essentially, the research design should answer such questions as: Where are the data located? How much material or how many cases will be needed? How will the data be collected? How will the data be analysed?

Each research approach or methodological orientation has its own research designs. As such, there are several research designs in quantitative research. These designs are divided into two main categories, namely, experimental and non-experimental research designs (Dwyer and Bernauer, 2014). In an experimental research design, which is used mainly in sciences, a researcher establishes different treatments or conditions, and then studies their effects on participants. Control groups are identified and exposed to the variable (Leedy and Ormrod, 2014). Experimental research designs, which are often called true experimentation, use scientific methods to establish cause-effect relationships among a group of variables in a research study. Researchers make efforts to control variables except the one being manipulated (the independent variable). The effects of the independent variable on the dependent variable are collected and analysed for a relationship.

However, for the purpose of this study, much attention was paid on the non-experimental research design, which encompasses research techniques in which participants are studied in their natural occurrence, without subjecting them to a particular treatment, condition or manipulation (Mertler, 2014). Three main types of the non-experimental research design exist, namely, descriptive survey, correlational and casual comparative research designs. According to Burns and Grove (2011: 201), a descriptive research design "is designed to provide a picture of a situation as it naturally happens". It may be used to justify current practice and make judgment and to develop theories. On the other hand, a correlational research design explores the relationship between variables using statistical analyses. However, it does not look for

cause and effect and therefore, is also mostly observational in terms of data collection. A quasi-comparative design seeks to establish a cause-effect relationship between two or more variables (Salkind, 2010). In this type of research design, the researcher does not assign groups and manipulate the independent variable.

This study followed the descriptive survey research design. The descriptive survey research design describes a situation and look for trends and patterns within the sample population group that can be generalised to the defined population of the study (Pickard, 2013: 112). It is a quantitative research design through which the researcher administers a survey or questionnaire to describe attitudes, opinions, behaviour, experiences and other characteristics of a group or population (Mertler, 2014). Furthermore, the data gathered in descriptive surveys are usually a combination of measurement, counts and brief narratives, which are then analysed using descriptive statistics such as measures of central tendency and standard deviations. The basic purpose of a descriptive survey is to describe characteristics of a population of interest, estimate proportions in the population, make specific predictions and test the associational relationships (Mann, 2015).

3.5. DATA COLLECTION METHOD

Creswell (2009) notes that when conducting survey research, "the researcher can choose among several modes of data collection, including direct administration of surveys, mail surveys, telephonic surveys, interviews, e-mail surveys and web-based surveys. Web-based surveys are typically administered by directing the participants to a website link sent via e-mail". The participants may complete the survey online and submit their responses via the internet. Although this kind of data collection procedure requires effective and efficient technological infrastructure, the cost in terms of time, money and effort is low. Therefore, this study used web-based survey using an online self-administered questionnaire designed through Google Forms. Google form is an easy to use data collection tool for the creation and

implementation of web-based questionnaire surveys. It is easy to create a survey and to manage collected data. A web-based questionnaire is a data collection tool that can be used to solicit information from a large population group.

3.6.   DEVELOPMENT OF DATA COLLECTION TOOL

The questionnaire was divided into five sections to address each objective of the study.

Section A sought information on demographic characteristics of respondents. The profile of respondents may serve as variables that determine the adoption of OA by academics and researchers. The types of questions asked from section A were closed-ended only, where the researcher sought to solicit information about their age, level of education, designated academic positions, and number of research papers published.

Section B looked at awareness of OA publishing by academics and researchers, as well as how they became aware of this initiative. The 5 point Likert scaling was used to ask respondents to rate items on a level of agreement. For example: 1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; and 5 = Strongly agree. This was followed up by a question on the sources through which they became aware of OA.

Section C looked at the actual adoption of OA by academics in terms of purpose for which they use OA publishing.

Section D asked respondents about their attitudes towards OA publishing, while Section E asked open-ended questions to solicit information regarding the adoption of OA, challenges and benefits that they derive from this mode of publishing. Section E asked open-ended questions to solicit information about challenges that they encounter in attempting to adopt OA and benefits that they derive from this.

3.7. POPULATION AND SAMPLING

3.7.1. Population

Population refers to a set of elements that the study focusses on (Bless, Higson-Smith and Sithole, 2013:165). Population, in most studies, refers to people who share the same characteristics. In other studies, population includes events, organisational units, case records or other elements with which the research problem is concerned. Bertram and Christiansen (2015:206) describe population as the "total number of people that would fit into the group that is being considered by a particular study". When the population is too large to an extent that the researcher will not be able to cover all of them, sampling is applied. Therefore, this section discusses population of this study as well as the sampling method that was employed to select participants of the study.

The population of this study was made up of academics from all four faculties making up the academic structure of UL, that is, Faculty of Humanities, Faculty of Management Sciences and Law, Faculty of Agricultural and Environmental Science and Faculty of Health Sciences. At the time of collecting data, the Integrated Tertiary System (ITS) indicated that there were 687 academic staff members at UL. However, since it would not be possible for the researcher to cover all academic staff members at the university, sampling was required to choose or select academics who should participate in the study to represent the entire population.

3.7.2. Sampling

Sampling is defined as the process of selecting a manageable group of individuals from the entire population to represent the larger group from which they were selected (Bless et al., 2013). It assists the researcher in saving time and money when collecting data. There are two main techniques of sampling in research, namely, probability sampling and non- probability sampling techniques (Babbie, 2013). The difference between the two sampling methods

lies in the fact that in probability sampling, all individuals within a particular population have an equal chance of participation or of being selected to participate in the study, while non-probability sampling methods refer to a situation where the possibility of including each element of a population is unknown or cannot be individually identified (Leedy and Ormrod, 2014). This study adopted the probability sampling method. Probability sampling is mainly used in quantitative studies. In this study, it will enable the researcher to generalise findings to the entire population of academics at UL.

3.7.3. Sampling method

The sampling methods used in probability sampling include simple random sampling, systematic simple random sampling, stratified sampling and cluster sampling. For the purpose of this study, systematic simple random sampling was the most appropriate strategy of selecting respondents in that it afforded every member in every faculty an equal chance of participating in the study (Creswell, 2009).

3.7.4. Sampling frame

Using the systematic simple random sampling, a standard interval of three was used to arrive at a target population of the study. A recent internal list of all academics at UL (687) was obtained from the ITS. The researcher selected them on the basis of the third interval in order to arrive at the target population of 229 participants. This entails that in this type of sampling, every academic staff member who was selected represented three staff members. However, noting that some academic staff members may not participate due to their busy schedules, the researcher decided to send out the web questionnaire link to all 687 academic staff members at UL. This resulted in 250 academics responding to the questionnaire.

3.8.   QUALITY CRITERIA

Quality criteria are some of the means used to meet reliability and validity requirements in research. Hammersley (2007) believes that unless research operates on the basis of quality criteria, the research product will be of poor quality, and users of research require reliable means of judging its quality. Before collecting data from respondents, "a pilot project or study should be conducted to measure the easiness, and not level, of the questions asked. A pilot study helps the researcher to identify potential challenges that may have an effect on the reliability and validity of findings. A pilot study is a small or trial run done in preparation for a proper study. The aim of a pilot study is to obtain information in order to assess the feasibility of the data collection instrument. De Vos et al (2011b) argue that the purpose of a pilot study is to give direction to the main investigation. It is a pre-test before the main data collection, and helps to ensure the validity and reliability of the instrument used to collect data.

Reliability is a means by which measurements made are consistent. It helps the instrument to be used to bring about standardisation even when used from one situation to another (Leedy and Ormrod, 2014:93). Leedy and Ormrod (2014:92) further explain that validity means that the measurements are correct, i.e., the instrument measures what it is intended to measure, and that it measures correctly. Relevance, precision and accuracy are requirements that are sought in measuring validity (Sarantakos, 2013: 99). By conducting the pilot study, the researcher wanted to establish that the data collection instrument used will bring reliability and validity to the findings of the study. This was done by distributing the questionnaire to at least ten (10) academics and researchers, five from School of Languages and Communications, two from School of Mathematics and Computational Sciences, two from School of Law, and one from School of Physical and Mineral Sciences. This was done in order to identify questions that might need to be clarified to respondents. The results of the pilot survey showed that the questions made sense to the participants, since there were no participants who had problems in terms of responding to these questions.

3.9. DATA ANALYSIS

Gorman and Clayton (2005: 207) define data analysis as a procedure for bringing about order, arrangement and meaning to data collected in a particular study. For effective interpretation of research findings, raw data that was collected has to be refined to produce information that the researcher can be able to draw conclusions from. Therefore, in order to transform data into meaningful information, it must be analysed so that readers of the dissertation can understand and make sense of findings. Researchers use software such as Statistical Package for the Social Sciences (SPSS), while others use Excel spreadsheet to analyse quantitative data.

In this study, quantitative data was analysed using the SPSS software. Bar graphs, tables and pie charts were used to present the data. Quantitative data was presented statistically and then interpreted descriptively, while qualitative data was analysed by identifying similar responses in the question relating to challenges encountered and general comments regarding OA adoption. This type of data analysis is referred to as thematic analysis. In thematic analysis, "the researcher closely examines the data to identify common themes. This means that similar topics, ideas and patterns of meaning that come up repeatedly in the responses solicited from the participants are identified and categorised into main headings and subheadings" (Caulfiled, 2019: par 2). Similar responses were identified, presented statistically and then described and interpreted in accordance with findings from similar and related research topics.

3.10. ETHICAL CONSIDERATIONS

Babbie (2013) indicated that when studying any form of human behaviour, ethical concerns are paramount. This is because studies of human behaviour are highly personal, salient and perhaps threatening in nature. Therefore, there were some ethical principles that the researcher had to adhere to.

3.10.1. Permission to conduct research

Ethical considerations are an important component of research. Therefore, as part of ethical considerations, the researcher requested permission to conduct research. This was done by applying and seeking an ethical clearance certificate (Appendix A) from TREC. The first step of the application was done when the research proposal was tabled at the School of Languages and Communication Research Committee, and upon approval, it was then tabled at the Faculty of Humanities Research Committee as the second step. Turfloop Research Ethics Committee approved the formal study proposal with the following project number as reference: TREC/53/2018: PG (Appendix A).

3.10.2. Informed consent

Informed consent is one of the ethical issues emphasising the importance of both accurately informing your subjects or respondents as about the nature of the research and obtaining their written consent to participate. Coercion is not to be used to force participation, and subjects may terminate their involvement in the research any time (Babbie, 2013: 71).

The study was explained to respondents in a covering letter that accompanies the web link questionnaire. They were requested to go through the covering letter and to tick in the box if they agreed to participate in the study.

3.10.3. Confidentiality and dignity of respondents

The researcher included a covering letter (Appendix B) used to explain to respondents what the study entails and what is required of them in terms of participation. In the covering letter accompanying the online survey questionnaire, the researcher also assured respondents of their rights, confidentiality and dignity. The researcher guaranteed respondents that the data they provided was confidential. This means that their age and other personal details will not appear anywhere in the research document, including the questionnaire and research reports.

3.11.   CHAPTER SUMMARY

This chapter provided an outline of the research methodology adopted in the study, which covered the research approaches, research design, area of study, data collection procedure, population and sampling and sampling techniques, and ethical considerations. The data collection and data collection procedure were also described.

Data presentation, analysis and interpretation are covered in Chapter 4.

CHAPTER FOUR
DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1.   INTRODUCTION

The previous chapter discussed the research methodology that was used as well as procedures followed to collect data of the study. The purpose of the current chapter is to pay attention to the presentation, analysis and interpretation of data that has been collected from responses received from self-administered questionnaires. Data collected are presented in the form of tables and bar graphs, and then examined and interpreted in descriptive form. Literature from previous findings on related topics are also used to interpret data. Though the targeted participants of the study were 229 academics, the responses received surpassed the target by 21 more respondents to make it 250.

4.2.   DEMOGRAPHICAL DATA

Demographic data refers to information that is related to personal information or statistics of participants such as age, gender, level of income, educational level, race and other related demographic characteristics.

4.2.1   Age distribution

In this question, respondents were requested to indicate the age range to which they belong. Findings related to age distribution are depicted in Figure 4.1. The results show that the largest number of respondents, that is, 108 (43.2%) were in the age group of between 31 to 40 years. This was followed by those whose age group falls between 55 to 61 years old with 60 (24%) respondents. Only 44 (17.6%) respondents fall in the age group of between 26 to 30 years old, followed by those whose age group is between 41 to 50 years old with 35 (14%) respondents. The lowest number of respondents in terms of age group was those whose age group is above 66 years old with 3 (1.2%) respondents.

	26-30 years	31-40 years	41-50 years	51-65 years	66 and above
Frequency	44	108	35	60	3
Percent	17,6	43,2	14	24	1,2
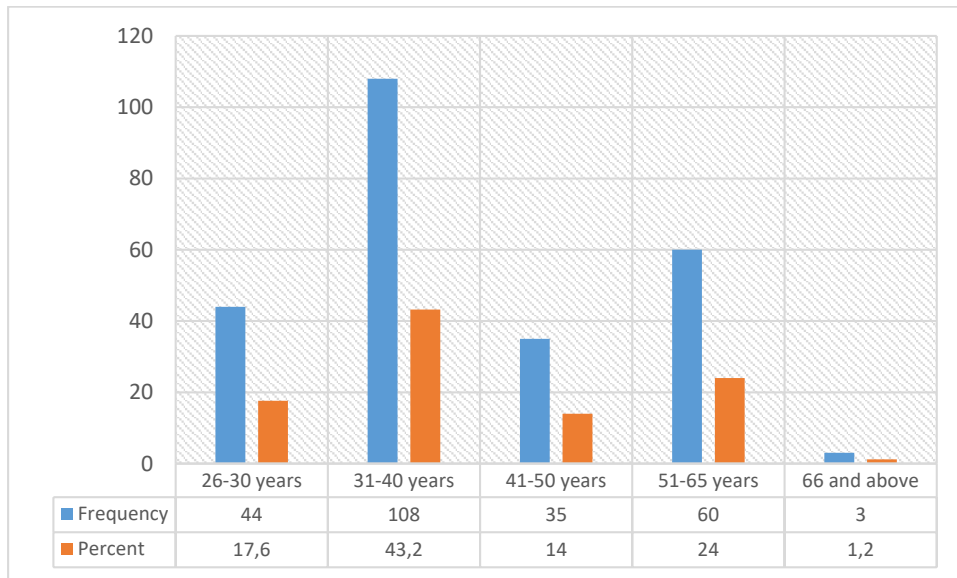
Figure 4.1 Age distribution

The findings of the study revolve around middle aged academics, whose age group falls between 31 and 40 and those whose age group falls between 51 and 65 years old. Van Der Walt and Du Plessis (2010) emphasise the importance of age diversity awareness in the higher education landscape in South Africa. A similar study by Dulle and Minishi-Majanja (2010) also indicate that most respondents in their study were aged between 41 and 50 years, while those above 60 years formed the smallest group in Tanzanian public universities. On the contrary, elsewhere, Kaba and Said (2015: 98) found that 68.5 per cent of participants belong to young adults and middle adulthood groups. To be more specific, 26.5 per cent of them are in the age group of 40 years or below, 25.5 per cent 41-50 years, 42 percent 51-60 years and only 6 percent in the age group of 61 years or above (Kaba and Said, 2015: 98). Hoole (2019) confirms that the majority of academics are in the middle age and approaching retirement age in most higher education institutions across South Africa.

4.2.2 Years of experience

The next question asked academics about their years of experience in academic institutions to which they are attached. The findings are illustrated in Figure 4.2, which indicates that 95 (38%) respondents have 6-10 years of experience, followed by 82 (33%) with 1-5 years of experience, and then 14 (16%) with 11-20 years, while 24 (10%) have 21-30 years of experience, with only 8 (3%) respondents with 30 years and more experience.
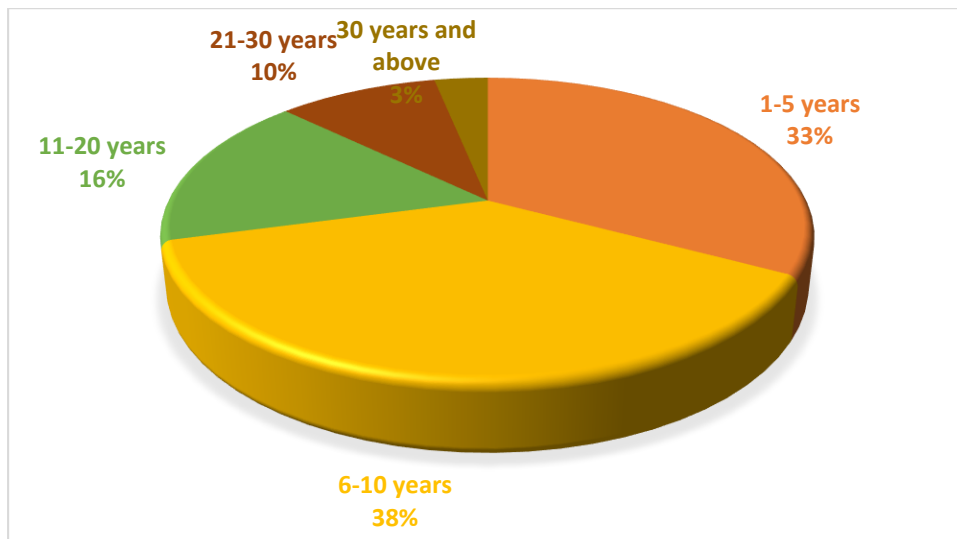
Figure 4.2: Respondents' years of experience

Years of experience in the academic environment may have an influence on the adoption of OA journals. Experience with the journals already published is cited as one of the factors influencing decisions on journal selection (Wakeling, Spezi, Fry, Creaser, Pinfield and Willet, 2018). Therefore, experienced academics are likely to adopt OA publishing than less experienced ones. In a study conducted by Chilimo, Edem, Otieno and Maina (2017), most academic researchers in Kenya showed that they would consider publishing in OA Journals based on their experience, as against few who said they would not publish in those journals because of publishers who abuse OA publishing.

4.2.3 Faculty attached to

Another question was about faculties and schools to which respondents are attached at UL. Findings in Figure 4.3 indicate that most respondents (98;39.2%) were attached to the Faculty of Sciences and Agriculture; followed by 73 (29.2%) who are attached to the Faculty of Management Sciences and Law, and then Faculties of Humanities and Health Sciences with 62 (24%) and 17 (6.8%) respondents, respectively.

	Health sciences	Humanities	Management and Law	Science and Agriculture
■ Percent	6,8	24,8	29,2	39,2
■ Frequency	17	62	73	98
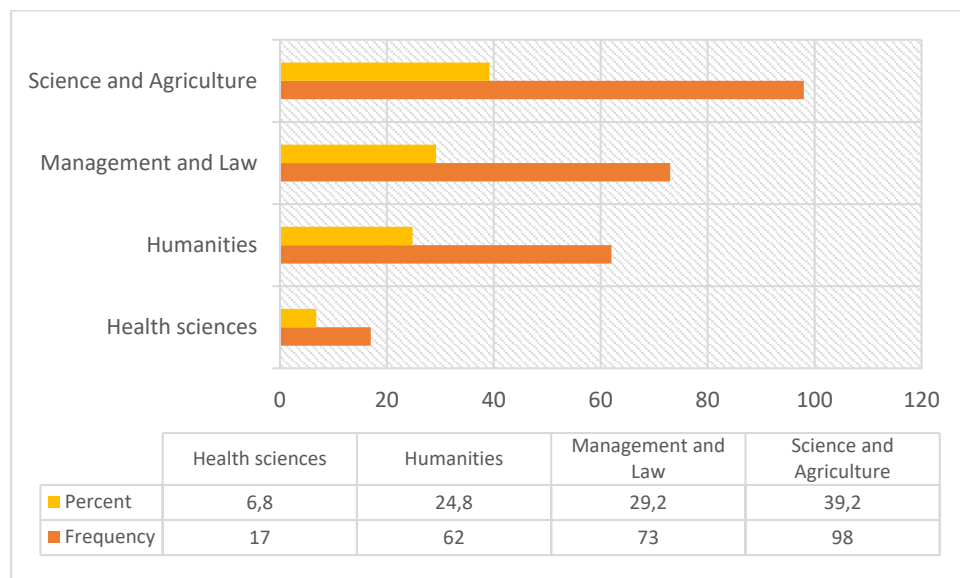
Figure 4.3: Faculties attached to

Björk and Korkeamäki (2020) note that OA is not evenly spread among disciplines. Looking at the general subject resources that promote OA publishing such as SciELO and DOAJ, it is realised that most of the journals available through these platforms are more in the sciences than in the humanities and management disciplines. The OA movement has its foundation in Science Technology and Mathematics subjects, leaving Humanities and Social Science scholars wrestling with the relevance of OA publishing (Rowley et al, 2017). Severin, Egger, Eve and Hürlimann (2020) also indicate that bibliometric studies show that the uptake of OA differs substantially across disciplines. Markin (2020) cautions that for information sources related to visual arts, OA is likely to involve some obstacles in the form of copyright laws. Therefore, academics in visual art may not be

interested in OA since they can include copyright-protected images with rights held by third parties, limited funds for the acquisition of preferred visual content and insufficient institutional support from national research frameworks. In Nigerian universities, it was found that "academics in sciences showed more promise of adopting OA initiative as authors and readers of scholarly resources than their counterparts in the humanities" (Utulu and Bolarinwa, 2009:660).

4.2.4 Respondents' highest qualifications

In this question, respondents were asked to indicate their qualifications. The findings are illustrated in Figure 4.4, and indicate that the majority (137; 54.8%) of respondents have Master's degrees as their highest qualification; followed by 65 (26%) respondents with Doctoral degrees and 22 (+11.2%) with honours degrees.

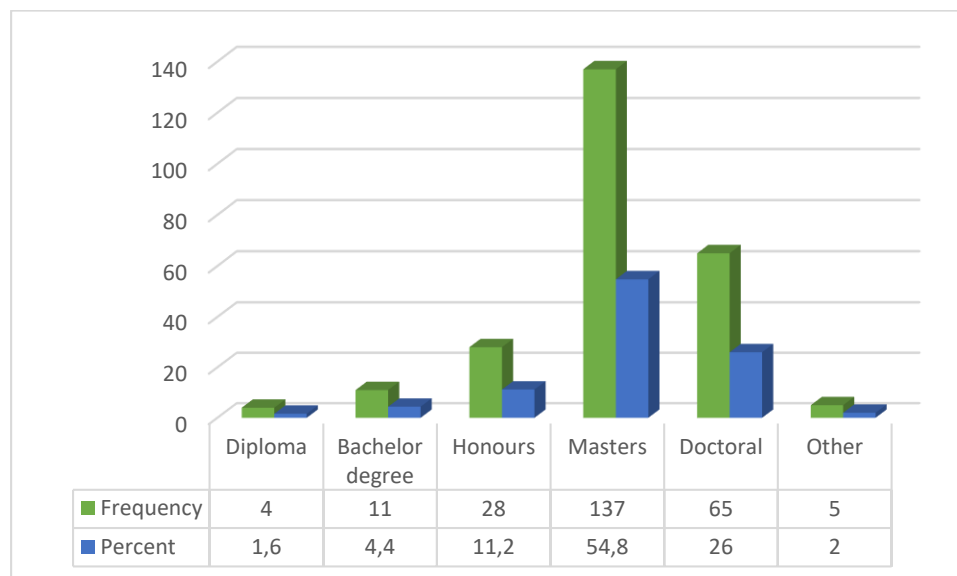|	Diploma	Bachelor degree	Honours	Masters	Doctoral	Other
■ Frequency	4	11	28	137	65	5
■ Percent	1,6	4,4	11,2	54,8	26	2

Figure 4.4. Respondents' highest quantifications

It is believed that most academics are still furthering their studies. Therefore, most (54%) respondents of this study have Master's degrees and occupy lecturer positions followed by those (26%) who have PhD degrees at senior lecturer positions.

4.2.5 Academic designation or position

This question was asked to solicit information about academics' designation or position, such as tutor, lecturer, senior lecturer, Head of Department (HoD), director, associate professor and professor. The results in Figure 4.5 show that most respondents are lecturers (110) at 44%, which is in direct correlation with their highest qualifications at 54.8%. The minimum requirements for lecturers' position is a Master's degree. The number is followed by senior lecturers at 18%, and other, which is likely to include research assistants and part-time lecturers at 10%, followed by professors at 9.2%, HODs at 7.2%, tutors at 4.4% and lastly directors at 2.4%. Some academics share responsibilities and hold two positions such as being an HoD, a professor or an associate professor at the same time.

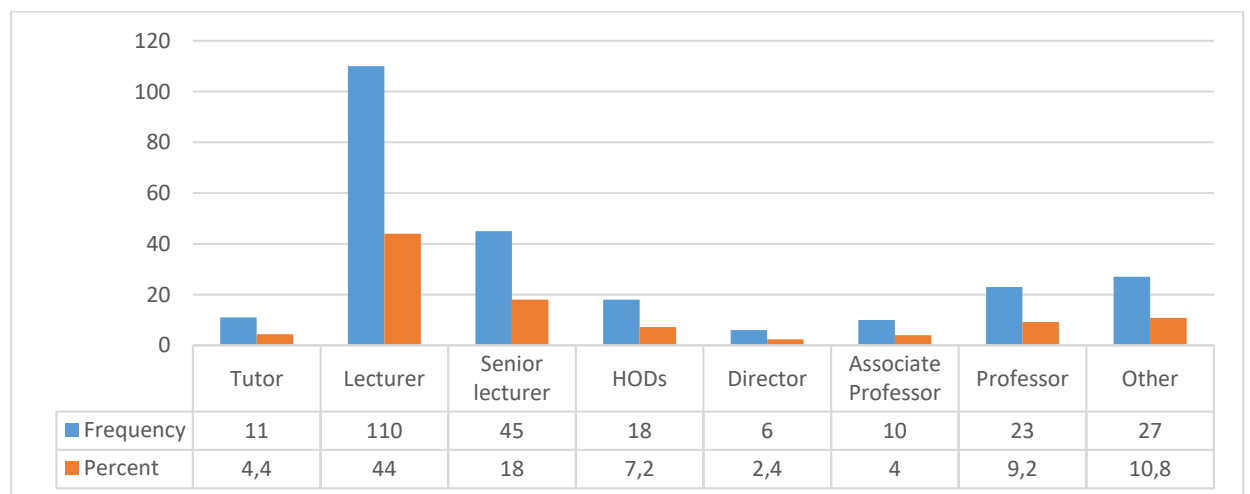|	Tutor	Lecturer	Senior lecturer	HODs	Director	Associate Professor	Professor	Other
Frequency	11	110	45	18	6	10	23	27
Percent	4,4	44	18	7,2	2,4	4	9,2	10,8

Figure 4.5: Academic positions

4.2.6 Number of research publications

This question sought to solicit information about the number of publications each respondent has produced. The question will in turn lead to asking respondents about the mode of publishing which they have used in publishing

their research publications. The numbers in Figure 4.6 indicate that out of 250, 82 (33%) respondents have published not more than three research articles, followed by 67(27%) respondents who have not published any research article. However, 51 (20%) respondents have published between 4 and 10 research articles, followed by 30 (12%), who have published more than twenty research articles. The lowest number of respondents, that is, 9 (3.6%), have published between 11 and 15 research articles.
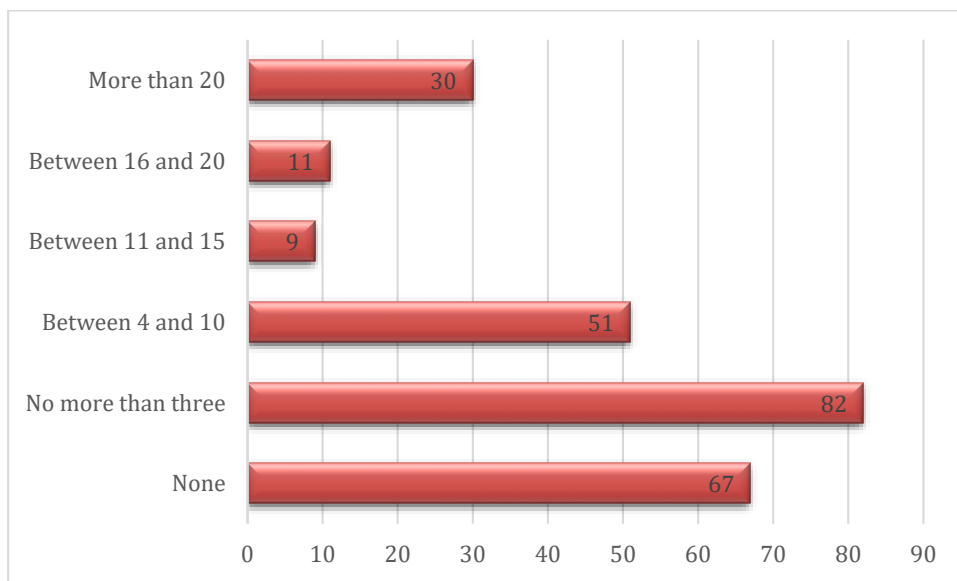
Figure 4.6: Number of research publications

The findings show that at least 183 (72%) respondents have produced articles. UL is ranked amongst universities that are gradually improving in terms of research output in South Africa. The journal publication output units in 2017 shows that the university is at number fourteen (14) out of twenty-six (26) universities in South Africa (Department of Higher Education and Training, 2019), while the Informatics Institute at the Middle East Technical University (2019) in Turkey, which lists the 18 top universities in South Africa, ranked UL at number fifteen. Inglesi-Lotz and Pouris (2018) reckon that South Africa has not yet reached the relevant level of the estimated threshold, even though the country's research publications (in all disciplines) have increased substantially in recent decade. Singh (2016) looked into challenges and

successes for building the research capacity at UL where findings revealed that there is an increase in the capacity building initiatives of the university in the last four years. This is reflected in an increase in research output. However, the question remains whether or not staff members at UL publish their research publications through the OA mode.

4.3 AWARENESS OF OA PUBLISHING

For a person to use a particular product, they must first be aware of it. Therefore, before academics can use and adopt OA, they must first be aware of the service and benefits of using it. This entails that OA cannot be utilised by academics who do not have any knowledge of its existence.

4.3.1 Level of awareness of OA

The first question regarding respondents' level of awareness of OA used Likert scaling in terms of the extent of awards of the initiative. Figure 4.7 indicates that the majority (129; 51.6%) of respondents have some form of knowledge or degree of awareness of OA "to some extent", followed by 45 (18%) respondents who are knowledgeable "to a large extent" with 29 (11.6%) to a very large extent, and then 39 (15.6%) respondents who "to no extent at all" have any idea as to what OA is, whilst 8 (3.2%) "to no extent" aware of OA.
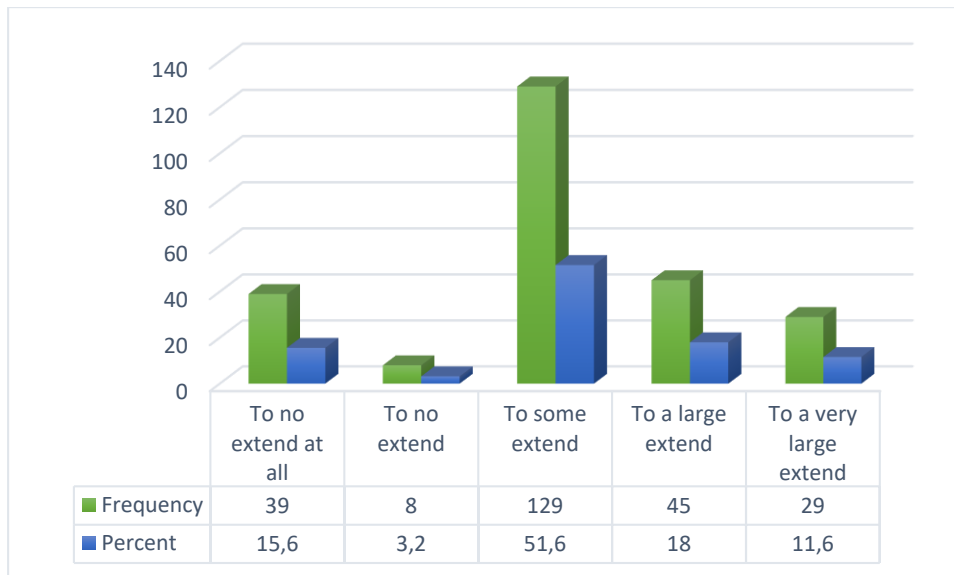
	To no extend at all	To no extend	To some extend	To a large extend	To a very large extend
Frequency	39	8	129	45	29
Percent	15,6	3,2	51,6	18	11,6

Figure 4.7: Level of awareness of OA

Zhu (2017: 557) found that "academics and researchers' use of OA publishing was also related to their awareness of OA policy and OA repositories, their attitudes towards the importance of OA publishing and their belief in OA citation advantage". Similarly, in the Philippines, a study by de Cadiz (2018) found that "the faculty members are much aware of the characteristics of OA publications (OAP) while the students are aware of how OAP are being implemented". On the contrary, Creaser (2010) found that academic staff had little knowledge of their institutional repositories". In Nigeria, a study by Obuh and Bozimo (2012) "revealed a high level of usage of OA publications by both senior and junior LIS lecturers and that the awareness of OA concepts accounts for the tendency of LIS lecturers in Southern Nigeria to use OA publications".

4.3.2 Sources of awareness of OA publishing

A follow-up question was posed to all respondents who are aware of OA, about how they became aware of the initiative. This question was asked in order to establish the channel through which OA access initiative is spread to the academic community as espoused in the DoI theory. The results in Figure 4.8 show that 87 (34,8%) respondents relied on the internet as their source of

awareness of OA, followed by 49 (19.6%) respondents who were informed by their faculty librarians. Thirty-eight (38) respondents at 15% have attributed their knowledge of OA to other sources not listed, while 33 (13%) respondents acknowledged conferences or seminars as their sources of knowledge of OA publishing. Twenty-six (26) respondents, that is, 10.4% acknowledged publishers for their awareness of OA and 17 (7%) have their colleagues and line managers (5, 2%) as their sources of awareness of OA.

	Colleagues	Faculty librarian	My line manager	Conference/ workshop or serminar	From the internet	Publishers	Other
■ Percent	4,8	19,6	2	13,2	34,8	10,4	15,2
■ Frequency	12	49	5	33	87	26	38
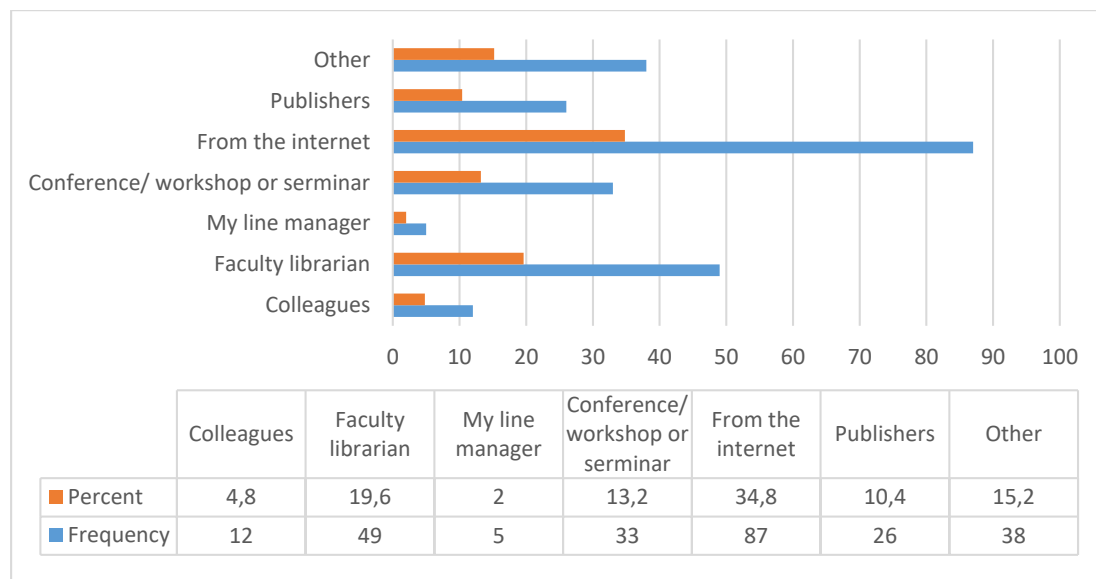
Figure 4.8: Sources of awareness of OA

A study by Nunda and Elia (2019: 150) explored the adoption and use of IR's among postgraduate students in Muhimbili University of Health and Allied Sciences and Sokoine University of Agriculture. The study found that "the library staff and lecturers are sources of awareness and the pulling factors in adoption and use of IRs and further concludes that information literacy (IL) training is crucial in promoting adoption and usage of IRs in universities" (Nunda and Elia, 2019: 150).

4.4 LEVEL OF ADOPTION OF OA PUBLISHING

The main aim of this study is to examine the adoption of OA for scholarly publishing by academics at UL. Therefore, the questions to participants related to frequency of OA access adoption, frequency of publishing in OA publishing platforms, reasons for publishing in OA publishing platforms, as well as types of scholarly publications which they make available through OA publishing, such as research articles, conference papers, theses and dissertations.

4.4.1 Frequency of publishing in OA publishing platforms

With regards to the adoption of OA, participants were first asked about the frequency at which they publish in open access. They were requested to choose from responses that were given to them ranging from "never" to "always". Those who did not publish any paper were provided with the response "not applicable".

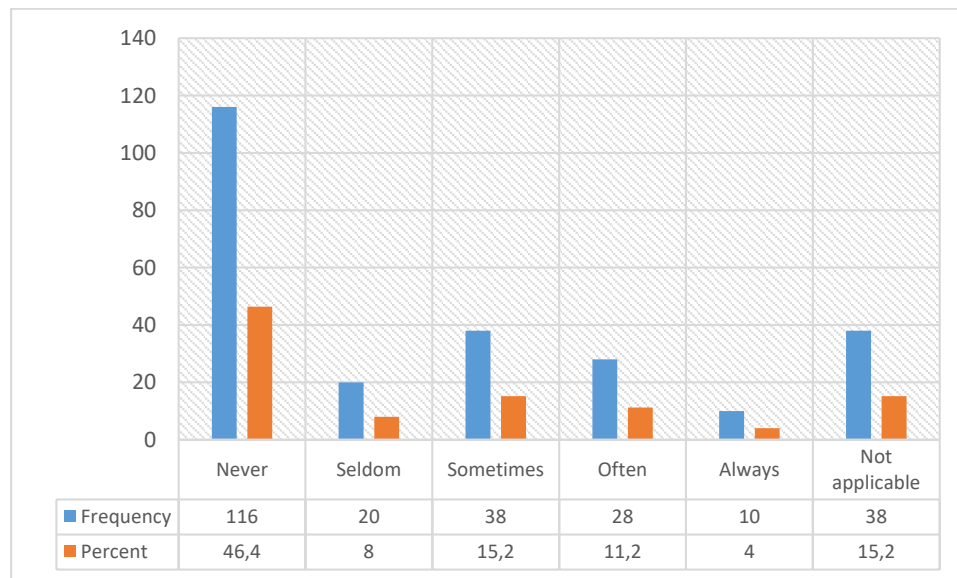|	Never	Seldom	Sometimes	Often	Always	Not applicable
Frequency	116	20	38	28	10	38
Percent	46,4	8	15,2	11,2	4	15,2

Figure 4.9: Frequency of publishing in OA publishing platforms

Figure 4.9 indicates that a large number of respondents, that is, 116 (46.4%) have "never" published in OA, followed by those who "sometimes" publish in OA publishing platforms with 38 (15,2 %) respondents. Another 38 (15%)

respondents chose the "not applicable" option, and only 28 (11) respondents "often" publish in OA, while 20 (8%) respondents "seldom" do so. The figures further show that only 10 (4) respondents "always" publish in OA, which is a small margin compared to those who "never" do so. These results show that there is still a lot that needs to be done in marketing OA and making people understand its importance and benefits. The main finding of a study by Allahar and Sookram (2020: 126) at the University of West Indies "is that OA was not fully embraced as a publishing outlet because of academic resistance derived from questions of acceptability, and the existence of a system that assigns greater recognition to the established subscription journals." Bashorun, Jain, Sabina and Kalusopa (2015) also revealed low level of adoption by academic staff in Nigerian universities. The results of the study by Bopape (2016: 1) also "showed that there has been a steady developing trend towards the adoption of OA for legal scholarly literature internationally, while in South Africa legal scholarly literature is under the control of commercial publishers".

4.4.2. Types of OA publishing platforms used

A follow-up question probed participants about the types of OA publishing platforms they used, such as commercial publishers, Directory of Open Access Journals (DOAJ) and IR's. Those who never published in OA publishing were also provided with the options.

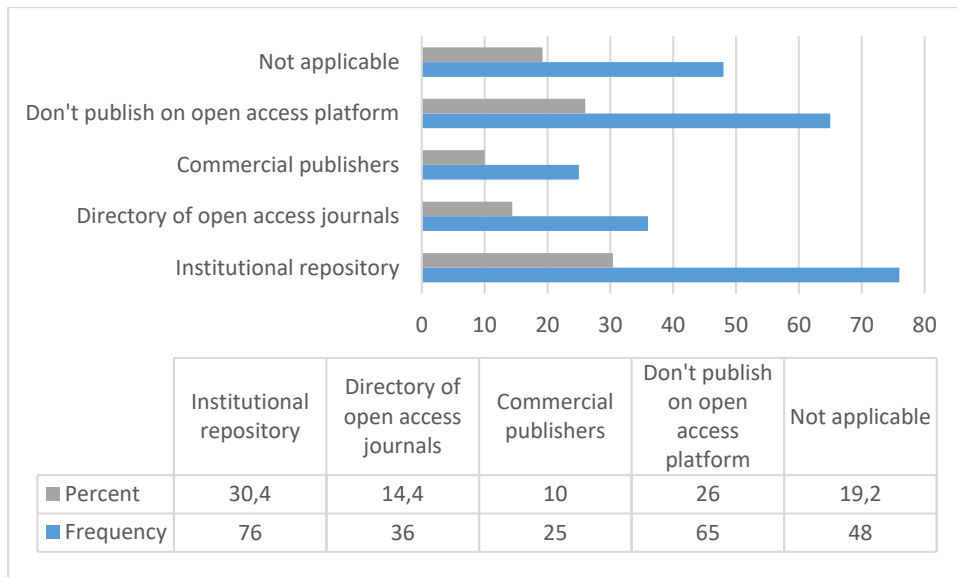|	Institutional repository	Directory of open access journals	Commercial publishers	Don't publish on open access platform	Not applicable
Percent	30,4	14,4	10	26	19,2
Frequency	76	36	25	65	48

Figure 4.10 Types of OA used

IRs hold remarkable prospects of breaking down barriers of access to scholarly communication, yet many remain underutilised and infrequently accessed (Narayan and Luca, 2016). A study by Okeji, Eze and Chobueze (2019: 2) revealed that "the academic librarians in Nigerian universities know and actually use self-archiving options such as ResearchGate, IR and Academia.edu to self-archive their publications". An IR is an electronic store web that contains and preserves theses and dissertations, research articles, conference papers, rare and special materials and many other digital information generated within an institution (Okumu, 2015; Kaikai, 2018). These resources provide a means for institutions to create a central record of their research output and make available their wealth of knowledge (Mgonzo and Yona), and they can be searched through different search engines and therefore they are accessible to people outside the institution (Ukwoma and Dicke, 2017). The IR also helps to preserve the intellectual wealth of an institution (Saini, 2018). Mutsvunguma and Hoskins (2020) examined the extent of use of the IR by academics at the University of KwaZulu- Natal, South Africa. Findings revealed a number of factors that contribute and support the use of the IR, such as the signing of the Berlin Declaration, employment of a full-time IR librarian, updating of the DSpace, development

of an online submission guide, and ongoing training and awareness programmes.

4.4.3. Reasons for publishing in OA

To find out about the purposes for which participants use OA publishing, respondents were asked a question on their reasons for using the initiative. They were to choose between accessing scholarly literature and publishing their scholarly works.
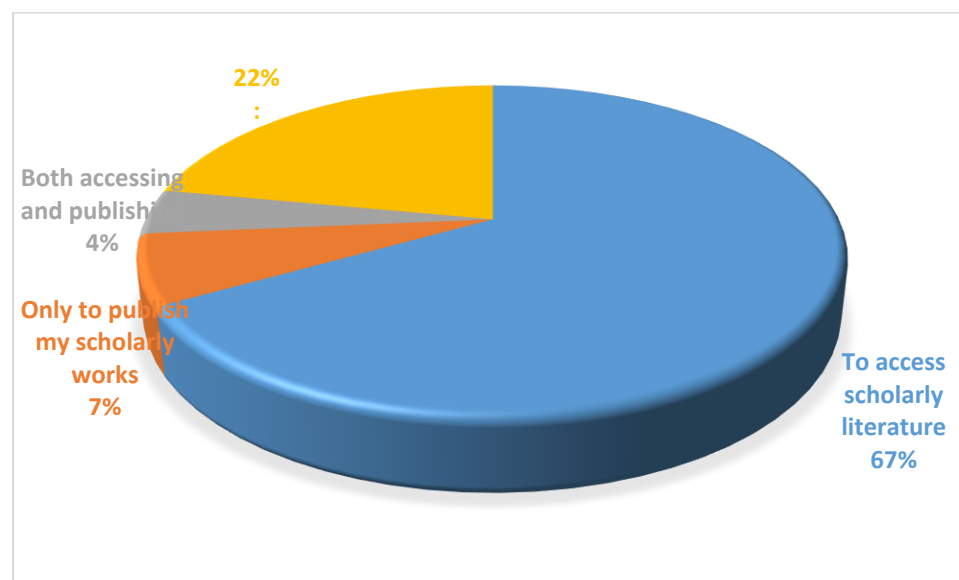

Figure 4.11: Reasons for using OA journals

The majority, that is, 67% of respondents use OA journals to access scholarly literature, while 7% use it for publishing and 4% for both publishing and accessing scholarly literature. Only 22% of respondents found the question not applicable to them, which might simply mean that they do not use OA publishing.

4.4.4. Types of publications published in OA

Participants were further requested to choose from a number of scholarly publications to find out types of publications that they usually publish through OA publishing. The type of publications that participants should choose from included research articles, conference papers, chapters in books, theses and dissertations and other types of scholarly publications.
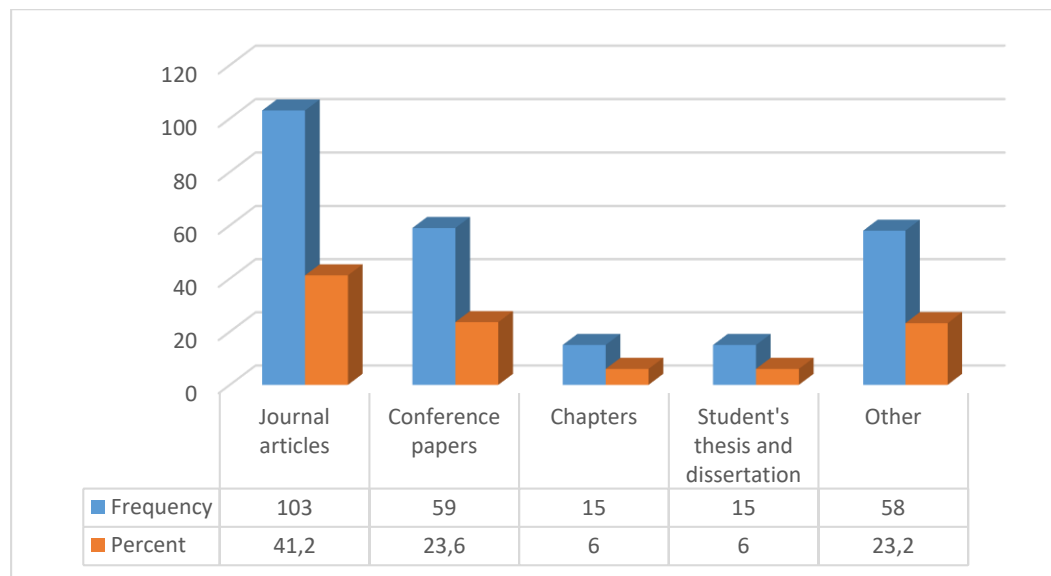
	Journal articles	Conference papers	Chapters	Student's thesis and dissertation	Other
Frequency	103	59	15	15	58
Percent	41,2	23,6	6	6	23,2

Figure 4.12: Types of publications made available through OA

From Figure 4.12, it is revealed that 103 (41.2%) respondents publish journal articles through OA, whilst almost an equal number of respondents at 59(23.6%) and 58(23.2%) made available conference papers and article or presentations respectively. An equal number of respondents with 15 (6%) respondents each made available book chapters and students' theses and dissertations. Other means of OA publishing which were not listed consisted of 58 (23.2%) respondents. These findings reveal that journal or research articles appear to be the most important vehicle or scholarly output through which academics and researchers publish their research results.

4.5. ATTITUDES TOWARDS OA PUBLISHING

Attitudes, either positive or negative, also influence adoption. Participants were also asked to choose between the extremes, that is, if they are "strongly in favour" or "not strongly in favour" of OA publishing. Participants were also requested to choose between neutral, in favour or against OA publishing
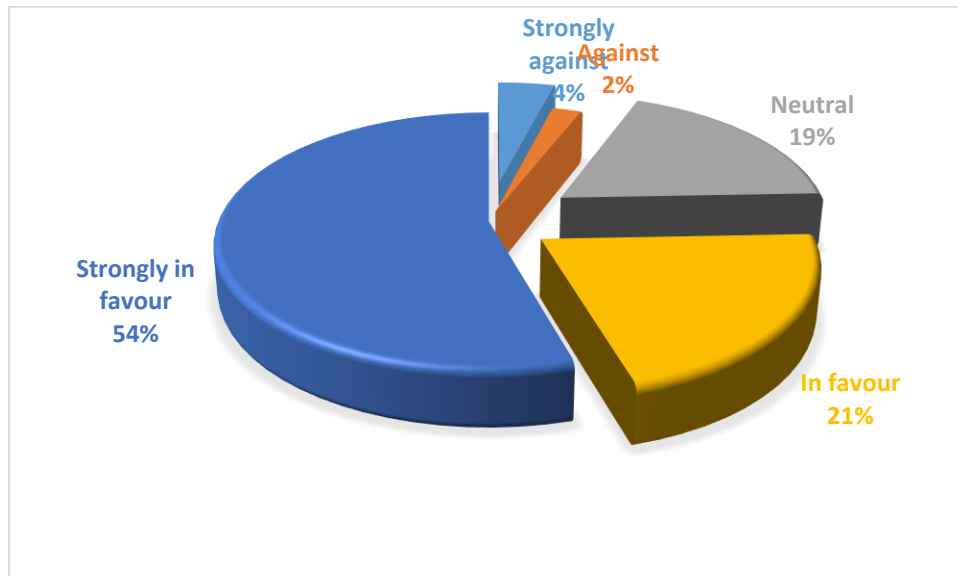

Figure 4.13: Stance towards OA

4.5.1. Positive and negative attitudes towards OA

Figure 4.13 provides a breakdown of academics and researchers' attitudes towards OA. More than half with 163 (54 %) respondents were "strongly in favour" of OA publishing. Fifty-three (21%) respondents were also "in favour", which adds up to 75% of respondents in support of OA, while 26 (19%) respondents were "neutral" and 8 (6%) were against OA. This shows that most academics have a positive attitude towards OA publishing. A study conducted by Mutsvunguma and Hoskins (2020) also found that academics and researchers' attitude towards IR use was positive, although this was hampered by limited knowledge of OA and the benefits of uploading scholarly content on the IR, limited skills for self-archiving, and lack of time to upload content on the IR. The use of other OA publishing platforms by some academics and researchers such as subject repositories, personal websites

and social media platforms such as ResearchGate, Academia and Mendeley took their attention away from the university's IRs. ResearchGate, academic.edu and Mendeley are new emerging social networking sites for researchers and scientists to share their papers, assist each other with research and scholarly queries and to find collaborators. Memon (2016) acknowledges that these tools are regarded as the most attractive academic social networking sites in the scientific community.

4.5.2. Effectiveness of OA publishing

In this question, respondents were also asked to rate the effectiveness of OA based on their experiences. The findings are indicated in Figure 4.14.

	Not effective	Partially effective	Effective	Very effective	Highly effective
■ Frequency	8	14	64	77	87
■ Percent	3,2	5,6	25,6	30,8	34,8
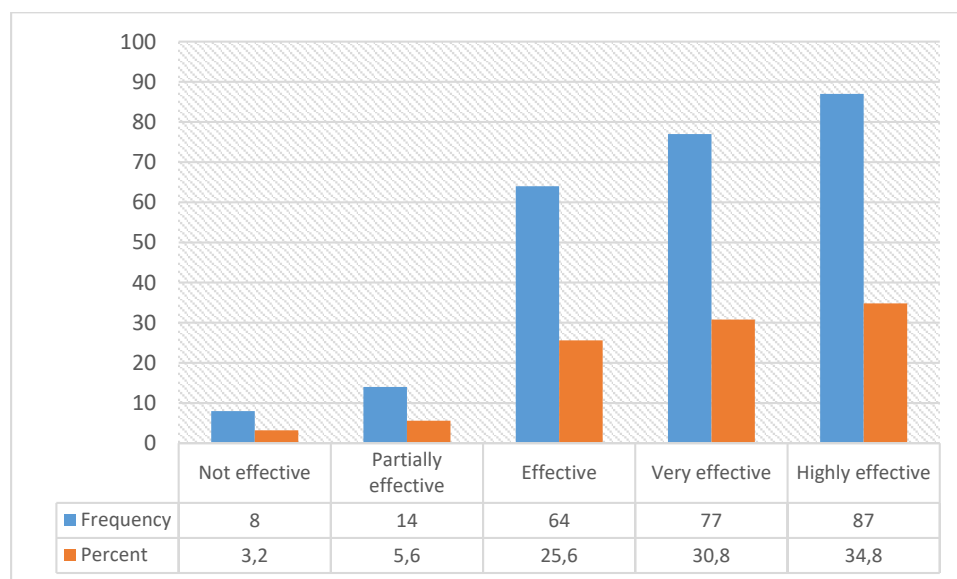
Figure 4.14: Effectiveness of OA

A majority of 228 (92%) respondents found OA publishing to be effective, with 14(6%) respondents finding it partially effective. Only 8(3.2%) respondents did not find OA publishing effective. Raju, Adam and Powell (2015: 136) state that OA "allows for the easy dissemination and preservation of information by providing all scholarly communication and knowledge at no cost to the end user... OA content is more citable, not simply because of the quality of the

output, but instead of the advantage that OA brings in maximising accessibility and increased citation. OA will enhance the research community's existing system for evaluating and rewarding research productivity. Ultimately, and OA has the ability to elevate (South) Africa, its universities and institutions, to the status of knowledge producers rather than mere knowledge consumers".

Therefore, OA publishing has multiplied remarkable support from academics and researchers. The most appreciated benefits of OA are increased visibility of their works and their reputation as researchers. Guruprasad and Marimuthu (2013:1111) indicate that some of the most significant benefits of OA publications are "free availability, authors retaining copyright, high quality and rigorous peer review, rapid publication, no space constraints, compliance with OA mandates, citation tracking and inclusion in bibliographic databases, accelerated discovery, public enrichment, as well as improved education". However, a study by Iton and Iton (2016), which assessed the readiness among science faculty academics at the University of West Indies revealed gaps in knowledge of OA and, therefore, insignificant engagement with pen access publishing. A study by Lwoga and Questier (2014: 1) "found that facilitating conditions, extrinsic benefits (professional recognition), behavioural intention and individual characteristics (professional rank, technical skills and number of publications) predicted actual usage of OA publishing. Other factors related to contextual factors (attitudes, and OA culture), and extrinsic benefits (academic reward, accessibility and preservation) determined behavioural intention to use OA. Fear to violate publisher's copyright policies and effort expectancy however de-motivated faculty to adopt OA publishing, while copyright concerns inhibited faculty's actual usage of OA".

4.6.   PERSPECTIVES ON OA BENEFITS AND CHALLENGES

The next question sought to solicit information from respondents about benefits that they experienced by using OA publishing platforms, as well as challenges that they encountered in adopting OA publishing. The questions

were open-ended, and respondents were allowed to narrate their perspectives on benefits and challenges of OA.

4.6.1. Benefits of OA

Among some of the perspectives provided by respondents on OA were as follows:

4.6.1.1. OA as a good platform

OA has been regarded as a good platform for academic research publishing by most respondents.

4.6.1.2. Access to scholarly research is maximised

Some respondents wrote that through OA publishing, access to scholarly research is maximised for institutions with limited resources. This appears to be an understanding by those who have used OA publishing platforms. Since most academic libraries are experiencing budget cuts, there is always a need for academics and researchers to rely on free information sources on the internet. Adema and Schmidt (2010:32) attest that with the aim of academic libraries to satisfy users' information needs within the constraints of their budgets, libraries have developed repositories and formed consortia of libraries to achieve this. Libraries have also become very active in assisting the publication of OA materials from managing IR's in releasing book chapters and journal articles and digitising OA versions with no copyright publications (Bailey, 2008).

4.6.1.3. Greater visibility and accessibility.

One respondent said: "*I think OA has greater visibility and accessibility*". Abrahams, Burke and Mouton (2009) argue that the visibility of scholarly communication means that specific knowledge and authored works can be

discovered because they are traceable. This has been made possible by registering authors for Open Researcher and Contributor ID (ORCID) numbers. Accessibility means that potential users can gain access to the full text in order to evaluate and engage with the content of the work. Thus, OA is thriving to ensure free access to scholarly communication output.

One of the respondents had this to say: "*I think people should be encouraged to do so".* This statement shows that OA may increase the quality of articles published through its platforms. This can be done through some incentives as a reward for hard work from the author. Fullard (2007:43) highlighted that respondents strongly support the idea that OA improves access to scholars of developing countries, and leads to opportunities for improved networking, collaboration and scientific methods. One of the respondents also noted a representative of one of the research councils who commented that, *"it is anticipated that OA publishing will motivate the individual researcher to publish more than he previously did".* This forecast is borne out by one of the respondents *"I cannot stress highly enough how positive it is to be able to access information quickly".*

4.6.2. Challenges of OA

Despite the benefits of OA, there were also challenges that academics experience in trying to adopt the initiative. Among some of these challenges that respondents highlighted were internet connectivity and lack of ICT connectivity, articles not peer reviewed, fake publishers, article processing charges, lack of knowledge and lack of OA policies. These are also shown in Figure 4.15
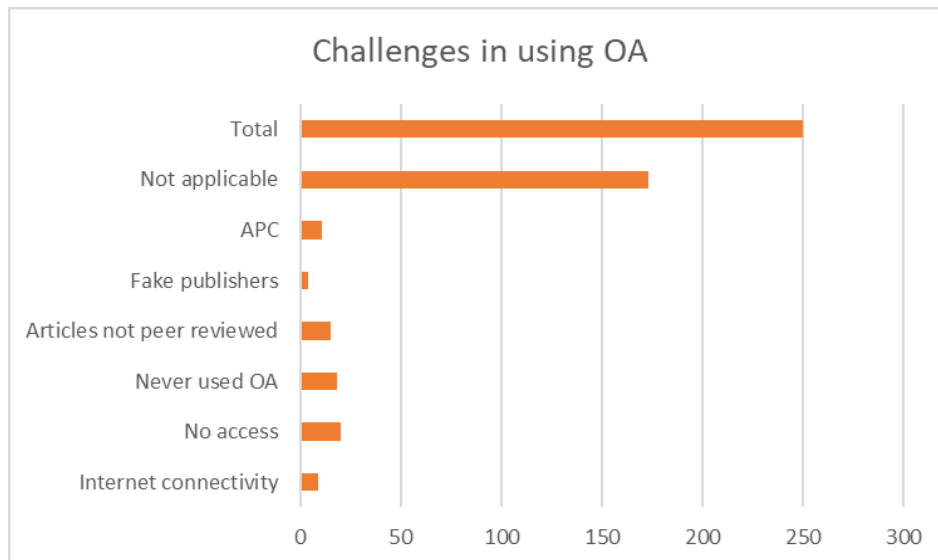
Figure 4.15: Challenges of using OA publishing

4.6.2.1.   Internet connectivity and access

From Figure 4.15, it can be noted that slow, unstable internet connectivity, and power interruptions are some of the challenges reported to have been affecting academics in accessing OA content. Of the 250 respondents, 9 (3.6%) have stated internet connectivity as a hindrance. Fox and Hanlon (2015:705) attest that one of the barriers to OA publishing is technological requirements with internet connectivity at the helm of the barriers. These challenges can also be coupled with lack of ICT facilities as stated by some respondents. Even though there are minimal problems with ICT facilities in the academic environment in South Africa, the same cannot be said about the situation in other African countries. Ridwan (2015) remarks that inadequate ICT infrastructure and the high cost of internet bandwidth is a major problem in Nigeria. Low bandwidth and erratic power supply was also revealed by Okite-Amughoru, Makgahlela and Bopape (2014) as one of the challenges related to ICT infrastructure.

Furthermore, 20 (9%) respondents complained about a lack of access to the necessary resources such as relevant content, and internet access for them to publish in OA publishing platforms. Contrary to what respondents have

stated, most of the literature attest that OA has brought about unrestricted access to content and journal articles. Dulle et al (2010:59) argue that an OA article similar in quality to a subscribed version has more chances of being accessed and cited than the one with restricted access. Giancarlo (2014:76) opines that restricted access to knowledge hinders the achievement of the objective of "enlightenment" and promotes "elitement" as only the elites with access were able to access subscription.

Perhaps, this is a reason for a few, that is, 8% of respondents who stated that they have never used OA publishing for scholarly communication. However, with a variety of OA publishing platforms, access might be confusing as some of the respondents do not necessarily equate access to repositories. Narayan and Luca (2017:1) found "that researchers lack awareness of OA and its value, and that there is also confusion about publishers' copyright policies and researcher reputation. The lack of visibility and usability of the library-managed IR was found to be an issue, as well as the need for subject repositories".

4.6.2.2. Articles not peer reviewed
Fifteen (15) 16%) respondents believed that OA articles are not peer reviewed and thus are of an inferior quality. Contrary to what other respondents believed in, OA movements are pushing for peer review to maintain high quality and not to drop the standard. Giancarlo (2014:115) states that the metrics and value of OA publishing such as citation and research impact, economic value, quality and peer review are what guides OA publications. Dulle et al (2010:64) state that the peer-review process of publications in OA avenues do not differ from those of traditional journals. The importance of the peer review process for OA materials is emphasised by the BOAI. Park (2007:2) expounds that OA journals are peer reviewed academic journals that are freely available in the internet.

4.6.2.3. Fake publishers

Of the 250 respondents, only 4 (1.6%) believed that fake publishers are a challenge for using OA publishing. Enago Academy (2018) opines that fake publishers are the most significant challenge in improving the quality of research in OA articles. With the increasing number of OA publications, some of them having dubious backgrounds, it is more difficult for researchers to identify appropriate content and to determine whether these articles have gone through a rigorous and reliable review process or authenticity of the journal or publisher. Wareham (2018) attests that the growing prevalence of predatory journals and publishers and the introduction of mega-journals and their potential impacts on the credibility of scientific publishing will affect the reputation of academics as publishers.

4.6.2.4. Article processing charges

Other respondents showed that charges incurred in publishing in OA are preventing them from publishing in this mode of scholarly publication. This can also be coupled with non-recognition of OA publications for career development and high costs of publishing in OA outlets. During the 2018 OA Week, Radijeng (2018) mentioned that although OA is well received in African countries as evidenced by the level of usage of IR's, it has not helped much with copyright challenges and cost reduction, since most of the journals are under the control of commercial publishers. Hoskins (2013) confirms that "the loss in buying power caused by the annual 10-20 per cent price increase for library periodicals was, and is still, a major concern for most, if not all, academic libraries". APCs are not understood by most, but yet they are seen as a limitation for adoption, as most respondents believe that they need to be paid for their contribution and not to pay to make a contribution. Enago Academy (2018) impresses that APCs cover the entire publishing cost, and it can be a hefty fee. So introducing fair and sustainable APC models is one of the biggest challenges of OA publishing yet.

4.6.2.5. Lack of Knowledge of OA

In this study, 15.6% of respondents stated that they are not aware of OA. This is in relation to 15.2% who are not familiar with it. Not knowing what OA is entirely about and how it will evolve in the future is proving to be a limiting factor for adoption. Park (2007:2) argues that prior experience with and knowledge of OA publishing was a significant factor to motivate scientists to adopt OA publishing in general, which means lack of knowledge and experience will hinder adoption

4.6.2.6. Lack of OA policies

Policies are meant to direct and regulate the work and knowledge shared, and thus institutions need to develop policies that can be adhered to, and assist people in understanding how things work. Narayan and Luca (2017: 2) posit that the government research funding policies for the university are not tied into OA deposits in the repository; instead, they are tied into peer-reviewed journals and articles published in journals with high impact factors. Consequently, the university has not adjusted their policies to ensure support of repositories, but explicitly rewards traditionally published work.

4.7. CHAPTER SUMMARY

This chapter presented findings of the study from descriptive analysis and inferential statistics. Data was presented in the form of figures in bar graphs and pie charts. The chapter also interpreted and discussed findings emerging from the study, as well as the previous literature or research findings on the topic.

In the next chapter, major research findings are summarised, and conclusions and recommendations of the study are made.

CHAPTER FIVE
MAJOR FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents the overall summary, key conclusions and recommendations of the study, including areas for further study. The chapter summarises major findings of the study with reference to key research objectives. Based on these findings, the chapter draws conclusions and makes recommendations.

5.2 RESTATEMENT OF RESEARCH OBJECTIVES

The aim of the study was to investigate or examine awareness and adoption of OA for scholarly communication by academics at UL.

5.2.1 To describe models of OA.

5.2.2 To measure the level of awareness of UL academics on the availability and use of OA resources.

5.2.2. To determine the adoption levels of OA publishing as a platform for information sharing by academics.

5.2.3 To establish attitudes of academics towards the use of OA publishing platforms.

5.2.4 To examine academics' perspectives on challenges and benefits which OA publishing presents for academic research.

5.3 MAJOR FINDINGS
5.3.1 Models of OA

The literature review showed that there are two models of OA, namely, green OA and gold OA access, models; as well as three shades of OA access, namely, delayed OA, partial OA and purely OA to journal articles.

5.3.2. Demographic information

Demographic information is very important in that it may reveal variables that influence the adoption of OA publishing by the population.

5.3.2.1 Age distribution

The distribution of respondents' age revealed that the majority (108; 43.2%) of respondents were aged between 31-40 years; 60 (24%) between 51-60 years; 44 (17.6%) between 26-30 years; 35 (14%) between 41-50 years; and 3 (1.2%) were above sixty years.

5.3.2.2 Years of experience

In terms of years of experience in academia, the majority (38%) of respondents had 6-10 years. This is followed by 33% who had 1-5 years, 16% who had 11-20 years of experience, 10% who had 21-30 years, and lastly 3% with 30 years of experience and more.

5.3.2.3 Faculty attached to

According to distribution by disciplines, 98 (39.2%) respondents represented the Faculty of Sciences and Agriculture, 73 (29.2%) Management and Law, 62 (24.8%) Humanities and 17 (6.8%) represented the Faculty of Health Sciences.

5.3.2.4 Highest academic qualification

In terms of the highest academic qualifications attained by respondents, 137(54.8%) were holders of Masters' degrees, followed by 65 at 26% who attained PhD degrees, and 28(11,2%) Honours degree holders.

5.3.2.5 Academic designation or position

With respect to positions, the majority (110; 44%) were lecturers, followed by senior lecturers (45; 18%) and 23 (9%) professors.

5.3.3. Awareness and usage of OA publishing
Respondents were asked to show the extent to which they are aware of OA publishing.

5.3.3.1. Level of awareness of OA publishing

The majority (81%) of respondents were aware of and have knowledge of OA, with a small margin at 19% of respondents who have no idea as to what OA is.

5.3.3.2. Sources of awareness of OA publishing

Most respondents came to know about OA from the internet, followed by those who were informed by their faculty librarians, colleagues and line managers, and those who were informed through conferences / seminars and those who heard from their publishers.

5.3.4. Adoption of OA publishing

Participants were also asked to show the frequency at which they have adopted OA.

5.3.4.1. Frequency of OA publishing by academic staff

More than half (55%) of respondents at 55% have published in OA publishing platforms, whilst 26% have never published in OA publishing platforms. Only 19% respondents deemed the question not applicable.

5.3.4.2. OA publishing platforms used

More than 30.4% of respondents published their work in the institutional repository, 14.4% in DOAJ, and 10% in commercial journals. 26% do not publish in OA. Only a few, that is, 19.2% of the respondents indicated that they do not publish in OA.

5.3.4.3. Purposes for using OA publishing

The majority (67%) of respondents use OA journals to access scholarly literature, 7% use them for publishing, and 4% for both publishing and accessing scholarly literature. Twenty-two percent (22%) of respondents do not know anything about OA.

5.3.4.4. Type of materials published through OA publishing platforms

Only 41.2% of respondents made journal articles available through OA. An almost equal number of respondents at 23.6% and 23.2% made available conference papers and presentations available, respectively. An equal number of respondents at 6% each made available book chapters and students' theses and dissertations.

5.3.5. Attitudes towards OA

5.3.5.1. Positive and negative attitudes towards OA

Most (75%) respondents were in support of OA. Only 19% of them are neutral, which indicates that they have limited or no knowledge of which OA to support or not to support, and 6% are against OA. Based on the level of positivity in attitude, it was very likely or likely for other academics to publish in OA outlets in future and to adopt the platform.

5.3.4.2. Effectiveness of OA publishing

The majority (92%) of respondents found OA to be effective, 6% found it partially effective, and 3.2% of respondents found it not effective.

5.3.5. Perspectives of OA benefits and challenges

5.3.5.2. Benefits of OA

Most respondents showed that OA is a good practice. Increased accessibility, free access to information and increased visibility or recognition by other researchers were seen as important benefits of OA publishing.

5.3.5.3. Challenges of OA publishing

The study revealed the following challenges in relation to the adoption of OA by academics and researchers:

- Lack of awareness of OA publishing and its value
- Academics and researchers' reputation and quality of work and predatory journals.
- Lack of ICT and access
- Peer review being ignored.

- The repository, proper policies and guidelines, discoverability and copyright
- Articles processing costs
- Lack of knowledge of OA

5.4.   CONCLUSION

5.5.1 Awareness of OA

The study concludes that the level of awareness of academics on the availability and use of OA resources has proven to be satisfactory.

Channels through which OA is being communicated to academics include the internet and librarians.

5.4.2. Adoption level of OA

The study concludes that the adoption level of OA publishing as a platform for information sharing by academics and researchers at UL is still low. However, it will probably grow as more academics are looking at having their work discoverable and widely cited to increase their citation indexes and ratings.

5.4.3 Attitudes of UL academic towards OA

Academics and researchers' attitudes towards the use of the OA publishing platform has improved greatly as they were made to understand the importance and benefits of publishing in OA publishing platforms.

5.4.4 Challenges and benefits of OA

Challenges cannot be avoided. Although most academics see article processing fees as a hindrance, they weigh the challenges against the benefits which OA publishing present for academic research. Academics are also cognisant of the benefits of OA access.

The conclusion that can be drawn from major findings of the study guided by the theoretical framework is that, in general, OA publishing appears to be an innovation communicated to academics through the internet and faculty librarians. Although the rate of adoption among academics appears to be slow, its relative advantage and compatibility is recognised. However, academics have observed that OA has resulted in the growth of journals that are not peer reviewed and predatory publishers. These developments, as well as the APC's that go along with OA affected its rate of adoption. In terms of time of adoption, the study reveals that most academics are in the category of early majority who still need more information about advantages of adopting OA publishing.

5.5. RECOMMENDATIONS

Based on the findings of the study, the following recommendations are made:

- The university library should intensify its awareness campaigns on OA publishing.
- The university policy on OA should also be formulated and made available to all academics.
- Workshops and seminars should be organised where librarians should explain to academics about what OA publishing entails and benefits thereof.
- Academics who are reaping the benefits of publishing in OA should be given opportunities to showcase their benefits during workshops and seminars.
- Lists of accredited journals should always be provided to academics annually.
- Future studies should focus on identifying effects of economic factors and social structure on the motivation for OA publishing. This is because not all institutions are on the same levels or rankings with regards to research outputs and scholarly communication.

- The findings of the present study could be adapted to studies of other scholarly communication channels such as IR as the platform for academic publishing.

- Policy implications for universities or libraries adopting OA journals would also be an interesting topic.

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Appendix A: Ethical Clearance Certificate

University of Limpopo
Department of Research Administration and Development
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 3935, Fax: (015) 268 2306, Email: Anastasia.Ngobe@ul.ac.za

TURFLOOP RESEARCH ETHICS
COMMITTEE CLEARANCE CERTIFICATE

MEETING: 07 February 2018

PROJECT NUMBER: TREC/53/2018: PG

PROJECT:

Title: The adoption of open access publishing for scholarly communication by
                     the academic staff at the University of Limpopo.

Researcher: MA Shoroma
Supervisor: Dr TS Bopape
Co-Supervisors: N/A
School: Languages and Communications
Degree: Master of Library and Information Studies

PROF TAB MASHEGO
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics
Council, Registration Number: REC-0310111-031

> **Note:**
> i)   Should any departure be contemplated from the research procedure as approved, the
>   researcher(s) must re-submit the protocol to the committee.
> ii) The budget for the research will be considered separately from the protocol.
>   PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

Appendix B: Cover Letter

<div align="right">

PO Box 4555

Sovenga

0727

</div>

University of Limpopo Library

Private Bag X1112

Sovenga

0727

Dear Madam/ Sir

It is my pleasure to engage with you through this questionnaire which seeks to gather information in relation to the Masters research project that I am currently conducting. The topic of my research is "*The adoption of Open Access publishing for scholarly communication by the academic staff at the University of Limpopo*".

I will greatly appreciate your valuable input by completing this questionnaire. However, you have the right to refuse to participate.

 The research is purely for academic purposes, and the results derived from your inputs will be used only for the purpose of this research project. Privacy and confidentiality are also guaranteed. Therefore, you are not required to write your name on the questionnaire. It is envisaged that this research will make a contribution to the academic body of knowledge.

Your cooperation is highly appreciated in advance.

If you wish to participate, kindly complete an informed consent form attached below

Yours Sincerely

Ms M.A. Shoroma

Appendix C: Consent form

This form should be signed by the participants or respondents for this research to indicate consent in participating in the research.

1. Title of survey project: *The adoption of Open Access for scholarly publishing by the academic staff at the University of Limpopo.*

2. I hereby voluntarily grant my permission for participation in the project by signing as explained to me by **Ms Abigail Shoroma**.

3. I understand my right to choose whether to participate in the project and that the information furnished will be handled confidentially.

5. I am aware that the results of the investigation may be used for the purposes of publication.

6. Upon signature of this form, you will be provided with a copy.

Signed: _____ Date: _____

Witness: _____ Date: _____

Researcher: _____ Date: _____

Appendix D: Questionnaire

This survey is conducted for a research project regarding the adoption of Open Access for scholarly publishing by the academic staff at the University of Limpopo.

Please could you kindly answer the following questions by:

- Marking the appropriate answering with an (X) in the given box; or

- Entering information in the given box; or

- Expressing your views in the provided space.

Section A: Demographic information

1. Age
   - ☐ 20-25
   - ☐ 26-30
   - ☐ 31-40
   - ☐ 41-50
   - ☐ 51-65
   - ☐ 66 and above

2. Years of service or experience in the academic field.
   - ☐ 1-5 year
   - ☐ 6-10 years
   - ☐ 11-20 years
   - ☐ 21-30 years
   - ☐ 30+ years

3. Which faculty are you attached to?
   - ☐ Faculty of Health Sciences
   - ☐ Faculty of Humanities
   - ☐ Faculty of Management and Law
   - ☐ Faculty of Science and Agriculture

4. What is the highest qualifications that you have you obtained so far?

- ☐ Diploma
- ☐ Bachelor's degree
- ☐ Honour Degree
- ☐ Master's degree
- ☐ Doctoral Degree
- ☐ Other, please specify

_____

5. What is your academic designation?

- ☐ Tutor
- ☐ Lecturer
- ☐ Senior Lecturer
- ☐ Head of Department
- ☐ Director of School
- ☐ Associate Professor
- ☐ Professor
- ☐ Other (Please specify)

_____

6. How many research publications have you published so far?

- ☐ None
- ☐ No more than three
- ☐ Between 4 and 10
- ☐ Between 11 and 15
- ☐ Between 16 and 20
- ☐ More than 20

Section B: Awareness and usage of Open Access platforms

7. To what extent are you familiar with Open Access publishing?

- ☐ To no extend at all
- ☐ To no extent
- ☐ To some extent
- ☐ To a large extent
- ☐ To a very large extend

8. How did you become familiar with Open Access publishing?

- ☐ Colleagues
- ☐ Faculty librarian
- ☐ My line manager
- ☐ Conference/ workshop or seminar
- ☐ From the internet
- ☐ Publishers
- ☐ Other (please specify)

  _____

9. Have you published a paper?

- ☐ Yes
- ☐ No (if no, proceed to Section D)

10. Have you published in Open Access platform?

- ☐ Yes
- ☐ No (if no, proceed to Section D)

Section C: Adoption of Open Access publishing

11. How often do you publish your works or articles in Open Access journals?

- ☐ Never
- ☐ Seldom
- ☐ Sometimes
- ☐ Often
- ☐ Always
- ☐ Not applicable

12. What type of Open Access publishing platform do you use for publishing your publication

- ☐ Institutional repository
- ☐ Directory of Open Access journals
- ☐ Commercial publishers
- ☐ Don't publish in Open Access platform

13. What are your reason for using Open Access journals?

- ☐ To access scholarly literature

  ☐ Only to publish my scholarly works

  ☐ Both accessing and publishing

  ☐ Not applicable

14. Please indicate which type of publications you make available through Open Access publishing

  ☐ Journal articles

  ☐ Conference papers

  ☐ Books

  ☐ Chapters in books

  ☐ Students' thesis and dissertation

  ☐ Other (please specify)

Section D: Attitudes towards Open Access

15. How do you feel about the use of Open Access publishing?

  ☐ Strongly against

  ☐ Against

  ☐ Neutral

  ☐ In favour

  ☐ Strongly in favour

16. How effective do you think Open Access platforms are?

  ☐ Not effective

  ☐ Partially effective

  ☐ Effective

  ☐ Very effective

  ☐ Highly effective

Section E: Perspective on Open Access Benefits and Challenges

17. What challenges did you encounter in using Open for Scholarly Communication?

_____

_____

_____

_____

_____

18. What do you consider to be the benefit for using Open Access as an academic or a researcher?

_____

_____

_____

_____

_____

Thank you for your participation!