DEPOSIT OF OPEN SCHOLARLY PUBLICATIONS:

EXAMINING RESEARCHER ENGAGEMENT WITH UCT's OPEN ACCESS POLICY

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COMPULSORY DECLARATION

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

Signature: Signed by candidate Date: 14 AUGUST 2017

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ABSTRACT

The purpose of this study was to determine the reasons for the low deposit levels of peer-reviewed, openly-licensed journal articles into the institutional repository, OpenUCT, by researchers at the University of Cape Town (UCT). The deposit of such materials into OpenUCT, which is managed by UCT Libraries, is mandated by the UCT Open Access Policy, which was approved by the University Council in June 2014.

The study operates within a post-positivist research paradigm, utilising a predominantly quantitative research approach accompanied by some elements of qualitative inquiry. A survey questionnaire was used as the primary data collection method and distributed to UCT staff on academic conditions of service. A total of 116 responses out of 1,116 were received. The results indicate that almost half of respondents were aware of the existence of the Open Access Policy and its mandate to deposit into the OpenUCT repository and have either done so or intend doing so. Reasons for deposit and non-deposit were investigated, as well as the presence of a relationship between those who resist depositing and one of the theoretical frameworks guiding the study, that of Passive Innovation Resistance (PIR), which may be described as the propensity of an individual to decide against adopting an innovation without having had any prior interaction with it. A mild negative correlation was discovered between UCT researchers motivated to deposit their work into the repository and their levels of PIR, suggesting an inverse relationship between the two – the more motivated the researcher is to deposit, the lower their PIR levels are likely to be. However, due to the absence of a statistically significant p-value, the correlations are weak at best, and further investigation is required. Most significant for the study, however, is the finding that PIR scores for non-depositing researchers are markedly higher than for depositing researchers, suggesting that higher levels of PIR influence the non-engagement of researchers with the repository.

A much smaller secondary investigation, in the form of interviews with UCT Libraries staff responsible for managing the OpenUCT repository, was also conducted. Questions used for the interviews were designed to evaluate the development, maintenance, and advocacy of the repository within the UCT community against identified critical success factors for institutional repositories - the other component of the theoretical framework guiding the study. This qualitative component, together with the findings from the survey questionnaire, are used to present a holistic and comprehensive picture of UCT researcher engagement with

institutional repositories in general and OpenUCT in particular, and how UCT Libraries has addressed issues and challenges arising from its mandate, especially given its limited resources. Based on the findings of both avenues of inquiry, recommendations are proposed regarding ways in which UCT Libraries may further encourage engagement in its management of the repository as a sustainable, useful, growing enterprise that successfully showcases the research activity of the University.

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LIST OF ACRONYMS AND ABBREVIATIONS

APC	Article Processing Charge
API	Application Programming Interface
CHED	Centre for Higher Education Development
CILT	Centre for Innovation in Learning and Teaching
CR	Cognitive Rigidity
CSF	Critical Success Factors
DHET	Department of Higher Education and Training
EBE	Engineering and the Built Environment
ER	Emotional Reaction to Change
FHS	Faculty of Health Sciences
HR	Human Resources
ICTS	Information and Communication Technology Services
IR	Institutional Repository
IRC	Inclination to Resist Change
IT	Information Technology
LISC	Library and Information Studies Centre
LWG	Library Working Group
MSRIR	Motivation to Share Resources in Institutional Repositories
NRF	National Research Foundation
OA	Open Access
OAI-PMH	Open Archives Initiative Protocol for Metadata Harvesting
OAJPF	Open Access Journal Publication Fund
OER	Open Educational Resource
ORCID	Open Researcher and Contributor ID
PASS	Professional, Administrative and Support Staff
PIR	Passive Innovation Resistance
RS	Routine-Seeking
RSRIR	Resistance to Sharing Resources in Institutional Repositories
RTC	Resistance to Change
SCC	Scholarly Communications Coach
SQS	Status Quo Satisfaction
SQSI	Satisfaction with the Extent of Innovation

SQSP	Satisfaction with Existing Products
STF	Short-term Focus
SWORD	Simple Web-service Offering Repository Deposit
TF	Theoretical Framework
UCT	University of Cape Town

CHAPTER ONE: INTRODUCTION AND BACKGROUND TO THE STUDY

1.0 Introduction

This study aims to investigate the extent to which researchers at the University of Cape Town (UCT) have engaged with UCT's institutional repository (IR), OpenUCT (https://open.uct.ac.za), for the purpose of making their scholarly publications available in accordance with the Open Access (OA) Policy approved by the UCT Council on 14 June 2014. Developed by the OpenUCT Initiative and managed by UCT Libraries, OpenUCT is included in The Directory of Open Access Repositories (*Open*DOAR - www.opendoar.org) and listed 342nd in the Ranking Web of World Repositories – 5th in Africa (Cybermetrics Lab, 2017). The purpose of the ranking, as articulated on the website (Cybermetrics Lab, 2014) is to "promote **Open Access initiatives and global access to academic knowledge**. Following that objective we promote good practices, especially those intended to increase the visibility and usage of the OA contents." This chapter introduces the study's key concepts; presents the background to the study; research problem, objectives and questions; outlines the significance of the study and how the rest of the dissertation is structured.

1.1 Key Concepts in this Study

1.1.1 An Institutional Repository (IR)

McMillen and Tucker (2010: 28) define the IR as an "OA archive" that facilitates the deposit of scholarly research in a centrally accessible, online database. IRs typically store, as collections, and make searchable and indexable by the Internet, the research publications of an institution, so that the materials may be discoverable by as wide an audience as possible. IRs are usually managed by particular institutions, and may feature some or all the types of research output produced by members of that institution (Rowlands, Nicholas & Huntington, 2004; Jain, 2011; Raju et al., 2012). Heery and Anderson (2005) and Raju et al. (2012), indicate that IRs must feature the following capabilities:

- receive and host deposited content according to the research output of the members of an institution;
- manage content and its accompanying metadata;
- offer a minimum set of basic services to facilitate searching and access to materials in the repository;
- be sustainable and trusted, well-supported and well-managed.

According to Van Wyk and Mostert (2011: 134), the purpose of an IR is to "describe the digitised content of institutions of higher learning", although this may be applied to content produced in "any…institution that is preserving and disseminating its internally created information". IRs are not meant to replace traditional forms of scholarly publication, but rather to complement them. Items typically published in IRs include peer-reviewed articles (pre- and post-print, subject to copyright conditions), books, grey literature (for example, technical reports, conference papers, working papers, research reports), theses and dissertations and other student research (Jain, 2011; Van Wyk & Mostert, 2011). One of the main purposes of an IR is to showcase the research output of an institution (Shearer, 2003).

A study by Abrizah, Hilmi and Kassim (2015) found that the resources published in IRs are generally of very good quality. In terms of access to resources, IRs should, by their very nature and purpose, be OA, given that much of the output in IRs is publicly funded (Kennan, 2011; Czerniewicz & Goodier, 2014; Abrizah, Hilmi & Kassim, 2015) and access to the Internet has provided a mode of dissemination not previously available to most of the population. Ruiz-Conde and Calderón-Martinez (2014) found that increased researcher publication in impact-factored journals also led to a corresponding increase in IR size. Abrizah, Hilmi and Kassim (2015) interpret this to mean that authors who publish in respected journals are comfortable with self-archiving in their IRs. The IR link to OA publishing can be expressed as "the development of the IR services…related to the OA movement which seeks to make valued research outputs openly available and globally visible by encouraging academics to place their publications into repositories" (Abrizah, Hilmi & Kassim, 2015: 732).

1.1.2 Open Access (OA)

Suber (2012: 4) provides a clear definition of OA literature as "…digital, online, free of charge, and free of most copyright and licensing restrictions". Several bodies have issued declarations and statements in support of OA practices globally, as detailed by Harnad et al. (2004: 313). There are three types of OA publishing routes that researchers can follow, namely green and golden routes (Harnad et al., 2004; Czerniewicz & Goodier, 2014; Yang & Li, 2015; Johnson, 2016) and the diamond route, which Raju, Claassen and Moll (2016: 37) describe as instances in which an institution hosts its own OA publications.

For Fuchs and Sandoval (2013: 428), the benefit of diamond OA, as a non-profit form of academic publishing, is that it "makes academic knowledge a common good, reclaims the common character of the academic system and entails the possibility of fostering job security by creating public service publishing jobs". In this vein, Raju, Claassen and Moll (2016) indicate that UCT Libraries already publishes its own OA journals utilising open source software, and that this activity extends to international journals, open monographs and open textbooks. Green OA publishing means that a researcher makes a version of a preprint or postprint journal article available in an IR, while golden route (or 'gold') OA publishing means that a researcher elects to publish in an OA journal and the article (along with the other journal content) is available for consumption from the time of publication (Czerniewicz & Goodier, 2014; Yang & Li, 2015). The article may be available in the IR immediately or subject to an embargo period, during which time it may be made available in the IR as a bibliographic record. Going the gold route requires the researcher to pay the journal publisher a fee (known as an *article processing charge*, or *APC*) to cover the peer-review and publishing costs per article (Harnad et al., 2004; Czerniewicz & Goodier, 2014: 1; UCT Libraries, 2016). Some OA publishers charge authors to publish in their journals, then charge the institutions to which these same authors are affiliated for access to these journals, because the journals contain open and closed access articles – a practice known as *double dipping* (McMillen & Tucker, 2010; Czerniewicz & Goodier, 2014; Pinfield, Salter & Bath, 2016). Essentially, this means that these journal publishers are paid twice for the same research output.

In terms of copyright permissions, OA allows authors to retain copyright of their work and specify the conditions under which it may be used, via Creative Commons licenses (https://creativecommons.org), while the publisher is able to publish the work without owning the copyright to it (McMillen & Tucker, 2010). This is in contrast to traditional publishing models in which authors sign copyright of their work over to publishers (Czerniewicz & Goodier, 2014), essentially giving it away in exchange for having it peer-reviewed, disseminated and cited as a means of attracting professional recognition and remuneration for the institutions they represent (McMillen & Tucker, 2010).

The benefits of OA publishing can be observed in the improvement of research university rankings, increases in article citations, the realisation of funders' aims of knowledge creation and sharing, benefit to research processes in terms of research output that is available

timeously and in general community improvement where access to knowledge contributes to continuous development (Czerniewicz & Goodier, 2014). OA publishing also means that content published in IRs can be reused (subject to the conditions of the Creative Commons license applied to it), data mined and read online.

1.1.3 UCT OA Policy

In terms of the UCT OA Policy (hereafter referred to as the 'Policy'), researchers and staff of the University are required to (UCT, 2014: 3):

> (a) Deposit an appropriate version of Scholarly Publications into an officially designated Institutional Repository or into an acceptable curatorial system which can be harvested by UCT; or
>
> (b) If prevented by a publisher's copyright terms or other good reason for doing so, must notify the Institutional Repository in writing that he/she will not be doing so and the reasons for this.

The SHERPA/RoMEO service (www.sherpa.ac.uk/romeo) has made it possible for researchers to find out which publishers forbid self-archiving and which publishers allow it, and the conditions under which they may do so (Kennan, 2011). Therefore, if researchers would like to publish their peer-reviewed journal publications OA in accordance with the Policy, they can use this service to verify a publisher's position on this prior to submitting their manuscripts for publication.

Harnad et al. (2004) advocate that, not only should those who receive funding for research be required to publish OA as a condition of receiving grants, but they should also be required to self-archive this research output. In South Africa, the National Research Foundation (NRF) recently mandated OA deposit of any research output generated through full or partial funding from the organisation (NRF, 2015). This mandate stipulates the OA deposit, into the researcher's IR, of the peer-reviewed version of a journal article accepted for publication. Embargo periods on access to these articles may not exceed 12 months. Articles published in OA journals should be made available in the IR immediately. Furthermore, the NRF policy also mandates the deposit of data generated during the course of research activities and used to support research publications into an OA repository, where it is supplied with a Digital Object Identifier (DOI).

1.1.4 Scholarly Communication

It would be an oversight to research on OA, IRs and an OA policy that defines scholarly publications without any narration of the concept of scholarly communication. The scholarly publications referred to in the Policy (UCT, 2014: 3) are produced through the scholarly communication process, which McMillen and Tucker (2010: 20) describe as a cyclical set of "formal and informal processes through which information or research produced by scholars is created, evaluated, disseminated, organized, accessed, used, and shared". Implied in this definition is the involvement of different stakeholders to perform the processes described. For example, in the traditional publishing model, the researcher creates the information or knowledge and submits it to a journal publication (for free), in order to attract citation and exposure for promotion, funding and possibly also work at higher education institutions. A more experienced researcher, usually in the same field, peer-reviews the work on behalf of the journal publisher, who then edits and publishes (and thereby disseminates) the work. Academic libraries buy access to these publications (Rowlands, Nicholas & Huntington, 2004) in the form of subscriptions, in many cases paying for research that could have been obtained from the researcher him/herself, if this individual works at the same institution. In addition to this, depending on the funding model for the researcher's salary, the taxpayer and institution may end up paying for the same information twice, first to retain the services of the researcher, then for the information produced (McMillen & Tucker, 2010; Czerniewicz & Goodier, 2014; Pinfield, Salter & Bath, 2016), via the library subscription.

The OA publishing process still involves the same quality control and peer-review activities that come with the traditional' publishing model, but does not entail the author having to give away their copyright/intellectual property. Copyright conditions can be negotiated so that authors retain some rights and cede others to the publisher, which means the information can be made available to a much wider audience than it would be when published by commercial publishers (McMillen & Tucker, 2010.). However, OA publishing may be free if the author uses the 'green' route, or APCs may have to be paid if the author chooses the 'gold' OA route (Harnad et al., 2004; Scholastica et al., 2017). According to Rowlands, Nicholas and Huntington (2004), even though authors seemed well enough disposed to the notion of OA publishing, they did not associate it with payment to publish, much less that payment would need to come from them - a carryover from the 'traditional' publishing model, in which authors do not pay to publish. To try to reduce corporate domination of OA publishing through double dipping and exorbitant APCs, Scholastica et al. (2017) advocate for

democratising academic journal publishing by making the tools required for journal publishing available to all as an institutionally driven way of breaking the traditional publication cycle.

1.1.5 Researchers in the Study

In this study, the distinction is made between (1) *the researcher* as the individual conducting the study, (2) *UCT researchers* as the units of analysis whose engagement with the OA Policy and OpenUCT was investigated, and (3) *researchers* in general.

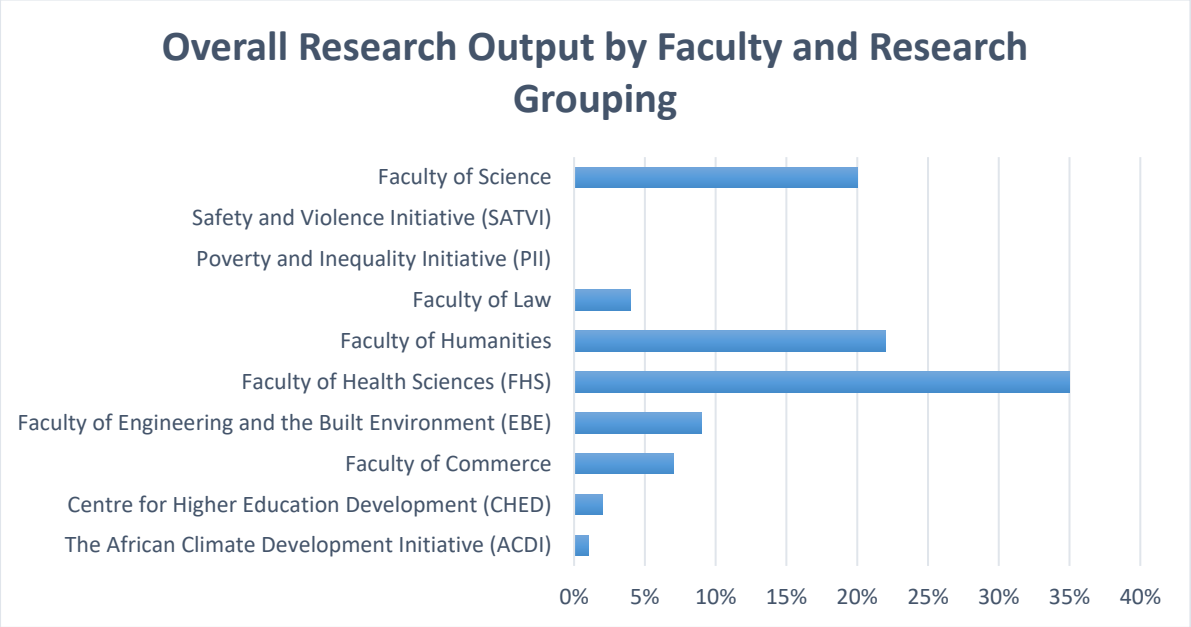
1.2 Background to the Study

As defined in the Policy, the term *Scholarly Publication* refers to "an article or paper submitted for publication in a journal which may, or may not, be peer-reviewed and may, or may not, be Open Access, or in conference proceedings" (UCT, 2014: 2). This definition makes specific reference to journal articles and conference proceedings, published or submitted for publication, and excludes other types of resources that make up the research output at the university. The OpenUCT Initiative project website (OpenUCT Initiative, 2012) refers to the management of the IR having been handed over to the UCT Libraries Access and Visibility Cluster which, according to the Policy, is charged with

> managing the implementation of the policy and procedures as well as develop [*sic*] and monitor [*sic*] a plan for a service or mechanism that would render compliance with the policy that is appropriate, convenient and supportive of UCT Authors, including adherence to archiving policies of publishers and funders (UCT, 2014: 5).

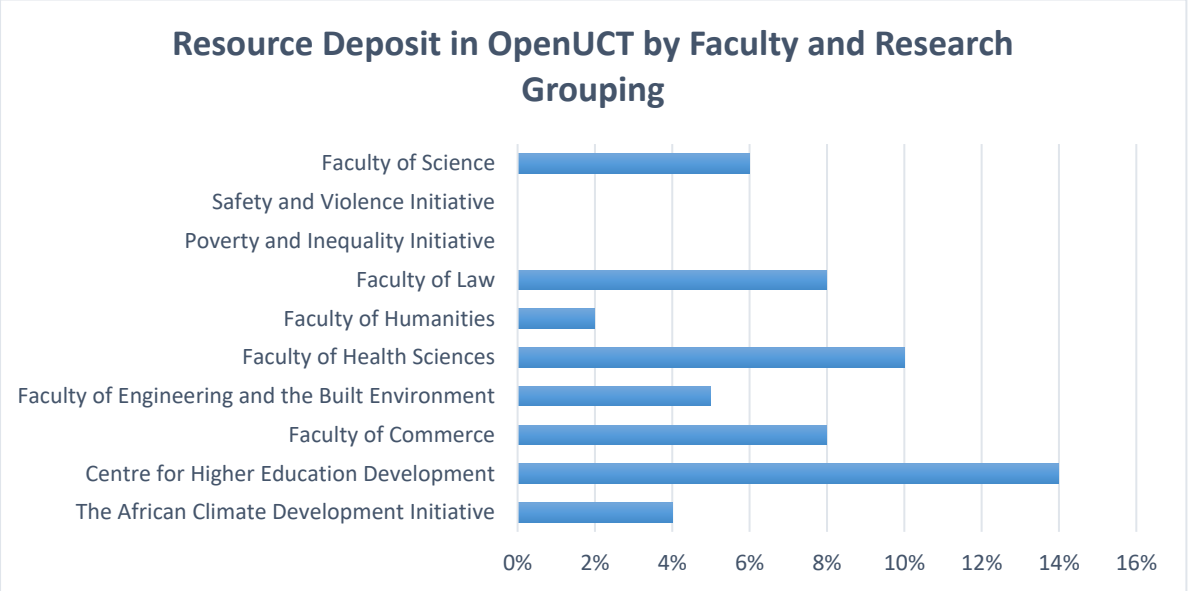
As a measure of the success or uptake (and, to an extent, UCT Libraries' efforts to encourage and support deposit) of the Policy to date, the researcher conducted a preliminary analysis to compare the journal articles in OpenUCT with those reported in the UCT Annual Research Report 2014-2015 (UCT Research Office, 2016). This was the latest report at the time at which the current study was conceptualised. The exercise revealed scant deposit rates, despite the institutional mandate. Figure 1 presents an overall picture of research outputs as reported by faculty and research grouping in the aforementioned report.

Figure 1: Overall research output by faculty and research grouping



The research output in the Annual Research Report was then checked against the holdings in OpenUCT to see how much of it had been deposited following the approval of the Policy by the University Council (UCT, 2014). Out of 4812 research outputs reported, only 328 (7%) were deposited in OpenUCT. Broken down by research type, 317 peer-reviewed journal articles, one authored book, seven book chapters and articles in three published, peer-reviewed conference proceedings were deposited. Collated by faculty and research grouping, these are represented in Figure 2.

Figure 2: Resources deposit in OpenUCT by faculty and research grouping

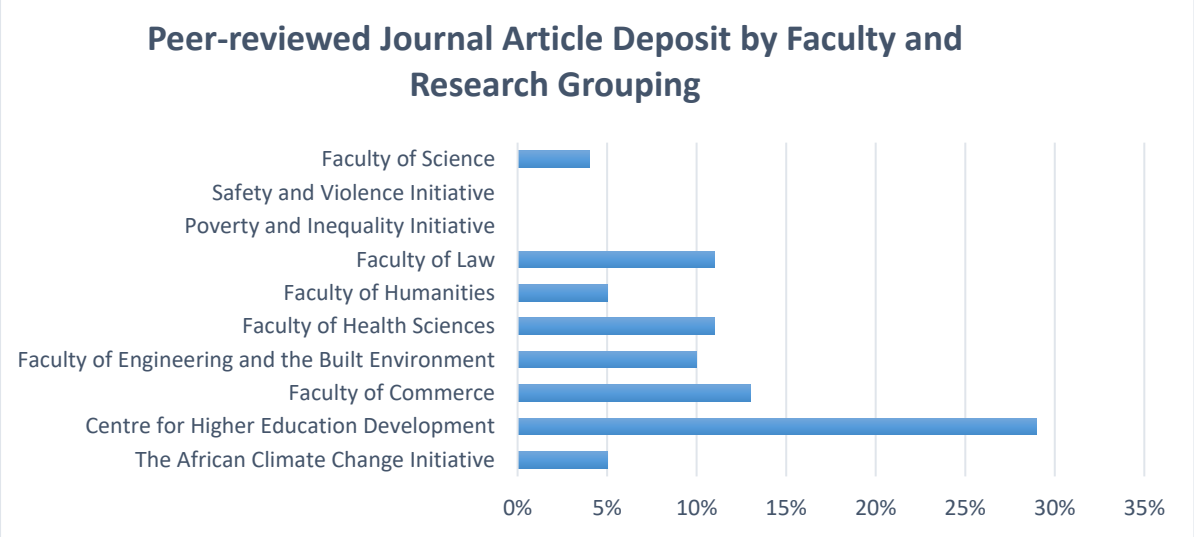


The above figures take into account all resource types reported in the research report such as scholarly communications, literary and creative works, and exhibition catalogues. For purposes of this study, it is deemed feasible to focus on the deposit of peer-reviewed journal articles, for the following reasons:

1. More peer-reviewed journal articles than any other resource type (317 out of 328) were deposited overall;
2. The UCT Open Access Policy (UCT, 2014) mandates the deposit of peer-reviewed (and non-peer reviewed) journal articles (or the creation of bibliographic records for embargoed publications), in addition to theses and dissertations;
3. All faculties (though not all research groupings) deposited peer-reviewed journal articles in OpenUCT.

Figure 3 presents, analysed by faculty and research grouping, the total number of peer-reviewed journal articles deposited in OpenUCT as a percentage of the entire faculty or research grouping peer-reviewed journal article output reported in the Annual Research Report 2014-2015.

Figure 3: Peer-reviewed journal article deposit by faculty and research grouping



It is worth noting that there are articles that may have been deposited in OpenUCT that did not meet the criteria for inclusion in the Annual Research Report because they were not published in subsidy earning journals identified by the National Department of Higher Education and Training (DHET) (UCT Research Support Hub, 2017). These were not included in the analysis mainly because, due to the subsidy, researchers tend to publish in

DHET journals. There is not much increase in the number of deposits in Open UCT in comparison with research outputs reported in the Annual Research Report of 2015-2016.

1.3 The Research Problem

Based on the analysis of the Annual Research Report 2014-2015 and the low rate of deposits in OpenUCT in 2016, the research problem focuses on the reasons for UCT researchers' seeming lack of engagement with the OA Policy in their publication and research dissemination practices. Johnson (2016) acknowledges that, in general, academic awareness and knowledge of issues surrounding OA publishing remain generally low. Given that the Policy mandates the deposit of scholarly publications into the IR, it is deemed necessary to determine the reasons for these levels of deposit being low. As the designated IR manager, UCT Libraries cannot be held solely responsible for the low rates of deposit – other factors are thought to influence this as well, such as awareness of the IR and the deposit requirement by UCT Management. Psychological resistance to change, as suggested by Quinn (2010), is another. As far as the role of UCT Libraries is concerned, it is important to determine what their efforts have been to support and encourage the research community to deposit, thereby growing the IR and making it an attractive data curation and scholarly communication avenue for UCT researchers. Their efforts should not, however, function in a vacuum, and determining researcher levels of resistance to change may help to inform the Libraries' efforts to reach the research community, particularly in terms of methods to reduce this resistance.

1.4 Objectives of the Study

Based on the research problem, the objectives of the study are:

1. To determine the level of UCT researcher awareness of the OA Policy and its requirement of deposit into OpenUCT.
2. To determine the extent to which UCT researchers that are aware of the Policy requirements have engaged with it regarding the deposit of the scholarly publications they produce under the auspices of UCT.
3. To investigate the ways in which UCT Libraries have attempted to develop and encourage UCT researcher engagement with the IR and, where appropriate, make recommendations that incorporate persuasive strategies for reducing resistance to change that the Libraries can use in their advocacy and outreach efforts to improve researcher deposit into the IR.

1.5 Research Questions

RQ1: What is the level of awareness of researchers regarding the existence of the OA Policy and its requirement of research deposit in OpenUCT?

RQ2: To what extent do researchers that are aware of the policy resist complying with it, and why?

RQ 3: Among those researchers that have not deposited in OpenUCT, to what extent are they found to be resistant to innovation and change?

RQ 4: Among researchers that have deposited in OpenUCT, what factors influence their commitment?

RQ 5: To what extent have non-depositing authors reported their non-deposit to the Libraries and provided reasons for not doing so?

RQ 6: How (to what extent and through what mechanisms) is UCT Libraries encouraging, monitoring and facilitating researcher engagement with the OA Policy?

1.6 Significance of the Study

Inspired by collection-based curation and archiving practices (Wheeler, 2017), this study aims to determine the extent to which UCT researchers have engaged with the OA Policy and deposited their peer-reviewed, openly licensed journal articles into OpenUCT. Compliance with the OA Policy impinges on digital curation governance, which is a fundamental principle underpinning Open Science philosophies. Evaluation of the progress of the IR following implementation and how those required to engage with the IR after the introduction of the Policy have responded is just as important as the implementation of both entities. Evaluation of the progress of the IR and its adoption by the University community will help stakeholders such as UCT Libraries and UCT management to identify areas at which improvement efforts could be directed, as well as those that have been over-invested in and require less attention. The identification of problematic areas in the traditional IR does not only provide opportunities for further research, but also presents valuable lessons and insights likely to inform data repositories. All these will further contribute to existing knowledge around the development, maintenance and growth of IRs, data repositories and open science in higher education institutions. To date, no previous studies have focused on researcher engagement with the IR at UCT.

1.7 Dissertation Structure

The remainder of this dissertation is structured as follows:

Chapter Two: Theoretical Framework and Literature Review

In this chapter, the two concepts comprising the theoretical framework for this study are expanded on, followed by a review of the literature relating to researcher perceptions and awareness of OA IRs, IR governance and its influence on scholarly engagement, and IR agency strategies.

Chapter Three: Research Design and Methods

Chapter Three focuses on the research methodology used to conduct the study. This includes the research paradigm in which the study operates, a description of the research design and how was used to address the six research questions presented in Section 1.5. It also highlights the limitations and delimitations of the study, as well as the ethical considerations faced by the researcher.

Chapter Four: Data Analysis and Findings

This chapter describes the findings of the study in respect of the six research questions introduced in Section 1.5. This includes the results of the data analysis and description of significant findings using the methods indicated in Section 3.3.3. The implications of these findings for both UCT Libraries and UCT researchers are addressed briefly.

Chapter Five: Conclusions and Recommendations

In this chapter, the researcher discusses some significant results of the analyses performed in Chapter Four and uses these to make informed recommendations regarding how UCT Libraries may improve their advocacy strategies in ways that work towards improving researcher engagement with OpenUCT in accordance with the OA Policy.

CHAPTER 2: THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.0 Introduction

This chapter presents a theoretical framework that combines two ways of examining the reasons that UCT researcher rates of compliance with the OpenUCT IR, demonstrated in Chapter One to be low, may be explained. The first of these is through the concept of the *psychology of resistance*, which researchers may experience subconsciously when required to deposit work in their IRs in addition to following traditional modes of disseminating scholarly communications. The second part of the framework focuses on the idea of *critical success factors* (CSFs) for IRs and how the awareness and integration of these in the development of the IR by the academic library can contribute to its successful use by researchers. Given that substantial literature was reviewed to clarify key concepts in Section 1.1, the review in this chapter focuses on researcher awareness and perceptions of OA IRs, IR governance and its influence on scholarly engagement, and IR agency strategies.

2.1 Theoretical Framework

The success of IRs, according to Abrizah, Hilmi and Kassim (2015), is dependent on CSFs. As an example, Lagzian, Abrizah and Wee (2015a) describe the *resources* CSF as the most important criterion by which the success of an IR can be measured. As researchers would be depositing resources into the IR, its success would depend on the extent to which they engage with it by depositing their work (Kim, 2007). Lack of engagement or slow rates of deposit may indicate resistance to the mandatory deposit imposed on them by the institutions for which they work – an idea also posited by Abrizah, Hilmi and Kassim (2015). The relatively new practice of depositing research as OA resources in an IR is a movement away from the closed-access 'traditional' publication model that has dominated scholarly publishing over the years, so it is necessary to investigate the possibility that researchers may harbour resistance, conscious or otherwise, to the imposition of this new requirement on their publication practices.

2.1.1 Psychology of Resistance

The *psychology of resistance* concept is posited as a means of attempting to understand and address factors that contribute to the slow rate of researcher engagement with the IR and use this understanding to propose persuasion methods to counteract this resistance (Knowles & Linn, 2004a; Quinn, 2010; Abrizah, Hilmi & Kassim, 2015). These authors believe that any

sort of imposed change will encounter resistance and that change and resistance counter-influencing measures should be used to inform proposed IR implementation strategies rather than ignoring their effects (Abrizah, Hilmi & Kassim, 2015).

Quinn (2010: 68) defines resistance as "a pre-existing state or attitude in which the user is motivated to counter any attempts at persuasion". Oreg (2003: 680) developed a *Resistance to Change* (RTC) Scale, meant to be used to measure "an individual's tendency to avoid making changes, to devalue change generally, and to find change aversive across diverse contexts and types of change". The PIR measure, developed by Heidenreich and Handrich (2015), which builds on Oreg's RTC scale conceptualisations, is proposed in this study as a way of measuring researchers' situational and personality-related disposition to resist innovation and change. It is described as "a generic predisposition to resist innovations prior to new product evaluation" (Talke & Heidenreich, 2014: 895; Heidenreich & Handrich, 2015: 879). In other words, it refers to a general tendency to evaluate innovations without having had any interaction with them. Heidenreich and Handrich (2015: 881) claim that it should be able to help predict individual predisposition to the product and innovation adoption process:

> Higher PIR prompts more negative responses, both cognitive and emotional, to the innovation. This in turn fosters functional and psychological barriers during new product evaluation, which then may lead to active innovation resistance and finally result in active rejection of the innovation. Hence, PIR as predisposition determines the whole course of the adoption process, whereas active innovation resistance and active rejections represent outcomes during the decision process which may be caused by PIR.

Oreg (2003: 690) developed four facets of RTC, namely Routine-Seeking (RS), Emotional Reaction to Change (ER), Cognitive Rigidity (CR) and Short-term Focus (STF). Heidenreich and Handrich (2015) use these facets to define their Inclination to Resist Change (IRC) dimension, which refers to the personality-specific orientation of individuals' PIR tendencies. According to Talke and Heidenreich (2014: 897), the IRC construct is characterised by change-related personality traits such as "sensation-seeking, openness to experience, dogmatism, locus of control, risk aversion and tolerance for ambiguity". The other component of PIR is Status Quo Satisfaction (SQS), which refers to the individual situational preference of maintaining the status quo over the adoption of disruptive innovations. This dimension is composed of Satisfaction with the Extent of Innovation (SQSI) and Satisfaction with Existing Products (SQSP) (Heidenreich & Handrich, 2015: 893). Table 1 illustrates the relationship between IRC and SQS (Heidenreich & Handrich, 2015: 883).

Table 1: Relationships between IRC and SQS dimensions of PIR

Inclination to Resist Changes			
Status Quo Satisfaction		Low	High
	Low	Low Passive Resistance	Cognitive Passive Resistance
	High	Situational Passive Resistance	Dual Passive Resistance

The table illustrates types of PIR, which may be explained as follows:

- Individuals with low IRC and low SQS = Low Passive Resistance
- Individuals with high IRC but low SQS = Cognitive Passive Resistance
- Individuals with high SQS but low IRC = Situational Passive Resistance
- Individuals with high IRC and high SQS = Dual Passive Resistance

In their book, Knowles and Linn (2004a) refer to their study of resistance and persuasion, and the idea that persuasion is an exercise in resistance reduction. The target of persuasion, in this case, institutional researchers, are assumed to function at different points on a continuum between states of not being persuaded and being motivated against compliance (Quinn, 2010). Resistance manifests as a rebellion against imposed change (Knowles & Linn, 2004a). Understanding the psychological influences that contribute to resistance to change and innovation adoption is critical for those wanting to implement new systems, technologies, ways of working and products. Individuals that express immediate eagerness and willingness to try these new things are found to be outnumbered by those who prefer to follow familiar procedures using established products, systems and technologies (Heidenreich & Handrich, 2015). Librarians must use their knowledge of psychological resistance to inform their promotion and advocacy strategies if they hope to make significant progress in persuading researchers to increase their rates of deposit in IRs.

2.1.2 Critical Success Factors

In general, IRs operate within the domain of academic and research institutions for purposes of collecting, storing and preserving research output and making it possible for the wider research community to see what the institution has produced (Shearer, 2003; Lagzian,

Abrizah & Wee, 2015a). In higher education institutions, responsibility for the development, maintenance, promotion and ultimate success of IRs usually falls to academic librarians, who need to be cognisant of and understand the CSFs that contribute to the success of IRs (Shearer, 2003; Lagzian, Abrizah & Wee, 2015a:147; Lagzian, Abrizah & Wee, 2015b: 197). According to these authors, CSFs can be used to help IR administrators provide valuable support and assistance to researchers, thereby boosting the size and concomitant success of their IRs.

These CSFs are discussed briefly below. Some have been grouped according to the researcher's understanding of the concepts' thematic interrelation, thereby warranting combined explanation.

CSFs 1 and 2: People and Management

Significant aspects of the *people* CSF include organisational culture, support by top management in areas such as funding, IR user satisfaction, a comprehensive IR deposit policy and staff dedicated to ensuring the success of the IR. The staff who manage the repository require investment in the form of recruitment, training and skills development and retention strategies (Lagzian, Abrizah & Wee, 2015a), even more so if they are academic library staff members to begin with, as these often don't have the requisite expertise.

Library staff have come to be responsible for the advocacy and promotion of IR deposit among academics. Shearer (2003) notes that advocacy of IR deposit is an important influencing factor in the success of an IR, as is quality control of repository record metadata. The degree of quality control depends on the skill level and expertise of those who input the repository content. If researchers self-archive, staff trained in IR support still need to review contributions and possibly edit the metadata supplied for quality control purposes, as the amount of use that a resource receives depends, in part, on the level of quality control applied to that record.

Further *management* CSF considerations, in addition to providing IR staff with support in their efforts to engage and assist researchers, include endeavouring to make provision for funding to support IR development and maintenance and to assist authors with the charges associated with publishing in OA journals (Van Wyk & Mostert, 2011; Lagzian, Abrizah & Wee, 2015b; Oladekun, 2015) and not rely on external funding to make this possible.

CSF 3: Resources

According to Kocken and Wical (2013), deposit of resources is the criterion by which the success of an IR is measured. Lagzian, Abrizah and Wee (2015a: 201) emphasize the importance of building up a "critical mass of material" as a means of attracting both more content deposit and repository use. This creates a positive feedback cycle: a high level of use of an IR attracts authors to deposit into it; the more authors deposit into the IR, the more it is likely to be used (Shearer, 2003).

CSFs 4 and 5: Services and Self-Archiving Practices

While faculty contribution through *self-archiving* is identified as a CSF for IRs, Abrizah, Hilmi and Kassim's (2015) study revealed that authors would be more amenable to self-deposit if they had some sort of help, such as a research assistant or librarian dedicated to the task, a practice known as *mediated archiving* (Shearer, 2003: 98). Even though mediated archiving is considered a form of self-archiving, it can also be viewed as an IR support service and is performed by the staff of some academic libraries (Watson, 2007). One of the consequences of providing such a service, however, is the detachment of researchers from the deposit activity so that they eventually don't know which of their research outputs is in the IR, or even if their work has been deposited (Kim, 2007). Further support examples include a suggestion by Foster and Gibbons (2005) to implement a system of liaison librarians tasked with working with faculty to facilitate the deposit process (*services* CSF) at the University of Rochester. Oladekun (2015) found, however, that mediated archiving did not work as well as expected at the University of Botswana, as librarians allocated to archiving contributions on academics' behalf were found to be slow in processing contributions and providing feedback to scholars, which then discouraged the latter from contributing additional work. Kim (2007) found that faculty who self-archived were more likely to contribute peer-reviewed, published articles than non-refereed ones, and that researchers were more likely to self-archive journal articles than other types of resources.

Lack of availability of help with intellectual property issues is also cited as a barrier to deposit (Kim, 2010; Abrizah, Hilmi & Kassim, 2015; Oladekun, 2015), as publication in non-OA journals often entails assigning part or total copyright to publishers. Authors see the time and effort of trying to renegotiate these terms in order to publish in an IR as time-consuming and not worthwhile. One of the misconceptions of OA publishing is that the author loses or gives away copyright (McMillen & Tucker, 2010; Czerniewicz & Goodier, 2014). Kim

(2007) found that faculty were generally found to have scant knowledge of the copyright issues related to self-archiving.

CSF 6: Technology

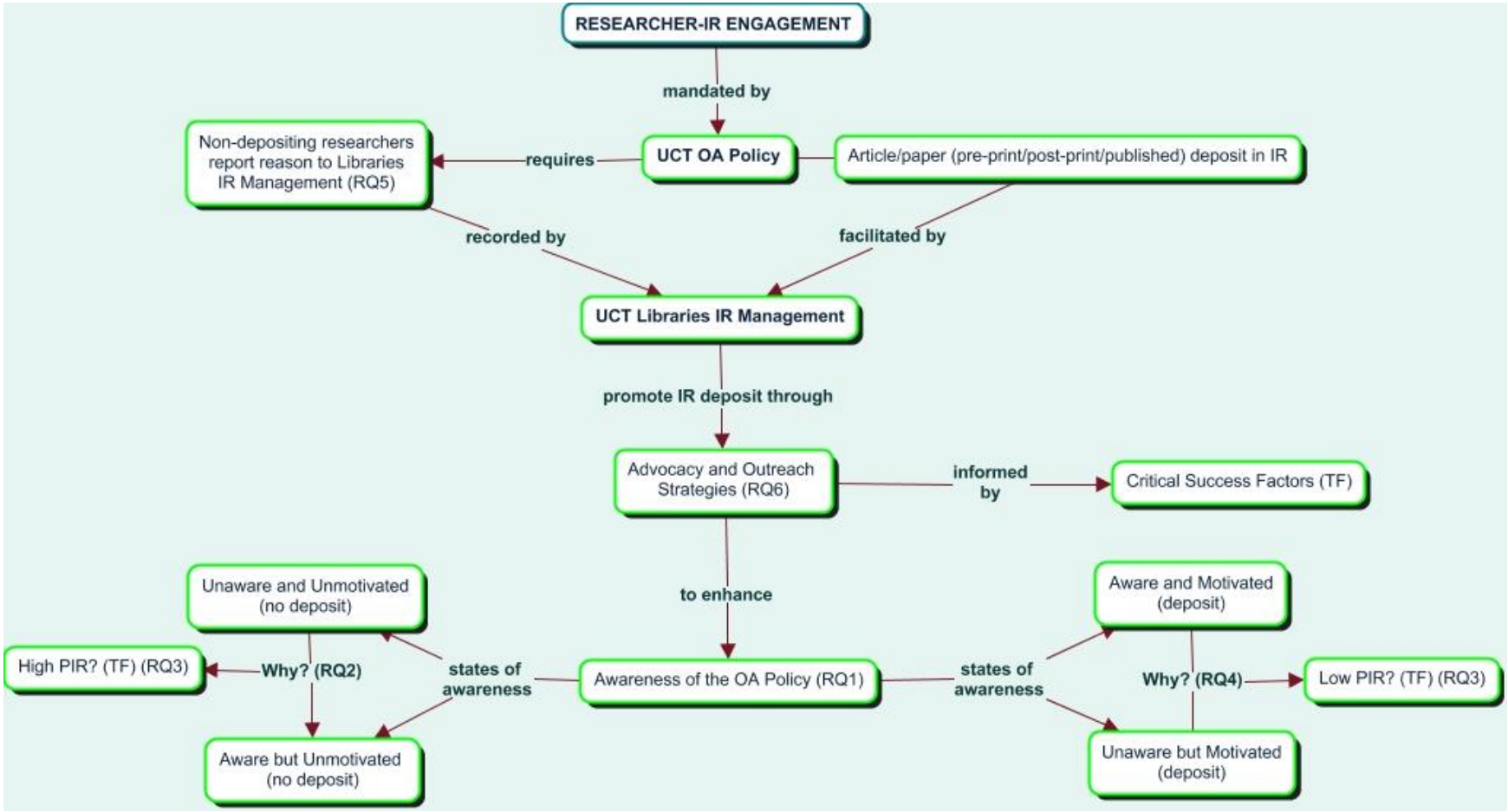
Lagzian, Abrizah and Wee (2015a: 148) cite six factors against which IR technology is measured, namely "software, usability, digital collections, performance, technical infrastructure, and interoperability". The software application used to host the repository is an important consideration, as is interoperability, initially facilitated by the introduction of the Open Archives Initiative Protocol for Metadata Harvesting, or OAI-PMH (Shearer, 2003: 93). MoReq2010® stipulates that "[the] information represented by an electronic component must be transportable, as content, to allow another separate application that implements the same processing rules as the system of origin, to read, interpret and process it correctly" (Document Lifecycle Management [DLM] Forum Foundation, 2011: 510). This standardisation of functionality across information management repositories to facilitate, among other things, the shareability or transferability of records between disparate systems, is referred to as *interoperability*. The concept of interoperability implies implementation of a standard that can be used across software development initiatives in order to make resources stored in disparate repositories accessible to each other without needing to be sent to the repository owners in response to requests. This is necessary, for example, in instances in which repositories created using different software applications or programmes are required to share or receive records from other IRs (Shearer, 2003). Interoperability of repositories, therefore, is crucial for the success of shared resource dissemination over as wide a research community as possible (Swan & Brown, 2005).

2.2 Linking the Theoretical Framework to the Research Questions

Figure 4 below is an illustration of how the theoretical framework (TF) is linked to the research questions. Awareness of the existence of the IR and UCT OA Policy must be determined, as it is a first step in approaching the issue of UCT researcher engagement. Determining the reasons researchers are motivated or resist depositing in the IR (Abrizah, Hilmi & Kassim, 2015) then becomes an important exercise in informing the study in relation to CSFs (and/or other factors) that may be influencing or deterring this behaviour. Determining the PIR levels of all respondents (depositors or non-depositors in the IR) must then be carried out so that it might be possible to determine whether or not this may be used

to understand the deposit / non-deposit behaviour and RTC disposition of the respondent group. As CSFs should be used to inform the Libraries' outreach and advocacy strategies for promoting IR engagement among academics, the extent to which the Libraries is mindful of and employs strategies to enhance these factors will be investigated to present a comprehensive picture of the status quo from both sides – that of UCT researchers and of UCT Libraries.

Figure 4: Theoretical Framework-Research Questions relationship



2.3 Literature Review

In light of the CSFs and notion of psychological resistance discussed above, it is necessary to examine the following aspects as they relate to researcher engagement with institutional repositories and library efforts to promote and support this: (1) researcher awareness and perceptions of OA IRs and how this may influence their deposit behaviour; (2) scholar engagement with IRs and governance therein, and (3) IR agency strategies (strategies that libraries use to encourage researchers to deposit in their IRs).

2.3.1 Researcher Awareness and Perceptions of OA IRs

Swan and Brown (2005), Yang and Li (2015) and Johnson (2016) describe low levels of researcher awareness around OA publishing, indicating that authors seemed not to know about the possibility of providing access to their work by self-archiving or how to go about doing so. Reluctance by researchers to deposit in IRs has been reported to be accompanied by lack of awareness of OA publishing and the copyright issues associated with it (Watson, 2007; Kim, 2010). Kim (2010) reported that academic staff that did not practise self-archiving appeared more concerned about copyright issues than those who did, as the latter adopted a more flexible approach to copyright issues associated with self-archiving. Also deterring researcher deposit is a lack of knowledge regarding suitable OA journals in their fields and difficulty identifying appropriate ones in which to publish (Rowlands, Nicholas and Huntington, 2004; Swan & Brown, 2005). According to Kocken and Wical (2013), the attitudes of academics towards OA, coupled with confusion over the intended purpose of an IR suggests that researchers do not yet understand OA.

Kim (2010) found that time and effort required to self-archive proved to be a significant deterrent to some researchers. Oladekun (2015) also found that researchers felt their workload too heavy to also be contributing to their IR.

In this case, the researchers' appeared to believe that the benefits associated with self-archiving did not necessarily outweigh the time and effort required to do so. In his study, Oladekun also suggested that non-deposit into the IR may be a strategy used by academics to passively resist the IR publishing imperative due to the demands placed on them to maintain their workload – an assertion supported by Cullen and Chawner (2011). This passive resistance may also point to a lack of trust in the institution and other authors or users of the repository, as well as lack of loyalty and alignment with the institutions at which they work (Kankanhalli, Tan and Wei, 2005).

Cullen and Chawner's (2011) study found that among the motivators to deposit, such as making work available, increasing exposure and meeting institutional demands, researchers did not really link the increased exposure with personal benefits resulting from it. Linking the IR to researcher profile, they found, provided this level of personalisation. Foster and Gibbons (2005) and Kingsley (2008a) also discuss the need for a researcher profile to accompany deposited items as a means of self-promotion within the IR. They discovered that academics tended to perceive the IR as something belonging to their institution rather than to them, and which focused on the institution's requirements rather than on those of individual researchers. Oladekun (2015) encountered a similar issue at the University of Botswana, where researchers appeared to associate the IR with serving to further the prestige of the institution itself rather than enhancing their status as researchers. Researchers were willing to forego any benefits associated with publishing OA and depositing in the IR in favour of more (perceived) recognition that came with publishing in better-known journals that also have more established peer-review and dissemination mechanisms in place. Kennan (2011) also describes a dichotomous relationship that authors/researchers may experience through their roles as peer-reviewers, editors and advisors for 'traditional' academic publishers, suggesting that the issue of OA IR deposit is not as straightforward as it may seem at first, as loyalties may be divided. Kim (2010) found that researchers adopted an attitude of altruism linked to an expectation of reciprocity. In other words, they self-archived because they believed in the benefits of making their work publicly accessible to other researchers. However, this altruistic behaviour was accompanied by an expectation that the wider research community reciprocated by also self-archiving in publicly accessible locations, such as IRs.

Kingsley (2008b: 1) argues that persuading researchers to publish in institutional repositories is complicated by their association with research communities outside of their institutions - communities he terms "invisible colleges". Membership to these groups often comes with its own set of expectations that must be met if researchers are to retain good standing within those communities. Sometimes these expectations conflict with those of the institutions at which the researchers are employed. Davis and Connelly (2007) discovered that researchers were more inclined to deposit in discipline/subject-specific repositories than in their IRs. Academics may, therefore, be faced with conflict between sharing their research information with the research communities in which they represent themselves, and the scholarly communication instrument, the IR (Swan & Brown, 2005; Kingsley, 2008b; Kim, 2010), which they perceive to represent the institution and funding bodies rather than themselves as

individual researchers. This is compounded by the fact that they use their research communities as sources of information and as research communication platforms (Davis & Connelly, 2007; Kingsley, 2008a).

Kim (2010) found that academics in Humanities tended to self-archive a lot less than those in Science, Engineering and Social Science. This is affirmed by the analysis of UCT researchers' patterns of deposits presented in Figures 1 and 2 (Section 1.2). Within these disciplines, peer-pressure also played a large role in motivating researchers to self-archive. Discipline-specific research communities will also dictate the types of scholarly communication outputs that are deemed noteworthy (Kingsley, 2008b). For example, a discipline such as Science may value journal articles over conference proceedings, which are assigned more importance in Computer Science, whereas a discipline such as Sociology may assign more value to the output of book chapters and books over journal articles and conference proceedings. Rowlands, Nicholas and Huntington (2004) also note that authors are more inclined to want to publish in certain journals in preference over others due to their intended audience, that is, other researchers in the same or related fields.

Social influence, defined by Abrizah, Hilmi and Kassim (2015: 738) as "the degree to which an author is influenced by peers or fellow researchers and the university to share knowledge, as well as the degree to which an author may influence his/her peers to share knowledge", is an important influencing factor in researchers' attitude and behaviour towards publishing in an IR. Social influence was also found to influence positively the self-archiving practices of authors, as these were noted to be very concerned about fellow students, colleagues and researchers' views of the practice. To this, Quinn (2010: 72-73) introduces a time imperative – persuading researchers to deposit by placing emphasis on the fact that their peers have already published OA in IRs and highlighting the career benefits that these depositors have experienced by doing so. Researchers may feel that they are losing out by not engaging in the same practices urgently.

Lastly, Kim (2010) noted that researchers in disciplines that required the maintenance of a fair level of technical competency, such as Computer Science, tended to be more motivated to self-archive than those in disciplines that did have these requirements. Kim aligned this with the motivator or deterrent factor of time and effort to self-archive, arguing that the positive or negative experience of the researcher may be significantly influenced by technical skill level.

2.3.2 Institutional Repository Governance and its Influence on Scholarly Engagement

As already indicated, the success of an institutional repository depends on whether or not it is able to attract a "critical mass of users" (Abrizah, Hilmi & Kassim, 2015: 732), preferably those who drive the research activities of the institution (Foster & Gibbons, 2005). Some researchers, however, have not quite embraced OA publishing for purposes of deposit in IRs, for reasons listed below (Swan & Brown, 2005; Kim, 2010; Abrizah, Hilmi & Kassim, 2015: 734; Yang & Li, 2015; Bower et al., 2017):

- redundancy with other modes of disseminating information
- confusion regarding copyright
- fear of plagiarism
- concerns related to associating their work with inconsistent quality
- lack of clarity about whether posting a manuscript constitutes 'publishing'
- lack of available time and technological skills required to self-archive
- lack of confidence among early career researchers that affects their willingness to expose their work to the wider research community

For Van Wyk and Mostert (2011: 137), "a clear mandate for the IR, proper planning, interoperability, a sound funding model, and ensuring the preservation of documents" are critical for gaining the trust and confidence of researchers to make their materials available for digitisation (if required), storage and online dissemination, which also emphasises the *cumulative* and *perpetual* nature of the IR (Shearer, 2003: 92). This also involves consistent IT infrastructure support (Ratanya, 2017).

The existence of a mandate requiring academics to deposit into IRs has proven useful in terms of increasing awareness and encouraging engagement, as well as growing the repository (Swan & Brown, 2005; Kingsley, 2008a; Kingsley, 2008b; Kocken & Wical, 2013; Abrizah, Hilmi & Kassim, 2015). However, Yang and Li (2015) indicate that academics generally do not respond positively to mandates. In a study of two universities and their researchers' IR deposit practices, Kennan (2011) found that the one that mandated IR deposit boasted a large IR collection of its researcher OA output, and that the researchers who deposited were also knowledgeable of the advantages of OA publishing and associated issues. Her study also revealed that top management support of the OA mandate and how it

was realised at that university played an important role in deposit compliance. Kennan (2011) and Yang and Li (2015) also found that when researchers had been educated about the implications of publishing in their IR, including the benefits to be derived from increased exposure, how deposit in the IR aligned with their institutional mission, and how to manage the copyright and publisher issues associated with open access publishing and data management, they readily acknowledged its importance in their career development and how valuable the IR was in its alignment with the university mission. Some researchers interviewed by Kim (2010) acknowledged that self-archiving practices were not viewed negatively from a career promotion perspective. Instead, it was viewed neutrally or positively, and also complimentary to traditional publishing modes. In Kennan's (2011) study, some researchers even recognised other potential research reporting modes that could be achieved through the IR.

The presence of a mandate also does not equal engagement or increased deposit although funder requirement of OA deposit as a condition of grant rewards may encourage it (Swan & Brown, 2005). Ratanya (2017) comments that university libraries in developing countries are plagued by budget shortages, and this results in perceived lack of management support of the IR. Researchers at the University of Botswana were found to believe that they would not derive any financial benefit from depositing in their IR, as opposed to their counterparts in neighbouring countries, such as South Africa, who generate income from publishing in South African journals, but also benefit from travel grants, conference funding and money to purchase research support tools. In contrast to many South African scholars, academics at the University of Botswana are not supported in this way and often have to pay to have their articles published and attend conferences (Oladekun, 2015). At UCT, to provide financial incentive to publish OA and attract researcher deposit into OpenUCT, some funding assistance aimed at helping researchers mitigate APCs is made available through the Open Access Journal Publication Fund (OAJPF), which is managed by UCT Libraries (UCT Libraries, 2016). The idea of APCs was introduced by the Finch Report, published in 2012, which empowered publishing houses to charge authors for making their articles available, under a Creative Commons license, via the publisher's website (Bower et al., 2017) – the 'gold' OA publishing route. This was not well received by authors because it simply enabled publishers to replace subscription fees with APCs, thereby retaining their commercial business model, and also encouraged double dipping (Pinfield, Salter & Bath, 2016; Bower et al., 2017).

As publishing in recognised, high impact factor journals is perceived to attract more reward (for example, financial support or career enhancement) than OA publishing and IR deposit, academics prefer to engage in the former, especially those at the beginning of their careers (Cullen & Chawner, 2011). Financial reward is also very closely associated with publication in 'recognised' DHET resource types, such as peer-reviewed journals, peer-reviewed conference proceedings, peer-reviewed books or book chapters (UCT Research Support Hub, 2017).

2.3.3 Institutional Repository Agency Strategies

Library staff have come to be responsible for the development and maintenance of the IR, as well as the advocacy and promotion of IR deposit among academics (Ratanya, 2017). It is, therefore, necessary to discuss strategies that have been used, or may be used, to encourage researchers to engage with the IR. Advocacy of IR deposit is an important influencing factor in the success of an IR, as is the number, knowledge and skill-level of staff employed to carry out these activities (Shearer, 2003). Quality control of deposited materials is an important responsibility now also assumed by library staff in the growth and maintenance of the IR. Library staff occasionally also perform mediated archiving, a practice encouraged by Bruns, Brantley and Duffin (2015) as part of liaison librarians' research support activities. However, Oladekun (2015) found that this did not work as well as anticipated at the University of Botswana, where it was found that librarians allocated to archiving contributions on academics' behalf were found to be slow in processing contributions and providing feedback to scholars, which then discouraged the latter from contributing other work.

Quinn (2010: 72) proposes persuading resistant researchers to see IR deposit positively by highlighting the benefits of deposit for their careers by way of research exposure that enhances their professional profile through increased visibility, increased article citations and impact (Swan & Brown, 2005) to a much larger potential audience than just the institutions at which they work. It may also help to emphasise that the IR is just another medium in which the work of researchers may be disseminated, just as preprints, books and closed access journals act as media via which research is made widely available. The difference lies in the nature of the access provided to this work (Quinn, 2010).

Librarians need to build on what researchers are familiar with when attempting to persuade them to deposit their scholarly communications in an IR. Kocken and Wical (2013) and Yang

and Li (2015) found that it is important for academics to fully understand the issues around OA before librarians could expect to see improved researcher engagement with the IR. According to Watson (2007), awareness of the existence of an IR as a brand does not mean academics understand its purpose. One of Yang and Li's (2015) recommendations for addressing these issues is the offering of more workshops designed to educate academics about processes and procedures in OA publishing and IR deposit, which includes informing them about tools such as SHERPA RoMEO and the Open Researcher and Contributor ID (ORCID) (https://orcid.org/). In the absence of workshops, researchers in Yang and Li's study indicated they would welcome newsletters or emails featuring issues pertinent to OA publishing. Taking this a few steps further, Bruns, Brantley and Duffin (2015) articulate the role of subject liaison librarian as *scholarly communication coach* (SCC), which they define as "a subject liaison, trained to understand copyright, author rights, and the use of various scholarly communication tools (e.g. [*sic*], the copyright-checking online database Sherpa/RoMEO - www.sherpa.ac.uk/romeo) then embedded in their academic department to partner with their department faculty and assist with scholarly communication demands throughout the research process". These authors propose that, in order to fulfil this role, librarians need to develop the following toolkit of competencies that they use to support the researcher:

1. **OA resources for faculty research:**

   The SCC should have an understanding of the scholarly communication environment as it pertains to their discipline, including the knowledge of tools available to assist researchers, such as the Directory of Open Access Journals, the Digital Commons Network, the Registry of Open Access Repositories and discipline-specific repositories.

2. **Data management:**

   Here, the SCC should understand funder OA publishing mandates to publish OA and make public the data management plans of research projects. They should also be able to provide authors with assistance in using data management curation tools, such as the Data Management Planning Tool (DMPTool) (https://dmptool.org/).

3. **Publishing options:**

   The SCC should be able to help navigate the publishing options available to researchers and the OA implications of taking a particular publishing route (closed access, green or

gold OA) and also how to identify predatory publishers.

4. **Collection development and mediated archiving:**
   SCCs should be doing mediated archiving as a collection development activity. Bruns, Brantley and Duffin (2015) believe that the SCC is most suitable to provide the best quality metadata for a resource being deposited.

Researchers accustomed to posting their work on personal or departmental websites and disciplinary repositories, as found by Kim (2007), need to be made aware of the impact that centralising the research output of a university can have (Johnson, 2002). In addition to disseminating their discipline-specific research, researchers need to be informed about the potential benefits that depositing in an IR can have for their career development, networking and reputation-building. Improved professional visibility is a consequence of increased use of an IR. Metadata quality control (Bower, et al., 2017), metadata harvesting and advances in interoperability mean that searches can be conducted across repositories globally, further enhancing professional visibility. Johnson (2002) also indicates that OA IR-disseminated research enjoys higher citation rates when compared to their closed-access counterparts, and researchers should be sensitised to this.

Kennan (2011), however, asserts that OA publishing in IRs is not as well supported and advocated by academic librarians as it should be. To assist with library-driven initiative planning, Bell, Foster and Gibbons (2005: 286 - 289) produced six research findings in relation to faculty perception of IRs and the role of librarians in developing IRs. Five of these are relevant this study, and each will be discussed in relation to the strategies that the authors also propose to address them:

> ***Research Finding # 1:***
> Faculty members have been slow to put their content into the IR, mainly because they have not understood how they would benefit from doing so. They become willing contributors when librarians provide individualised information, and direct support.

To address this finding, the University of Rochester created the position of library liaisons to work with faculty in recruiting content for the IR. These librarians will have received training in the history of the IR and the reasons for its creation, what the benefits are for those who deposit in it also how those benefits come about. They should be able to answer questions

likely to arise, but also anticipate other questions and share this information before it is solicited. They should also be completely au fait with the way in which the IR deposit process works, including being able to demonstrate and answer questions about the user interface of the IR and what sort of anxieties might arise during this process.

The specifics of IR implementation as a contentious area for academics is also discussed by Foster and Gibbons (2005). For example, given the expectation of technical ability as a deterrent to deposit, Foster and Gibbons attempt to address some of the associated issues by investigating and proposing modifications to the DSpace instance at the University of Rochester in order to make self-archiving easier for faculty.

> ***Research Finding # 2:***
>
> Faculty members across disciplines share basic questions and concerns about IRs and have similar needs for clear, understandable information about IR features and benefits. But faculty members do not speak the same language as librarians. Moreover, the features of an IR that are most exciting to librarians, such as persistent URLs and metadata schemas, rarely register the same enthusiasm for faculty. The resulting "Tower of Babel" is a significant hindrance to the increased use of IRs by faculty. Consequently, Library Liaisons must strive to find a "*lingua franca*" to ensure that their message about IRs is clear and well understood.

In providing support, librarians need to be conscious of not using library jargon when communicating about the IR with faculty. Issues and concerns need to be addressed in relation to features and affordances that are relevant to faculty, and appropriate terminology used to communicate this information. To facilitate this, and in line with Kim's (2010) recommendations for addressing the copyright concerns of researchers as they relate to IR self-archiving, the University of Rochester liaison librarians developed an internal information sheet to be able to refer to when addressing faculty concerns, such as how to avoid copyright violations or the benefits to be had from depositing in IRs as opposed to other dissemination channels, in which they also used language and references more relevant to faculty, as opposed to 'librarian-speak'.

> ***Research Finding # 4:***
>
> Sometimes serendipity is as successful for content recruitment as planned marketing.

All librarians at the University of Rochester, not just the liaison librarians, needed to receive training and be informed about how to facilitate faculty IR deposit. That way, if they ever identified an opportunity for content recruitment through their relationships with faculty, they

would be able to act on it. One way to do this would be for members of the IR team and liaison/subject librarians to work more closely on collaborating to develop and grow IR engagement among researchers (Horwood et al., 2004; Yang & Li, 2015). One way in which the librarians at the University of Texas A&M achieved this was through a project called OAKTrust Face-time, during which an IR staff member and liaison librarian meet to discuss issues related to OA and the IR and patrons, including faculty, are invited to be assisted with any questions, project ideas or requests (Yang & Li, 2015).

> ***Research Finding # 5:***
>
> Many faculty members are reluctant to use the IR because they worry about accidentally violating copyright. As a result, few faculty members are exercising their self-archiving rights when available to them.

To assist faculty address copyright concerns, the University of Rochester Library created a database based on the SHERPA RoMEO Publisher Copyright Policies & Self-Archiving database (www.sherpa.ac.uk/romeo), which provides information about publisher policies regarding OA and self-archiving. Each publisher policy is colour-coded to indicate their level of friendliness (permissiveness) to OA publishing of pre- and post-prints. Researchers that have published in journals of publishers identified as *most friendly* (most permissive), which is colour-coded green, are approached about self-archiving the same work into the IR. Once faculty have deposited one piece of work, the rest of their publications are investigated to see what else they may have published that is also eligible for IR deposit.

> ***Research Finding # 6:***
>
> Faculty members will want to use the IR once they know that others are finding, using, and citing the work that they place there.

It is expected that the more research output faculty deposits in the IR, the more they will want to deposit, and the more they will engage with the IR. While they are in this discovery process, library liaisons need to provide the full gamut of support services for facilitating their acquaintance with the IR and associated deposit processes.

2.4 Summary

Information dissemination via the IR has become a preferred means of showcasing research output by institutions. This is manifested in the mandated OA policies that some institutions have created as a way of attempting to build their IRs. A good start to understanding researcher engagement with the IR is in gauging their awareness of its existence and the

presence of a mandate designed to govern its use. It is necessary to discover and understand the perceptions that researchers have formed about IRs in general and the implications that self-archiving in IRs has on their careers, their status within the institution and outside it, the institutions for which they work and the wider community. In institutions in which financial support for research activities is in short supply, researchers may not be convinced that publishing OA or depositing in the repository will benefit them directly, and therefore view it as an unnecessary imposition on their available time. It appears researchers may also grapple with loyalties, which may lie both with their institution and with their discipline-specific communities within which it is considered important to be seen to be sharing one's research openly. The challenge for librarians managing the IR on behalf of institutions necessitates sensitivity to these issues and, at the same time, using their understanding of these issues to persuade researchers to engage with the IR. Bearing this in mind, the proposed study has been designed to provide holistic insight into the situation at UCT. It suggests examining the extent to which UCT researchers have engaged with the institution's OA Policy in terms of depositing their research output into OpenUCT and the reasons they do or do not deposit, what the Libraries' efforts have been to promote this engagement, and what their experiences have been in doing so.

The TF suggests approaching the issue of compliance from the researcher and library perspectives, as both are recognised as significant stakeholders in the scholarly communications arena (Swan & Brown, 2005; Ratanya, 2017). In the first instance, in addition to finding out what motivates researchers to deposit their work in OpenUCT, the study attempts to understand the effects of psychological resistance to imposed change and innovation that may have influenced the less-than-ideal levels of resource deposit currently observed. Awareness of the IR and the benefits of depositing in it, as the literature demonstrates, is an important factor in influencing levels of deposit (Watson, 2007; Kocken & Wical, 2013; Abrizah, Hilmi & Kassim, 2015; Bruns, Brantley & Duffin, 2015; Ratanya, 2017;). Governance of the IR is another important factor, and it is in this component that CSFs come into play. People, Management, Resources, Self-Archiving, Technology and Services – these all manifest in the Library perspective as critical to the success of an IR – critical in achieving Lagzian, Abrizah and Wee's (2015a: 201) "critical mass of material" and Abrizah, Hilmi and Kassim's (2015: 732) "critical mass of users". In the second instance, once existing and historical advocacy and outreach attempts in terms of CSFs have been determined, recommendations for improvement, if applicable, may be made. Here, it

becomes important to incorporate (1) strategies that other academic libraries have reported on and, (2) if psychological resistance is found to exist among the UCT researcher community, strategies that work to counteract this resistance. In this way, it is hoped that the desired outcome of significantly increased researcher contribution of resources to the IR will be achieved by the time the OA Policy is next revised, in 2018.

CHAPTER 3: RESEARCH DESIGN AND METHODS

3.0 Introduction

For purposes of this study, two groups of people were identified from whom it is necessary to solicit information to address the research questions stated in Section 1.5. The first group is comprised of researchers employed by UCT. The second group is the UCT Libraries team responsible for the management, maintenance, promotion and advocacy of the IR among the UCT research community. In this study, the research approach is largely quantitative, with qualitative elements, such as pre-structured questions being used to interview repository staff (Jansen, 2010) and the coding of interview responses according to pre-defined categories for analysis and reporting purposes. In keeping with the post-positivist research paradigm within which the study is being conducted, statistical analysis methods were applied to the collected data with a view to examining possible relationships between the dependent and independent variables.

3.1 Research Paradigm

This study is conducted within a post-positivist research paradigm, defined by Creswell (2014: 36) as:

> …a deterministic philosophy in which causes (probably) determine the effects or outcomes. Thus, the problems studied by postpositivists reflect the need to identify and assess the causes that influence outcomes, such as found in experiments. It is also reductionistic in that the intent is to reduce ideas into a small, discrete set to test, such as variables that comprise hypotheses and research questions. The knowledge that develops through a postpositivist lens is based on careful observation and measurement of the objective reality that exists out there in the world. Thus, developing numeric measures of observations and studying the behavior of individuals becomes paramount for a postpositivist. Finally, there are laws or theories that govern the world, and these need to be tested or verified and refined so that we can understand the world. Thus, in the scientific method – the accepted approach to research by postpositivists - a researcher begins with a theory, collects data that either supports or refutes this theory, and then makes necessary revisions and conducts additional tests.

It aims to explore the possibility of a relationship between the low levels of deposit of peer-reviewed, published articles in OpenUCT (dependant variable) and the possible presence of PIR thought to influence researcher disposition to IR engagement (independent variable) (Abrizah, Hilmi & Kassim, 2015; Quinn, 2010). This relationship is causal, and because the research is exploratory, correlations between the two key variables and their sub-constructs were sought. Various influences are thought to be at work within this reductionist approach.

Beliefs in the prestige, or lack thereof, of publishing in IRs, (mis)conceptions about the way in which copyright issues are addressed regarding the preservation and quality of work deposited in IRs, mistrust in the organisation's ability to manage and preserve the deposited materials, and concerns about dissemination and plagiarism are just some of these. Consonant with post-positivism, the researcher acknowledges that the findings of this study are specific to UCT, which limits generalisation of findings, to an extent: "…findings are viewed as contextually related and could be inductively applied with reference to probability of the similar case holding elsewhere" (Clark, 1998: 1246).

3.2 Research Approach

In view of the descriptive nature of the research questions, coupled with the relationship of constructs presented in Chapter Two (Table 1), the research approach is quantitative with some qualitative data gathered through in-depth interviews with UCT Libraries staff who manage OpenUCT. In general, a quantitative research approach is characterised by the following of a linear research path and the application of *reconstructed logic*, defined as "a logic of research based on reorganizing, standardizing, and codifying research knowledge and practices into explicit rules, formal procedures and techniques" (Neuman, 2013: 169). This linear research path dictates each step in the research process, rigid adherence to which should result in logical conclusion, which is deductive. The eventual aim of the data analysis is to be able to generalise the results to the target population by means of statistical inference.

3.3 Research Design

Adams, Khan and Raeside (2014: 64) describe the research design as

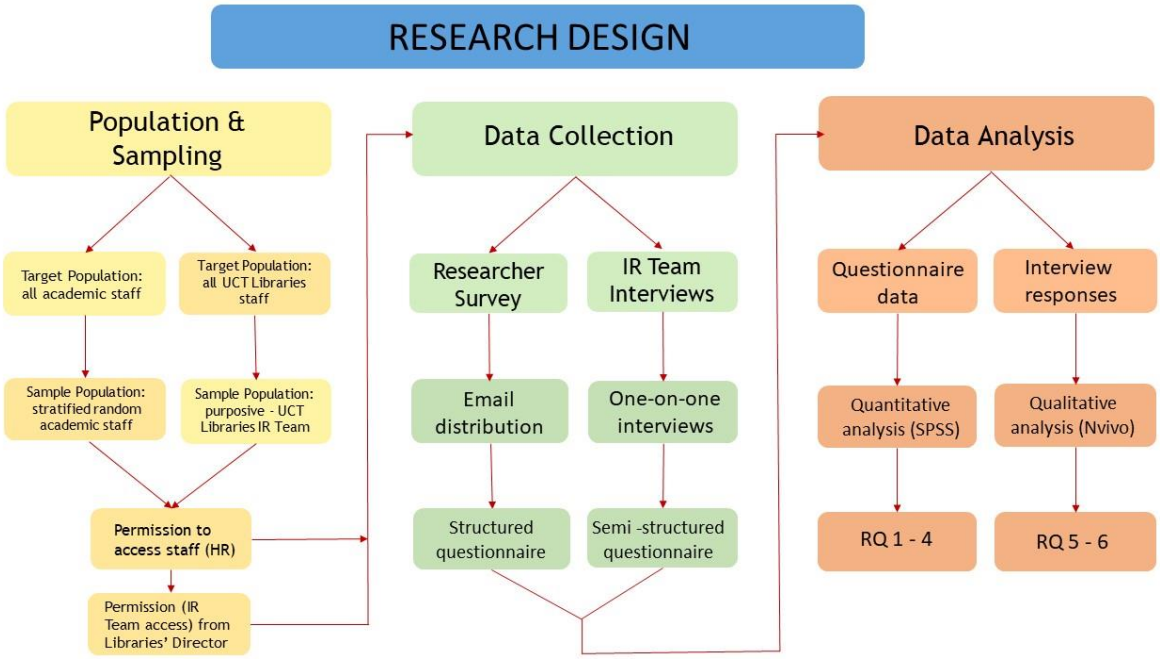
> …a master plan specifying the methods and procedures for collecting and analysing the needed information". The researcher must have a clear knowledge about the sources of information, the design technique such as survey or experiment, the sampling technique and the schedule, as well as the cost involved.

In this study, the research design aims to gauge the awareness of UCT researchers of the existence of OpenUCT and the requirements of the UCT OA Policy. It also aims to examine the extent to which UCT researchers that are aware of the Policy requirements have engaged with OpenUCT and also their disposition (attitudes towards, perceptions of and beliefs about) to sharing their work in IRs. To this end, it explores whether there is a relationship between PIR constructs and this disposition to using IRs that could be used to explain, in part, the low

levels of deposit of peer-reviewed published journal articles in OpenUCT, as observed in the preliminary analysis. The third component examines the efforts (outreach and advocacy) of UCT Libraries to encourage institutional researchers to engage with the IR and how the IR has been developed according to the CSFs of Lagzian, Abrizah and Wee (2015a; 2015b).

The study is classified as cross-sectional survey, as it aims to gather data over a specific and relatively brief period of time (two months) (Babbie, 2012; Adams, Kahn & Raeside, 2014; Creswell, 2014). Babbie (2012) also notes that, although often used in exploratory studies, cross-sectional studies are somewhat problematic in that the research attempts to understand, over a reduced period, phenomena that usually occur over a longer time span. In this instance, UCT researchers' non-compliance with OA Policy is being examined over a short period of time and yet it is a phenomenon that is likely to occur over a longer period. The research design for this study is illustrated in Figure 5 below.

Figure 5: Research design for the study



For the quantitative component of the study, an online questionnaire was used to solicit responses from UCT researchers regarding their disposition to IRs and the relationships of the variables comprising disposition to IRs to the constructs that make up PIR. The purpose of a survey design, according to Creswell (2014: 201) is to "provide a quantitative or numeric description of trends, attitudes or opinions of a population by studying a sample of that

population" with the eventual aim of generalising findings to the target population. It is also the most appropriate tool for measuring the attitudes, opinions and beliefs of a larger number of people (>100) over a short period of time (Neuman, 2013).

3.3.1 Population and Sampling

In social research, a population is made of units of analysis, which Babbie (2012: 124) defines as "the people or things whose characteristics social researchers observe, describe, and explain". In adherence to this reasoning, the unit of analysis in this study is the individual UCT researcher, who is characterised by his/her membership to the larger social group, that is, staff on academic conditions of service at UCT and who conduct research as part of their conditions of service. This excludes professional, administrative and support staff (PASS), academic staff on teaching-only contracts, because research and publishing is not part of their terms and conditions of services, and students. Students and non-permanent faculty were not included in the target population in light of Xia's (2007) observation of their transient status as a complicating factor in deciding which groups to include in a sample intended to be used for studying issues relating to IRs. Much of the existing research on engagement of researchers with IRs also focuses on academic staff of institutions (Foster & Gibbons, 2005; Davis & Connelly, 2007; Kingsley, 2008a; Kim, 2010; Micho & Schlembach, 2011; Van Wyk & Mostert, 2011; Bamigbola, 2014; Abrizah, Hilmi & Kassim, 2015; Oladokun, 2015; Ratanya, 2017).

Adams, Kahn and Raeside (2014: 72) define sampling as "the process or technique of selecting a suitable sample for the purpose of determining the parameters or characteristics of the whole population". In this study, the target population, as indicated above, is staff employed on academic conditions of service, for whom it is a requirement to publish. UCT Human Resources (HR) confirmed this number to be 1,163 (UCT HR, personal communication 2016, December 15). All individuals involved in the development and refinement of the survey questionnaire, namely, the research supervisor, two academics from the Organisational Psychology section of the School of Management Studies in the Faculty of Commerce, the academics to whom the pilot was distributed and the members of the ethics committee to whom the study was submitted for ethical clearance (11 people in total) were excluded from the sampling frame (Trochim, 2006a). The sampling units on the remaining list were sorted by faculty, each of which is made up of a different number of academics. Each faculty list was randomised, and the first 50% of each list selected for the sample,

rounding down when 50% worked out to a decimal point. The initial sample, therefore, was proportionally stratified by faculty – a sampling strategy known as stratified random sampling (Leedy & Ormrod, 2015; Trochim, 2006b). The resulting list was comprised of 503 members of staff on academic conditions of service. According to the Raosoft Sample Size Calculator (Raosoft Inc., 2004), with a target population size of 1,163, a confidence interval (margin of error) of ± 5%, a confidence level of 95%, the required sample size needs to be at least 289 (minimum) sampling units, that is, 289 individual researchers for the results of the statistical analysis to be generalisable to the target population (Kothari, 2004; Babbie, 2012).

In the case of the UCT Libraries staff interviews, the two staff members comprising the IR team were identified as suitable participants, so the sampling method is purposive (Trochim, 2006c) in that the two individuals were specifically selected as opposed to being randomly selected from a pool of potential respondents.

3.3.2 Data Collection

The survey questionnaire was distributed to potential respondents via email. An advantage of this distribution method is ease of delivery. This ease of distribution is also a disadvantage, as the email medium also creates distance between the researcher and sample participants. It is much easier to ignore an email than a person who makes an appointment to record survey responses in person. UCT HR is not in favour of reminder emails being sent, so this was not done. It must be recognised that the researcher does not have the financial means to offer an incentive to potential respondents – a strategy sometimes used to encourage response (Creaser, 2010; Kim, 2010).

The questionnaire is presented in Appendix A. Participants were presented with a set of statements on awareness of the IR and the OA Policy in order to inform RQ 1 in an approach similar to the study conducted by Abrizah (2009), in which she attempted to gauge faculty awareness of IRs. A study by Waugh et al. (2015) also began by gauging the awareness of the University of North Texas' UNT Scholarly Works IR among faculty, staff and graduate students while attempting to determine a relationship between awareness and perceived value of the IR. Creaser (2010) commented on the fact that approximately three-quarters of the researcher respondents to her survey were unaware that a policy on research outputs and open access existed at their institutions.

The initial survey distribution, to 503 academics via email on 20 February 2017, obtained 31 responses, eight of which were incomplete. Having obtained HR permission to survey UCT academic staff (included in Appendix E), the researcher then revised the sample population to include all those in the target population (still excluding seven researchers that responded to the pilot survey, three who were part of the Library and Information Studies Centre (LISC) ethics committee that approved the study, and the researcher's supervisor (11 people). The survey was, therefore, distributed to a further 613 academic staff via individualised email during the week of 26 March to 2 April 2017; 85 of these were returned; seven were incomplete. No reminders were sent out.

Of the 1,116 staff members to whom the survey was emailed, 116 responses were received, yielding a response rate of approximately 10%. Of these responses, 15 were incomplete. However, because of the inconsistency of response omission (not all incomplete response sets omitted the same items), the researcher decided to include the incomplete responses in the survey analysis. Where appropriate, SPSS manages this as *pairwise deletion*, defined as "a technique whereby all available participants for a specific part of an analysis are used" (Cole, 2011). For reporting purposes, *N* will be used to denote the total number of responses to each item.

Responses to the statements on awareness determined which set of follow-up questions respondents received. Those who selected Options A or C (see Appendix A, Section B) were presented with a set of statements from Question Set 1 designed to gauge researcher motivation to engage with IRs (Abrizah, Hilmi & Kassim, 2015). Responses to these were used to inform RQ 4. Those who selected Option B were asked to respond to Question Set 2, which contains statements that address researcher reluctance to engage with IRs. These were also adapted from Abrizah, Hilmi and Kassim (2015). Responses to these statements were used to inform RQ 2. All respondents were asked to respond to survey statements from the PIR instrument adapted from Heidenreich and Handrich (2015). This was used to determine (1) the levels of PIR of the two groups of UCT researchers (those who deposit in the IR vs. those who do not), and (2) the strength of correlational relationships between PIR and its sub-constructs and the variables associated with disposition to engagement with IRs (positive or negative) among sample group participants. This data was used to inform RQ 3.

Qualitative data collection in the form of face-to-face interviews with UCT Libraries IR staff was conducted using pre-structured questions (see Appendix C) to guide the discussions around:

1. The extent of reporting of non-deposit in the IR by UCT researchers;
2. The current status of the UCT IR in relation to the six CSFs of Lagzian, Abrizah and Wee (2015a; 2015b);
3. The extent of advocacy and outreach activities to date and planned by the IR team to promote the IR within the UCT research community.

Of the pre-structured interview questions, Question Set 1 addresses RQ 5, while Question Sets 2 and 3 address RQ 6. The interviews were recorded, transcribed and encoded using the NVivo Pro 11 qualitative data analysis software tool, as recommended by Creswell (2014). During these interviews, the researcher relied on the participant to provide information about the history and development of the IR, its current governance and how the Libraries' efforts to engage the researcher community in conversations around self-archiving have been received (Babbie, 2012; Creswell, 2014). An advantage of this approach is that the researcher is able to control, to an extent, the discussion that takes place. A drawback, however, is that the information is shared through the perspective of the participant, and is, therefore, subjective (Creswell, 2014). To obtain valuable information despite this, Babbie (2012) recommends that the researcher focuses much more on listening than on talking, subtly redirecting the conversation if the interviewee strays off topic, and appears intently focused on what the participant is saying in order to recognise important information shared indirectly as well as portray him or herself as a great conversationalist when, in fact, he or she hasn't said very much. Following this approach as much as possible, the researcher conducted two interviews, approximately 50 minutes each.

3.3.3 Data Analysis

The SPSS® version 23 statistical analysis software programme was used to code and analyse the collected data. Likert scale response categories were used to collect questionnaire responses to the survey in the five-point 'Strongly disagree' to 'Strongly agree' format (Allen & Seaman, 2007). Responses to each question set item statement were coded numerically for statistical analysis purposes, as follows: Strongly disagree = 1; Disagree = 2; Neutral = 3; Agree = 4; Strongly agree = 5. The coded data was used to generate frequency tables to describe the responses to the item statements in the RSRIR and MSRIR question sets. The

means of these responses is then used to describe the overall responses to each question set (Tables 11 and 25). The mean is a measure of "central tendency" used to determine the centre of a distribution of values (Trochim, 2006d) and is defined as "all the scores for a variable added together and then divided by the number of observations" (Leech, Onwuegbuzie & Daniel, 2011: 44). Presented after the frequency distribution tables of item statements for each question set, the means of responses to Question Set 2 (RSRIR, Section 4.1.1.3) and Question Set 1 (MSRIR, Section 4.1.1.5) are interpreted according to the way in which the responses were coded, that is, a higher score indicates a higher level of agreement and a lower score the opposite. As the midpoint of the scale is 3 (Neutral), a score below 3.0 indicates a greater tendency to disagree, while a score above 3.0 demonstrates a greater tendency towards agreement.

Standard deviation quantities accompany the means for the item statements in each question set. The standard deviation is a measure of how much the distribution of responses varies from the mean and is often used in hypothesis testing (Burdess, 2013), such as when conducting the Mann-Whitney U Test for Independent Samples, described below and in Sections 4.1.1.4 to 4.1.1.6.

Non-parametric statistical tests, the Spearman Rank Correlation test and the Mann-Whitney U Test for Independent Samples were used to analyse the data collected as it is ordinal and should not be assumed to be normally distributed (Sections 4.1.1.3 to 4.1.1.6) (Scott & Mazhindu, 2005). The Spearman Rank Correlation test was used to determine if there is a statistically significant correlation between the MSRIR or RSRIR variables and the constructs comprising PIR. This test is used to measure if a change in one variable corresponds with change in another (Scott & Mazhindu, 2005; Coleman, 2012). The non-parametric Mann-Whitney U Test was used, where appropriate, to determine if statistically significant differences existed between particular groups, for example, between researchers who are aware of the IR and deposit, and those who are not aware but still deposit (Vogt, 2011) on the measured variables. This test is suitable for comparing groups of differing sample sizes to see if the mean ranks of the two groups differ from each other as a result of a change in the independent variable (Hinton, 2012).

As the six CSF themes have already been identified in Chapter Two, the aim of interviewing each UCT Libraries IR team participant was to determine how each of the identified CSFs

has influenced the development, management and functioning of the IR. Transcription and thematic coding began once the first interview took place, as advised by Babbie (2012), Neuman (2013) and Creswell (2014). This also continued in parallel with the questionnaire data collection and analysis.

3.4 Validity and Reliability

3.4.1 Validity

The validity of responses to the questions adapted from Abrizah, Hilmi and Kassim's (2015) survey were determined during the pilot testing and data analysis phases of this study. Kothari (2004: 73) defines the validity as "the degree to which an instrument measures what it is supposed to measure" and also how well it does so (Marczyk, DeMatteo & Festinger, 2005; Leedy & Ormrod, 2015). It is important to establish *content-related* validity by ensuring that the items included in the questionnaire cover the topic(s) in question adequately (Kothari, 2004; Marczyk, DeMatteo & Festinger, 2005; Leedy & Ormrod, 2015). Carmines and Woods (2004) recommend testing content-related validity by creating a sample of questions that include all content covered in the topic and testing it on a sample population. The questionnaire was adapted from Abrizah, Hilmi and Kassim (2015) to gauge respondents' motivation or resistance to engaging with IRs in relation to various aspects, namely:

1. Motivating factors: prestige, visibility, accessibility, ease of dissemination, technology, networking, usability and external influences.
2. Resistance factors: plagiarism, copyright, intellectual property, repository management concerns, resource quality, academic freedom, technology, usability, resource accessibility, visibility and discipline specificity.

The researcher distributed the survey questionnaire to seven staff members at the UCT Centre for Innovation in Learning and Teaching (CILT), all of whom conduct research as part of their daily work activities and regularly interact with academics at UCT for capacity building and development of learning and teaching. They have insights on UCT academic stature and research terrain. They were not only asked to participate in the pilot study, but also comment on how comprehensively the statements in each question set covered the above aspects of each 'motivation' and 'resistance' question set, ease of use of the survey, interpretability (that is, whether all statements were understandable and how they responded to the tone of the statements) and convenience (that is, how easily respondents were able to access and navigate

through the survey) – aspects referred to by Kothari (2004: 75) as *tests of practicality*. Feedback on the motivation and resistance components included a recommendation to group statements covering the same or similar aspects together and removing statements that seemed to ask the same question in different ways as a means of reducing survey fatigue in respondents.

Amendments were made accordingly on the instrument such as categorisation and clustering of questions meant to measure similar constructs; restructuring of some statements to eliminate ambiguity and grammatical errors; and changing of terms that were vague and without frame of reference for UCT researchers to be able to respond meaningfully. The validity of the PIR component of the survey has already been established by Heidenreich and Handrich (2015: 983), who describe it as "multidimensional, reliable, and able to provide convergent, discriminant and nomological validity".

3.4.2 Reliability

A measuring instrument is considered to be reliable if it consistently produces the same results over time (Kothari, 2004; Babbie, 2012; Leedy & Ormrod, 2015). Although it is possible to have reliability without validity, the opposite is not true. A reliable instrument not only reduces the chances of measurement error and random factors in the scoring of a construct but also increases the accuracy of scores obtained (Marczyk, DeMatteo & Festinger, 2005). Validity of survey measurement may be compromised by respondents selecting responses based on what they think their views and practices should be as opposed to what they actually are. McNabb (2014) describes additional types of measurement error:

1. Instrument error. In a questionnaire or interview schedule, this includes problematic question phrasing or non-verbal cues, as well as questions that cause discomfort or embarrassment in the interviewee or survey respondent. To address this error, ethics clearance was done on research instruments for scrutiny of questions that are likely to cause discomfort or embarrassment.
2. Data collection mode and processing error. In this instance, the data collection modes were online questionnaire and one-on-one interviews. Errors could occur in the coding of the data, the accuracy of data entry (this includes accuracy of transcription of the interviews) and the assignment of item weights (in the case of the questionnaire). As questionnaire data was coded manually due to the lack of functionality in the researcher's

programme to export the data to SPSS, errors were detected in the compilation of frequency tables detailing the responses to each item statement based on the coded data.

3. Coverage error. Occurs when the sampling frame does not include all subjects in the target population. In this study, barring those who had been part of the pilot study or development of the questionnaire, all staff in the target population were included in the sample to eliminate coverage error.
4. Response error. Occurs when a response to a question is incorrect or incomplete, or due to misinterpretation of the question on the part of the respondent. The pilot study was intended to assist with reduction of response error, which sometimes may be beyond the researcher's control. In this study, even though 15 questionnaires were returned incomplete, they were still included in the analysis.
5. Nonresponse error. In the context of this study, this occurred when researchers failed to take the survey.
6. Interviewer error. May result from misinterpretation of interview responses. To mitigate for this, the interviewer contacted the respondents for clarification.

Marczyk, DeMatteo & Festinger (2005: 18) recommend measures for maximising instrument reliability during the study design phase that should be included in data collection exercises:

- The research instrument administration should be conducted in as standardised a way as possible. In the context of this study, this meant distributing the link to the questionnaire to all participants at the same time, via the same channel, which in this case was email. No special concessions, such as telephoning a respondent to try and administer the questionnaire over the phone or in person, were made. During data collection in this study, the first half of sample participants received the survey simultaneously, via email. The second half was emailed individually over the course of seven days. Sending emails had a spinoff to qualitative data, because some researchers had additional comments.
- Ensure that all participants understand the instrument instructions and questions in the same way. All ambiguity should be eliminated. This was established through discussion with participants in the pilot study.
- Efforts should be made to ensure that data recording, compilation and analysis are conducted accurately. Errors in data input were corrected when the researcher encountered them during the analysis.

Cronbach's Alpha has been established as a way of determining the internal consistency of sets of scale items in a survey instrument (Vogt, 2011). To establish scale reliability of the pilot and final survey questionnaires, Cronbach's alpha (α) was calculated for each of the question sets that received responses. As none of the pilot participants completed Question Set 2: Resistance to Sharing Resources in Institutional Repositories (RSRIR) (Question Set 2), the results for the other question sets were as follows:

1. Motivation to Share Resources in Institutional Repositories (MSRIR) (Question Set 1): $\alpha = .918$
2. Passive Innovation Resistance (PIR) (Question Set 3): $\alpha = .942$

As the final questionnaire (Appendix A) contained revisions according to recommendations made by the pilot participants, the Cronbach's alpha scores for the three question sets were as follows (see also Appendix B):

Question Set 1 - Motivation to Share Resources in Institutional Repositories: $\alpha = .925$
Question Set 2 - Resistance to Sharing Resources in Institutional Repositories: $\alpha = .713$
Question Set 3 - Passive Resistance to Innovation: $\alpha = .789$

In each case (pilot and final questionnaire, the alpha (α) values reflect a high degree of reliability for each of these question sets. Trobia (2011) indicates that a score above .70 indicates a good degree of scale reliability, that is, the scale items are measuring the same thing and, therefore, the scales demonstrate internal consistency.

Although this study is quantitative, its collection of qualitative data warrants brief consideration of reliability in qualitative studies, which appears more difficult to establish. Smith (2004) contends that although it may be possible for one researcher in a qualitative study to be able to replicate the observations of another researcher in the same setting, making this happen should not be a primary concern. In qualitative research, Babbie (2012) notes that researcher subjectivity poses a threat to the reliability of a study, as does the changing nature of researcher-participant relationships, the transience of the conditions under which a phenomenon is being studied and the variety of data sources that can be used to

inform the study. Smith (2004) advises, therefore, that reliability in a qualitative research study is not an essential component of the research process.

3.5 Limitations and Delimitations

According to Denscombe (2012: 69), delimitations are "self-imposed boundaries imposed by the researcher", which are different from limitations in that the latter are the result of "factors beyond the researcher's control".

3.5.1 Delimitations of the Study

The OpenUCT repository contains theses, dissertations, book chapters, journal articles, open educational resources (OERs) and technical and research reports spanning the six faculties at UCT, namely Health Sciences (FHS), Law, Science, the Centre for Higher Education Development (CHED), Commerce and Engineering and the Built Environment (EBE), as well as various interdisciplinary research groupings (see Section 1.2, Figures 1 – 3). This study, however, focuses on the deposit of peer-reviewed, openly licensed journal articles, delineated as "Scholarly Publications" by the UCT OA Policy (UCT, 2014: 2) for two reasons: (1) including all the types of resources in this study would broaden the scope too extensively, and (2) according to the researcher's preliminary analysis, peer-reviewed, published journal articles make up the bulk of deposit in the IR. These articles also attract financial subsidisation of the University from DHET.

3.5.2 Limitations of the Study

Time, or lack thereof, is a major limitation of the study. The time frames within which researchers were required to respond to the survey also constituted a limitation. Due to the student fee protests of 2015 and 2016 (Pilane, 2016; Govender, 2016), the UCT academic timetable had to be greatly condensed, placing additional constraints on researchers' available time, both for conducting their own research and for teaching preparation. The first half of academics was surveyed in the three weeks prior to the start of the first academic semester. During this time, academic staff were finalising the marking of deferred and supplementary examinations and preparing for the start of the teaching year. Researchers in the second half of the sample were emailed the survey a few weeks after the commencement of the 2017 teaching year. This group, too, is likely to have been too busy with teaching activities to take the survey, be too fatigued to prioritise it or may have simply forgotten about it. The

sociological impact of the impasse between UCT management and student protesters must not be discounted as a factor that negatively impacted the success of the survey.

The researcher was not permitted to send reminder emails to researchers in an attempt to improve the response rate to the survey – a restriction imposed by UCT HR. The low response rate of 116 responses as opposed to the desired 289 indicated by the Raosoft Sample Size Calculator (Raosoft Inc., 2004) compromises the generalisability of the results of the quantitative data analysis as the margin of error is 9%, according to the Survey Monkey Margin of Error calculator (Survey Monkey, 1999), as opposed to the desired 5% indicated in Section 3.3.2 above. The results of Question Set 2 (RSRIR) were particularly compromised, as only nine (eight, in some instances) responses were received. This resulted in too small a sample size to be able to interpret any of the Spearman rank correlations meaningfully, as indicated in subsequent Section 4.1.1.3.

As indicated in Section 3.3 above, this study is cross-sectional as the period over which data was collected is relatively brief (two months). This, together with the limited response rate, suggest that a longer period of data collection, coupled with permission to send reminder emails to non-respondent researchers, may have improved the results of the investigation to the point of generalisability.

Finally, a notable limitation is the period over which the study was conducted. The UCT OA Policy was signed into effect in 2014 and revised in early 2016. The researcher conducted a comparison between the journal articles available in OpenUCT and those listed in the UCT Annual Research Report 2014-2015 in early to mid-2016. A new Annual Research Report (2015-2016) has since been released by the University, but data for the existing study could only be collected from information available at the time of commencement of the study, also early to mid-2016.

3.6 Ethical Considerations

The Faculty of Humanities Guide to Research Ethics pertaining to research with human participants (UCT, 2016a) was used as the main source of reference for ethical considerations, one of which pertained to protecting the identity of research participants (Babbie, 2012). All data has been presented anonymously.

Ethical approval for the study was granted subject to minor changes to the research instrument and contextual materials as well as a review of Question Set 3 (PIR scale statements) of the survey instrument by a specialist in Industrial Psychology prior to conducting the pilot study. The ethics approval letter is included in Appendix D. He advised against changing any of the statements in the scale, for the following reasons:

1. The measurement properties of the scale have already been established. This includes several types of validation, detailed in the article in which the scale was published (Heidenreich & Handrich, 2015). Changing the phrasing of the scale items may invalidate the scale and the measurement properties may have to be re-established.
2. The scale items, as part of a psychometric test, which is what the 18-item Question Set 3 constitutes, are characteristic of psychometric tests and nothing appears offensive or inappropriate. However, comments on the statements could be invited from those participating in the pilot study.
3. The journal in which the article containing the scale was published has an impact factor of 2.086 and all research articles are subject to double-blind, refereed peer-review.

Due to the small sample size, it was not possible to completely anonymise the identities and responses of interview participants. For this reason, the researcher offered the assurance of confidentiality of responses, with an undertaking to dissociate, as far as possible, responses from respondent identities without compromising the integrity of the analysis and reporting of findings. This assurance is important for the maintenance of an existing collegial relationship between the researcher and the interview participants. It was also emphasised that the data collected during interviews would only be used to inform the research study, dissemination of which will be limited to scholarly communication channels such as the deposit of the minor dissertation in OpenUCT and possible publications that may arise from it. Information will not be shared with any third party in any form and all documentation will be further encrypted for additional security.

All participants were given the option to withdraw from the study at any time and the researcher respected this.

Participants were provided with a summary of the research study prior to participation, and interview participants were required to sign a negotiated consent form that was emailed to them prior to the interviews taking place, with the researcher providing printed copies of the

agreed-upon consent form for signature at the commencement of each interview. It was recognised that, in addition to the researcher taking care to be as objective as possible, the information provided in the research summary needed to be as transparent as possible and incorporate no element of attempted deception (Denscombe, 2012).

Permission from UCT HR and UCT Libraries management to interview the IR staff was obtained prior to the scheduling of the interviews. The IR staff also needed to be mindful of the information they were authorised to share or not share, as providing the researcher with incorrect or inaccurate information could lead to their being disciplined by UCT Libraries management and/or reputational harm to the Libraries and participants and/or economic harm to the participants (if they lose their jobs), as well as compromise the findings of the study.

In addition to ensuring confidentiality of interview responses, the researcher took care not to inadvertently portray any particular individual or University department negatively due to information revealed regarding attitudes towards, for example, open access, the OA Policy, or attempts at engagement on the subject by the IR team. Although this type of information may be considered relevant to the study, the additional precautionary step of broadening, for example, the disciplinary area from within which the resistant individual or department operates is proposed. For example, instead of referring to experiences relating to the Physics Department, the researcher could refer to the individual as being employed within the Science Faculty.

3.7 Summary

Situated in a post-positivist paradigm, this study employed a quantitative research approach with some qualitative data being used to build a comprehensive picture of the methods of engagement that UCT Libraries has used to encourage researchers to deposit their research work in the IR. Within the cross-sectional survey research design, the quantitative aspect was used to determine if there is a relationship between UCT researcher deposit in the IR and resistance to innovation and change. This relationship need not establish causation – merely correlation or influence. Data were collected through an online questionnaire and interviews. While quantitative data was analysed using SPSS, qualitative data was analysis using Nvivo. The chapter presented limitations and delimitations as well as ethical considerations.

CHAPTER 4: DATA ANALYSIS AND FINDINGS

4.0 Introduction

This chapter describes the analysis of the data collected by the researcher in accordance with the methods outlined in Chapter Three. The results of the online survey distributed to UCT researchers is presented first, followed by a discussion of the outcomes of the interviews with UCT Libraries' IR staff.

4.1 Survey Analysis

4.1.1 Descriptive Statistics

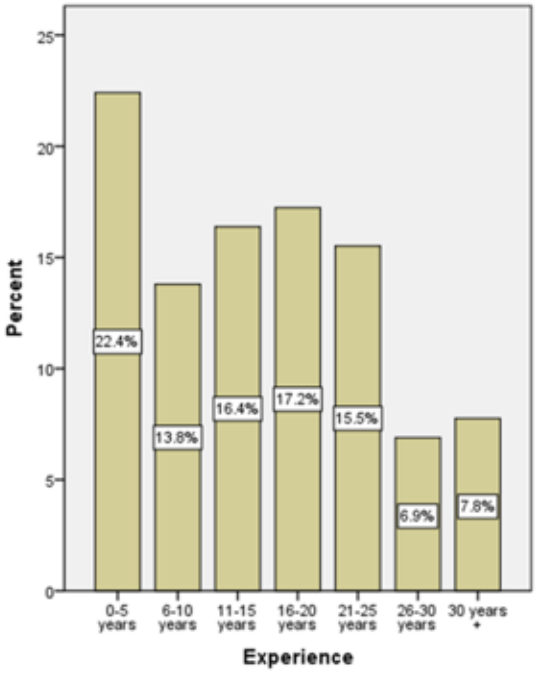
4.1.1.1 Respondent Demographic Profile

Respondent demographic information is presented by the frequency tables and their visual representations in Figures 6 to 8 below. In terms of research experience, the largest group

Figure 6: Respondents by years of research experience

Section A, Question 1: How many years have you worked as a researcher?

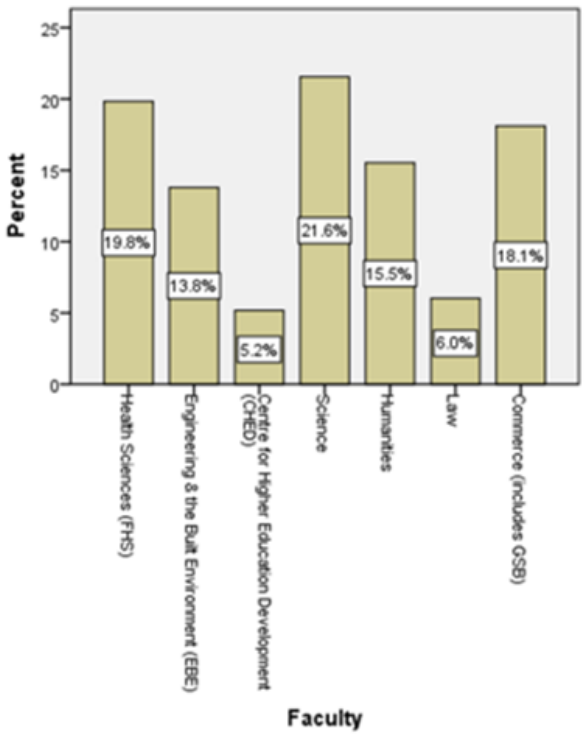
Scale Item	Percentage (%)
0 – 5 years	22.4
6 – 10 years	13.8
11 – 15 years	16.4
16 – 20 years	17.2
21 – 25 years	15.5
26 – 30 years	6.9
30 years +	7.8
Total:	**100**
N = 116	



represented is academics with up to five years' experience as researchers, while the group with 25 to 30 years' research experience constitutes the smallest group. When viewed by faculty (Figure 7 below), the most respondents were from the Science Faculty, while CHED is the least represented faculty (5.2%).

Figure 7: Respondents by faculty

Section A, Question 2: In which faculty are you employed?	
Scale Item	**Percentage (%)**
Health Sciences (FHS)	19.8
Engineering & the Built Environment (EBE)	13.8
Centre for Higher Education Development (CHED)	5.2
Science	21.6
Humanities	15.5
Commerce (includes GSB)	18.1
Total:	**100**
N = 116	



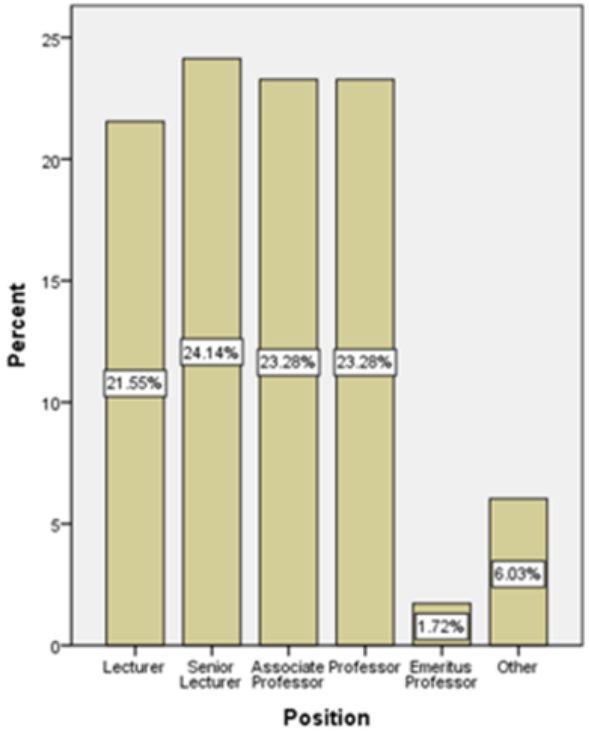
With regard to position of employment in Figure 8 below, most of the respondents are employed at Senior Lecturer (24.1%), Associate Professor or Professor level (23.3% each). The least number of respondents were Emeritus Professors (1.7%). Respondents in the 'Other' category were comprised of Clinical Educators (3.4%), Research Officers (1.7%), and Senior Research Officers (0.9%).

Figure 8: Respondents by employment position

Section A, Question 3: What is your position of employment at UCT?

Scale Item	Percentage (%)
Lecturer	21.6
Senior Lecturer	24.1
Associate Professor	23.3
Professor	23.3
Emeritus Professor	1.7
Other	6.0
Total:	**100**

N = 116

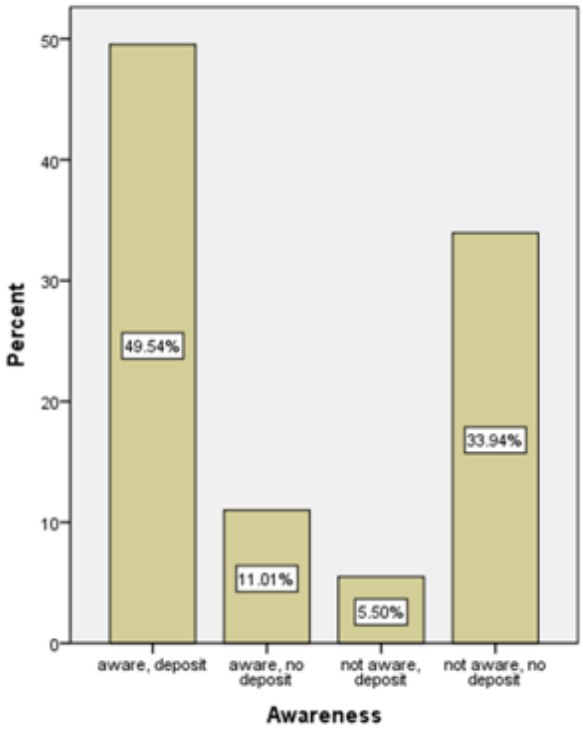


4.1.1.2 OA Policy and IR Awareness

Among those who responded to this question (Appendix A, Section B) (N = 109), 49.54 % of respondents are aware of the OA Policy and have contributed (or intend contributing) their openly-licensed, peer-reviewed journal articles to OpenUCT. The response frequencies to this question are presented Figure 9 below. Of the 109 responses to this question, 11% of respondents were aware of the Policy but had no intention of depositing their work. 5.5% indicated that, while they had no knowledge of the Policy, they had still deposited their work in OpenUCT, while 33.94% were not aware of the Policy and had never deposited anything.

Figure 9: Awareness of the UCT Open Access Policy and OpenUCT deposit activity

Section B: Awareness of the UCT Open Access Policy and OpenUCT Deposit Activity	
Scale Item	**Percentage (%)**
Aware, deposit	49.5
Aware, no deposit	11.0
Not aware, deposit	5.5
Not aware, no deposit	33.9
Total:	**100**
N = 109	



The above information informs Research Question 1 (RQ 1) of this study, as it reports on the awareness of respondents to the existence of the OA Policy and its requirement of openly-licensed, peer-reviewed journal article deposit in OpenUCT. It is observed that the majority of respondents are aware of the existence of the repository and have either deposited in it or intend doing so.

4.1.1.3 Resistance to Sharing Resources in Institutional Repositories

This section addresses Research Question 2 (RQ 2): *To what extent do researchers who are aware of the policy resist complying with it, and why?* The frequencies of Question Set 2: Resistance to Sharing Resources in Institutional Repositories (RSRIR – Appendix A, Section C) are presented in Tables 2 – 10 below. The figures in these tables depict the number of researcher responses (N = 9 or 10) to each item statement in the question set and are presented by statement number.

Table 2: Response frequencies to RSRIR statements 1 and 2

RSRIR Statement 1: I am concerned about plagiarism.	
Scale Item	**Percentage (%)**
Strongly disagree	60
Disagree	10
Agree	30
Total:	**100**
	N = 10

RSRIR Statement 2: I am concerned that the University might do something with my work without my permission.	
Scale Item	**Percentage (%)**
Strongly disagree	70
Disagree	20
Neutral	10
Total:	**100**
	N = 10

Table 3: Response frequencies to RSRIR statements 3 and 4

RSRIR Statement 3: I am concerned that someone might want to change or delete my work.	
Scale Item	**Percentage (%)**
Strongly disagree	70
Disagree	20
Agree	10
Total:	**100**
	N = 10

RSRIR Statement 4: I am concerned that I might be infringing on the copyright of my previously published material.	
Scale Item	**Percentage (%)**
Strongly disagree	40
Disagree	20
Agree	30
Strongly agree	10
Total:	**100**
	N = 10

Table 4: Response frequencies to RSRIR statements 5 and 6

RSRIR Statement 5: I am concerned about what would happen to my work if I move to another institution.	
Scale Item	**Percentage (%)**
Strongly disagree	50
Disagree	10
Agree	30
Strongly agree	10
Total:	**100**
	N = 10

RSRIR Statement 6: I am concerned about the newness and initially small scale of repositories.	
Scale Item	**Percentage (%)**
Strongly disagree	40
Disagree	20
Neutral	10
Agree	20
Strongly agree	10
Total:	**100**
	N = 10

Table 5: Response frequencies for RSRIR statements 7 and 8

RSRIR Statement 7: I am concerned that the institutional repository managers might choose to remove my work after a long period of time.	
Scale Item	**Percentage (%)**
Strongly disagree	60
Disagree	30
Agree	10
Total:	**100**
	N = 10

RSRIR Statement 8: I am concerned about the long-term sustainability of repositories.	
Scale Item	**Percentage (%)**
Strongly disagree	20
Disagree	10
Neutral	10
Agree	50
Strongly agree	10
Total:	**100**
	N = 10

Table 6: Response frequencies for RSRIR statements 9 and 10

RSRIR 9: I believe that the repository has low prestige.	
Scale Item	**Frequency (%)**
Disagree	11.1
Neutral	33.3
Agree	55.6
Total:	**100**
	N = 9

RSRIR 10: I believe that few people would see my work in institutional repositories.	
Scale Item	**Percentage (%)**
Disagree	11.1
Neutral	44.4
Agree	44.4
Total	**100**
	N = 9

Table 7: Response frequencies for RSRIR statements 11 and 12

RSRIR 11: I believe that the readership of institutional repositories is too broad and not targeted to my field of work.	
Scale Item	**Percentage (%)**
Disagree	33.3
Neutral	33.3
Agree	22.2
Strongly agree	11.1
Total	**100**
	N = 9

RSRIR 12: I do not want my work to be deposited alongside work from other disciplines.	
Scale Item	**Percentage (%)**
Strongly disagree	22.2
Disagree	33.3
Neutral	22.2
Agree	22.2
Total:	**100**
	N = 9

Table 8: Response frequencies for RSRIR statements 13 and 14

RSRIR 13: I do not want my work to be deposited alongside work that has not been peer-reviewed because I fear that my work will be considered to be of low quality.	
Scale Item	**Percentage (%)**
Strongly disagree	11.1
Disagree	33.3
Neutral	22.2
Agree	33.3
Total	**100**
	N = 100

RSRIR 14: I prefer to make my work available via my personal website.	
Scale Item	**Percentage (%)**
Strongly disagree	22.2
Disagree	22.2
Neutral	33.3
Agree	22.2
Total:	**100**
	N = 100

Table 9: Response frequencies for RSRIR statements 15 and 16

RSRIR 15: I prefer to make my work available via my departmental website.	
Scale Item	**Percentage (%)**
Strongly disagree	22.2
Disagree	22.2
Neutral	22.2
Agree	33.3
Total:	**100**
	N = 9

RSRIR 16: I am concerned that the University might expect me to publish in open access journals.	
Scale Item	**Percentage (%)**
Strongly disagree	33.3
Disagree	22.2
Neutral	11.1
Agree	33.3
Total:	**100**
	N = 9

Table 10: Response frequencies for RSRIR statements 17 and 18

RSRIR 17: I do not have the necessary technical skills.	
Scale Item	**Percentage (%)**
Strongly disagree	33.3
Disagree	44.4
Neutral	11.1
Agree	11.1
Total:	**100**
	N = 9

RSRIR 18: I'm afraid the deposit process might take too much time.	
Scale Item	**Percentage (%)**
Strongly disagree	11.1
Disagree	11.1
Neutral	11.1
Agree	44.4
Strongly agree	22.2
Total:	**100**
	N = 9

Of the 116 responses to the survey questionnaire, 10 were collected for this question set. The mean and standard deviation of responses is summarised in Table 11 below. An explanation of the way in which the mean values may be interpreted for descriptive purposes in this and subsequent sections was provided in Section 3.3.3.

Of the means presented in the table, the time that the deposit process takes appears to be the biggest concern (mean = 3.5556), followed by prestige associated with institutional repositories (mean = 3.4444), visibility of work (mean = 3.3333), long-term sustainability of repositories (mean = 3.2000) and the broadness of institutional repository discipline coverage (mean = 3.1111). Issues of least concern appear to be regarding university use of researchers' work without permission (mean = 1.4000), concern that work may be used or deleted without researcher permission (mean = 1.5000) and that the repository managers might choose to remove researcher work after an extended period (mean = 1.6000).

Table 11: RSRIR response descriptive statistics - mean and standard deviation

	Item Statement	Mean	Std. Deviation
1.	I am concerned about plagiarism.	2.0000	1.41421
2.	I am concerned that the University might do something with my work without my permission.	1.4000	.69921
3.	I am concerned that someone might want to change or delete my work.	1.5000	.97183
4.	I am concerned that I might be infringing on the copyright of my previously published material.	2.5000	1.58114
5.	I am concerned about what would happen to my work if I move to another institution.	2.4000	1.64655
6.	I am concerned about the newness and initially small scale of repositories.	2.4000	1.50555
7.	I am concerned that the institutional repository managers might choose to remove my work after a long period of time.	1.6000	.96609
8.	I am concerned about the long-term sustainability of repositories.	3.2000	1.39841
9.	I believe that the repository has low prestige.	3.4444	.72648
10.	I believe that few people would see my work in institutional repositories.	3.3333	.70711
11.	I believe that the readership of institutional repositories is too broad and not targeted to my field of work.	3.1111	1.05409
12.	I do not want my work to be deposited alongside work from other disciplines.	2.4444	1.13039
13.	I do not want to store my work alongside work that has not been peer-reviewed because I fear that my work will be considered to be of low quality.	2.7778	1.09291
14.	I prefer to make my work available via my personal website.	2.5556	1.13039
15.	I prefer to make my work available via my departmental website.	2.6667	1.22474
16.	I am concerned that the University might expect me to publish in open access journals.	2.4444	1.33333
17.	I do not have the necessary technical skills.	2.0000	1.00000
18.	I'm afraid the deposit process might take too much time.	3.5556	1.33333

The means of the summed scores for researcher responses to Question Set 2: RSRIR above and Question Set 3: Passive Innovation Resistance (PIR) were used to calculate Spearman's correlation coefficient (rho [ρ]), explained in Section 3.3.3, to determine any sort of correlation between the two variables (Scott & Mazhindu, 2005). The results of these calculations are presented in Table 12 below.

Table 12: Spearman's rho (ρ) RSRIR-PIR correlations

		Resistance to Sharing Resources in Institutional Repositories (RSRIR)
Passive Innovation Resistance (PIR) Total	Correlation Coefficient	0.282
	Sig. (2-tailed)	0.462
	N	9
Inclination to Resist Change (IRC)	Correlation Coefficient	0.060
	Sig. (2-tailed)	0.877
	N	9
Status Quo Satisfaction (SQS)	Correlation Coefficient	0.654
	Sig. (2-tailed)	0.078
	N	8
Routine Seeking (RS)	Correlation Coefficient	-0.451
	Sig. (2-tailed)	0.223
	N	9
Emotional Response (ER)	Correlation Coefficient	-0.017
	Sig. (2-tailed)	0.965
	N	9
Short-term Focus (STF)	Correlation Coefficient	0.047
	Sig. (2-tailed)	0.905
	N	9
Cognitive Rigidity (CR)	Correlation Coefficient	0.446
	Sig. (2-tailed)	0.228
	N	9
Satisfaction with the Extent of Innovation (SQSI)	Correlation Coefficient	0.567
	Sig. (2-tailed)	0.143
	N	8
Satisfaction with Existing Products (SQSP)	Correlation Coefficient	0.230
	Sig. (2-tailed)	0.585
	N	8

A few of the RSRIR-PIR measures show moderate correlational relationships, some negative. None of them, however, reach statistical significance, that is, $p < 0.05$. The final sample size for correlations is also very low (N = 9), which is too small to be able to interpret these correlations meaningfully.

4.1.1.4 Passive Innovation Resistance of Non-depositors

The analysis of this section was guided by Research Question 3 (RQ 3): *Among those researchers that have not deposited in OpenUCT, to what extent are they found to be passively resistant to innovation and change?* The researchers that have not deposited openly licensed, peer-reviewed articles into OpenUCT would have responded to one of two options in the 'Awareness' question in the survey questionnaire (Appendix A, Section B):

Option B: I am aware of the Open Access Policy but do not intend contributing my openly-licensed, peer-reviewed articles to OpenUCT.

Option D: I am not aware of the Open Access Policy and have not deposited anything into OpenUCT or any other institutional repository.

These non-depositing researchers were grouped into two categories: (1) 'aware, no deposit' (Option B), and (2) 'not aware, no deposit' (Option D). This section aimed to determine if there was a difference between the two groups of researchers and their RSRIR and PIR scores respectively. Figure 10 presents the distribution of mean scores for the RSRIR and PIR variables (and its sub-constructs) for the two non-depositing groups

Table 13 presents the descriptive statistics for the responses to the two sets of relevant variables, that is, RSRIR and PIR (and its sub-constructs) that fall into the two awareness categories indicated.

Table 13: Descriptive statistics (RSRIR and PIR) for non-depositors

	N	Minimum	Maximum	Mean	Std. Deviation
Resistance to Sharing Resources in Institutional Repositories (RSRIR)	10	1.00	3.17	2.4167	.68104
Passive Innovation Resistance (PIR = IRC + SQS) Total	45	1.67	4.28	2.6765	.44795
Inclination to Resist Change (IRC)	45	1.42	5.00	2.6222	.65124
Status Quo Satisfaction (SQS = SQSI + SQSP)	44	1.83	3.83	2.7917	.43747
Routine Seeking (RS)	45	1.00	5.00	2.9407	.80137
Emotional Response (ER)	45	1.00	5.00	2.9407	.92739
Short-term Focus (STF)	45	1.00	5.00	2.5778	.88306
Cognitive Rigidity (CR)	45	1.67	5.00	2.8889	.61134
Satisfaction with the Extent of Innovation (SQSI)	44	1.00	5.00	2.5758	.82707
Satisfaction with Existing Products (SQSP)	44	2.00	4.00	3.0076	.51584
Valid N (listwise) = 8					

Figure 10: Mean scores distribution (RSRIR and PIR) for non-depositing researchers

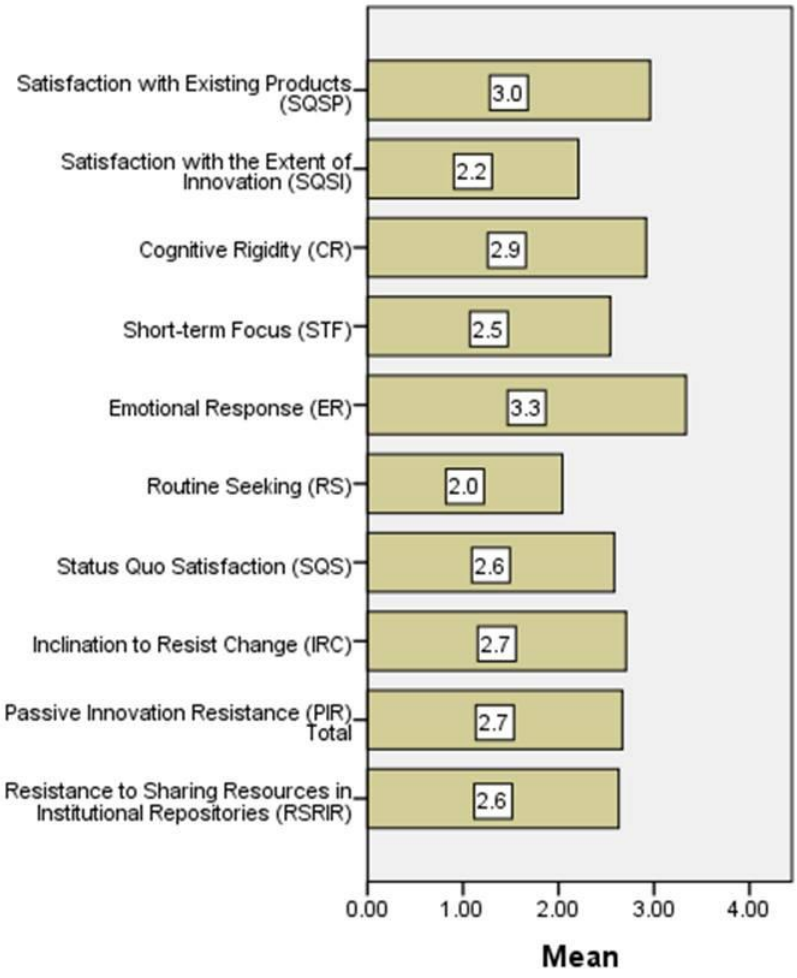


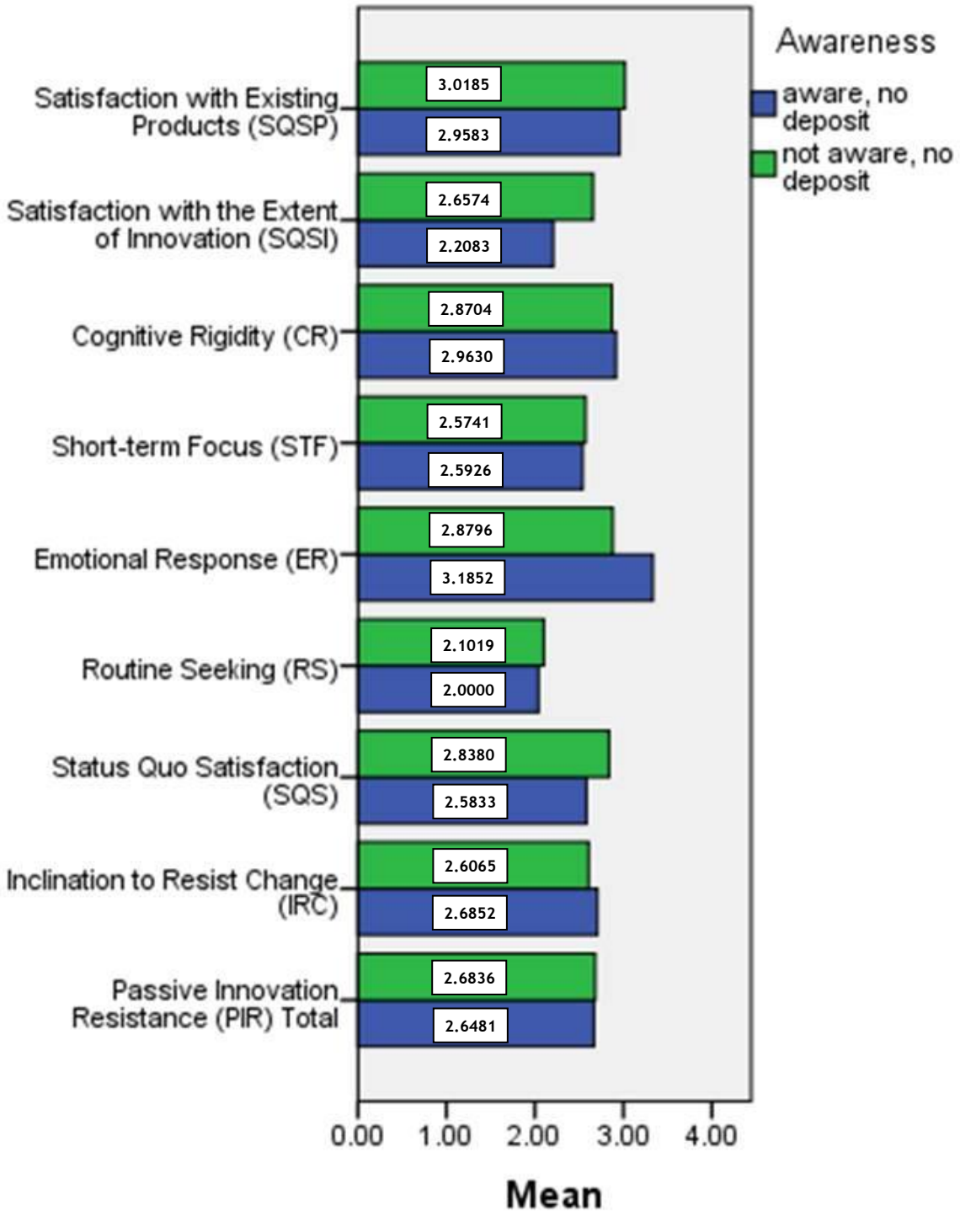
Table 14 presents the mean and standard deviation of scores for the awareness categories ('aware, no deposit'; 'not aware, no deposit') for the non-depositing groups of researchers.

Table 14: Awareness category descriptive statistics for non-depositors

	N		Mean		Standard Deviation	
	Awareness		Awareness		Awareness	
	aware, no deposit	not aware, no deposit	aware, no deposit	not aware, no deposit	aware, no deposit	not aware, no deposit
Resistance to Sharing Resources in Institutional Repositories (RSRIR)	10	0	2.4167		.68104	
Passive Innovation Resistance (PIR) Total	9	36	2.6481	2.6836	.27217	.48484
Inclination to Resist Change (IRC = STF + ER + RS + CR)	9	36	2.6852	2.6065	.32483	.71259
Status Quo Satisfaction (SQS = SQSI + SQSP)	8	36	2.5833	2.8380	.39841	.43732
Routine Seeking (RS)	9	36	2.0000	2.1019	.57735	.85382
Emotional Response (ER)	9	36	3.1852	2.8796	.86781	.94332
Short-term Focus (STF)	9	36	2.5926	2.5741	.61864	.94486
Cognitive Rigidity (CR)	9	36	2.9630	2.8704	.45474	.64870
Satisfaction with the Extent of Innovation (SQSI)	8	36	2.2083	2.6574	.85333	.81059
Satisfaction with Existing Products (SQSP)	8	36	2.9583	3.0185	.27817	.55746
Valid N (listwise) = 8						

Comparative mean scores for the non-depositing groups of researchers ('aware, no deposit'; 'not aware, no deposit') to the PIR variable statements are displayed in Figure 11 (below). The RSRIR scale is not displayed on this graph as no respondents in the 'not aware, no deposit' group had scores on this scale. This is due to the fact that they were not required to respond to it. Since both (non-depositing) groups of researchers responded to the PIR scale, their mean scores are displayed in relation to the awareness differentiation.

Figure 11: PIR mean scores for non-depositing researchers



An Independent Samples Mann-Whitney U test, the purpose of which was discussed in Section 3.3.3, was conducted to determine if any difference exists between aware non-depositors and the non-aware non-depositors in relation to their RSRIR and PIR scores. The outcome is displayed in Table 15. For purposes of this test, the null hypothesis was that no difference exists between the two groups. A null hypothesis is used, when testing for statistical significance, to test the assumption that no differences exist between two groups being scrutinised (Creswell, 2014). If the test determines that there is a relationship, the null hypothesis may be rejected (Babbie, 2012). From the results table, the significance level (α) in each case is more than 0.05, so the null hypothesis is retained in all cases. (The calculation for RSRIR could not be determined due to the small sample size). In other words, there does not appear to be any significance difference between the two groups of respondents (that is, 'aware, no deposit' and 'not aware, no deposit') in relation to their PIR scores. There is, therefore, no difference in the PIR scores of those who are aware of the UCT OA Policy but choose not to deposit, and those who are not aware and have, therefore, never deposited.

4.1.1.5 Motivation to Share Resources in Institutional Repositories

This section of the analysis sought to answer Research Question 4 (RQ 4): *Among researchers that have deposited in OpenUCT, what factors influence their commitment?* The relevant sets of survey questions were answered by those who selected either of the following options to the 'Awareness' question (Appendix A, Section B):

Option A: I am aware of the Open Access Policy and have already contributed/intend contributing my openly-licensed, peer-reviewed articles to OpenUCT.

Option C: I am not aware of the Open Access Policy but I have already contributed my openly-licensed, peer-reviewed article(s) to OpenUCT.

Respondents that selected Option A would have received Question Sets 1 and 3 from Section C (Appendix A, Section C) of the survey questionnaire (N = 54). Those that selected Option C would have received Question Set 3 only (N = 6). The frequencies of responses to Question

Table 15: Mann-Whitney U test results - non-depositors

Hypothesis Test Summary				
	Null Hypothesis	**Test**	**Sig.**	**Decision**
1	The distribution of Resistance to Sharing Resources in Institutional Repositories (RSRIR) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.	**Unable to compute.**
2	The distribution of Passive Innovation Resistance (PIR) Total is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.944[1]	Retain the null hypothesis.
3	The distribution of Inclination to Resist Change (IRC) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.645[1]	Retain the null hypothesis.
4	The distribution of Status Quo Satisfaction (SQS) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.151[1]	Retain the null hypothesis.
5	The distribution of Routine Seeking (RS) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.878[1]	Retain the null hypothesis.
6	The distribution of Emotional Response (ER) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.363[1]	Retain the null hypothesis.
7	The distribution of Short-term Focus (STF) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.770[1]	Retain the null hypothesis.
8	The distribution of Cognitive Rigidity (CR) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.459[1]	Retain the null hypothesis.
9	The distribution of Satisfaction with the extent of Innovation (SQSI) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.189[1]	Retain the null hypothesis.
10	The distribution of Satisfaction with Existing Products (SQSP) is the same across categories of Awareness	Independent Samples Mann-Whitney U Test	.754[1]	Retain the null hypothesis.
Asymptotic significances are displayed. The significance level is .05. [1] Exact significance is displayed for this test.				

Set 1 (MSRIR) are included in Tables 16 to 24. As in Section 4.1.1.3, the purpose of presenting the frequency tables is to provide the reader with an indication of how researchers responded to each item statement in Question Set 1.

Table 16: Response frequencies for MSRIR statements 1 and 2

MSRIR Statement 1: I believe that depositing my research work in institutional repositories makes my work more visible to society.	
Scale Item	**Percentage (%)**
Strongly disagree	3.3
Disagree	1.6
Neutral	13.1
Agree	39.3
Strongly agree	42.6
Total:	**100**
	N = 61

MSRIR Statement 2: I believe that depositing my work in institutional repositories is a way of making my work available to the world.	
Scale Item	**Percentage (%)**
Strongly disagree	1.6
Disagree	1.6
Neutral	8.2
Agree	36.1
Strongly agree	52.5
Total:	**100**
	N = 61

Table 17: Response frequencies for MSRIR statements 3 and 4

MSRIR Statement 3: I find that knowledge sharing through institutional repositories allows readers to find my articles easily.	
Scale Item	**Percentage (%)**
Strongly disagree	3.3
Disagree	3.3
Neutral	23.0
Agree	36.1
Strongly agree	34.4
Total:	**100**
	N = 61

MSRIR Statement 4: I believe that depositing my research work in institutional repositories will increase my readership.	
Scale Item	**Percentage**
Strongly disagree	1.6
Disagree	4.9
Neutral	29.5
Agree	27.9
Strongly agree	36.1
Total	**100**
	N = 61

Table 18: Response frequencies for MSRIR statements 5 and 6

MSRIR Statement 5: I believe that depositing my research work in institutional repositories will enhance my professional prestige.	
Scale Item	**Percentage (%)**
Strongly disagree	6.6
Disagree	16.4
Neutral	27.9
Agree	34.4
Strongly agree	14.8
Total:	**100**
	N = 61

MSRIR Statement 6: I believe that depositing my research work in institutional repositories will bring about prestige to my institution.	
Scale Item	**Percentage (%)**
Strongly disagree	4.9
Disagree	9.8
Neutral	26.2
Agree	39.3
Strongly agree	19.7
Total:	**100**
	N = 61

Table 19: Response frequencies for MSRIR statements 7 and 8

MSRIR Statement 7: Academics who support knowledge sharing through depositing articles in institutional repositories enjoy more professional prestige than those who do not.	
Scale Item	**Percentage (%)**
Strongly disagree	8.2
Disagree	19.7
Neutral	49.2
Agree	13.1
Strongly agree	9.8
Total:	**100**
	N = 61

MSRIR Statement 8: I find knowledge sharing through institutional repositories useful for disseminating my research output.	
Scale Item	**Percentage (%)**
Strongly disagree	3.3
Disagree	3.3
Neutral	3.3
Neutral	34.4
Agree	37.7
Strongly agree	21.3
Total:	**100**
	N = 61

Table 20: Response frequencies for MSRIR statements 9 and 10

MSRIR Statement 9: I find that knowledge sharing through institutional repositories encourages the communication of research output by other researchers.	
Item Statement	**Percentage (%)**
Strongly disagree	3.3
Disagree	3.3
Neutral	29.5
Agree	41.0
Strongly agree	23.0
Total:	**100**
	N = 61

MSRIR Statement 10: I believe that depositing my research work in institutional repositories makes it easier for me to connect with other researchers worldwide.	
Scale Item	**Percentage (%)**
Strongly disagree	4.9
Disagree	14.9
Neutral	23.0
Agree	37.7
Strongly agree	19.7
Total:	**100**
	N = 61

Table 21: Response frequencies for MSRIR statements 11 and 12

MSRIR Statement 11: I find it easy to use institutional repository technology to share resources.	
Scale Item	**Percentage (%)**
Strongly disagree	3.3
Disagree	14.8
Neutral	47.5
Agree	27.9
Strongly agree	27.9
Total:	**100**
	N = 61

MSRIR Statement 12: I am comfortable with using institutional repository technology for finding information.	
Scale Item	**Percentage (%)**
Strongly disagree	6.6
Disagree	14.8
Neutral	29.5
Agree	34.4
Strongly agree	14.8
Total:	**100**
	N = 61

Table 22: Response frequencies for MSRIR statements 13 and 14

MSRIR Statement 13: I am comfortable with using institutional repository technology for sharing my research output.	
Scale Item	**Percentage (%)**
Strongly disagree	1.6
Disagree	11.5
Neutral	26.2
Agree	47.5
Strongly agree	13.1
Total:	**61**
	N = 61

MSRIR Statement 14: I am technologically comfortable with depositing materials for knowledge sharing through institutional repositories.	
Scale Item	**Percentage (%)**
Strongly disagree	6.6
Disagree	18.0
Neutral	19.7
Agree	37.7
Strongly agree	18.0
Total:	**100**
	N = 61

Table 23: Response frequencies for MSRIR statements 15 and 16

MSRIR Statement 15: Knowledge sharing in institutional repositories is not time-consuming.	
Scale Item	**Percentage (%)**
Strongly disagree	6.6
Disagree	21.3
Neutral	36.1
Agree	31.1
Strongly agree	4.9
Total:	**100**
	N = 61

MSRIR Statement 16: Other researchers think I should share my research work via deposit in institutional repositories.	
Scale Item	**Percentage (%)**
Strongly disagree	8.2
Disagree	14.8
Neutral	52.5
Agree	23.0
Strongly agree	1.6
Total:	**100**
	N = 61

Table 24: Response frequencies for MSRIR statements 17 and 18

MSRIR Statement 17: My students think I should share my research work through depositing in institutional repositories.	
Scale Items	**Percentage (%)**
Strongly disagree	11.5
Disagree	19.5
Neutral	59.0
Agree	8.2
Strongly agree	1.6
Total:	**100**
	N = 61

MSRIR Statement 18: My librarian thinks I should share my research work through depositing in institutional repositories.	
Scale Item	**Percentage (%)**
Strongly disagree	8.2
Disagree	11.5
Neutral	41.0
Agree	32.8
Strongly agree	6.6
Total:	**100**
	N = 61

The mean and standard deviation of responses to these item statements is summarised in Table 25 below, in response to Question Set 1**.** Of the mean values presented in Table 25, the most compelling motivator for depositing in institutional repositories appears to be the belief that this activity makes research work available to the world (mean = 4.3607). This is followed by the beliefs that:

- Deposit makes research work more visible to society (mean = 4.1639)
- Research articles can be found more easily if they have been deposited in an institutional repository (mean = 3.9508)
- Readership of research work is increased by availability in institutional repositories (mean = 3.9180), and
- Knowledge sharing through institutional repositories encourages the communication of research output by other researchers (mean = 3.7705).

Researchers do not seem to feel pressurised to share resources because their students think they should (mean = 2.6889), or because other researchers think they should (mean = 2.6885). They also don't really deposit in institutional repositories because of perceived professional prestige associated with publishing in institutional repositories (mean = 2.9672).

Table 25: MSRIR response descriptive statistics - mean and standard deviation

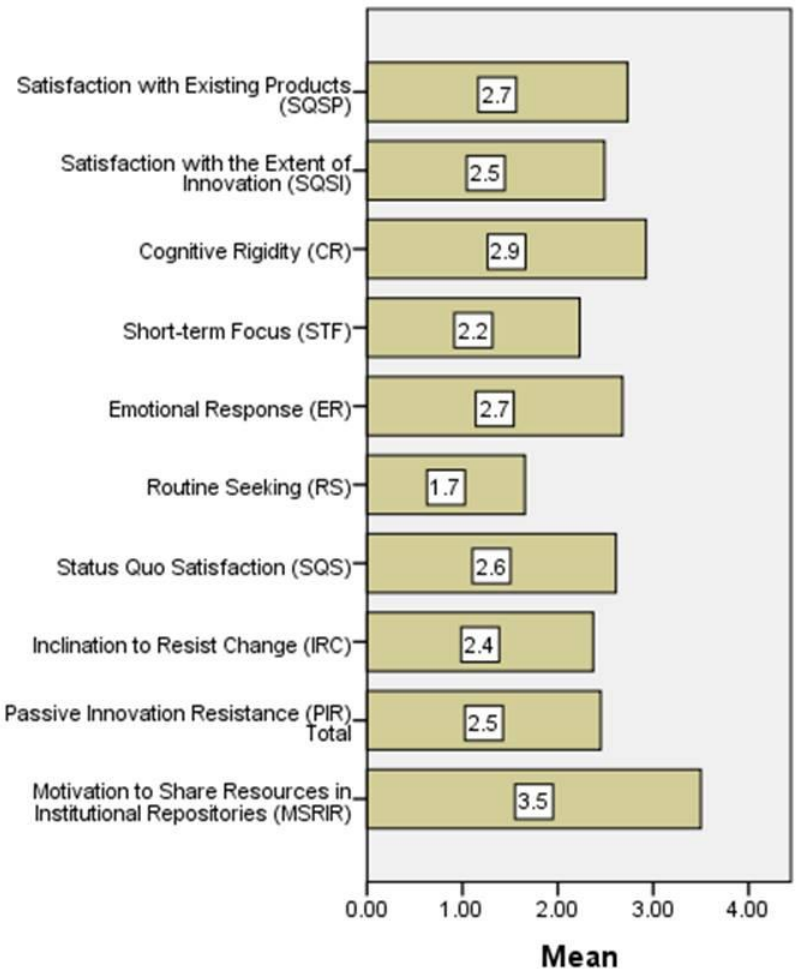
	Item Statement	Mean	Std. Deviation
1.	I believe that depositing my research work in institutional repositories makes my work more **visible** to society.	4.1639	.95185
2.	I believe that depositing my research work in institutional repositories is a way of making my work **available** to the world.	4.3607	.83731
3.	I find that knowledge sharing through institutional repositories allows readers to find my articles more easily.	3.9508	1.00708
4.	I believe that depositing my research work in institutional repositories will increase my readership.	3.9180	1.00491
5.	I believe that depositing my research work in institutional repositories will enhance my professional prestige.	3.3443	1.12376
6.	I believe that depositing my research work in institutional repositories will bring about prestige to my institution.	3.5902	1.07047
7.	Academics who support knowledge sharing through depositing articles in institutional repositories enjoy more professional prestige than those who do not.	2.9672	1.03227
8.	I find knowledge sharing through institutional repositories useful for disseminating my research output.	3.7049	.95471
9.	I find that knowledge sharing through institutional repositories encourages the communication of research output by other researchers.	3.7705	.95557
10.	I believe that depositing my research work in institutional repositories makes it easier for me to connect with other researchers worldwide.	3.5246	1.11962
11.	I find it easy to use institutional repository technology to share resources.	3.1967	.89106
12.	I am comfortable with using institutional repository technology for finding information.	3.3607	1.11105
13.	I am comfortable with using institutional repository technology for sharing my research output.	3.35902	.91973
14.	I am technologically comfortable with depositing materials for knowledge sharing through institutional repositories.	3.4262	1.17557
15.	Knowledge sharing in institutional repositories is not time-consuming.	3.0656	.99781
16.	Other researchers think I should share my research work via deposit in institutional repositories.	2.9508	.88367
17.	My students think I should share my research work through depositing in institutional repositories.	2.6885	.84737
18.	My librarian thinks I should share my research work through depositing in institutional repositories.	3.1803	1.00843

Having obtained descriptive statistics for the MSRIR survey responses, the researcher sought to determine the MSRIR and PIR response scores for the group of researchers that have deposited in the repository. Table 26 below presents descriptive statistics (minimum, maximum, mean and standard deviation for MSRIR and PIR scores) for the depositing group.

Table 26: Descriptive statistics (MSRIR and PIR) for IR depositors

	N	Minimum	Maximum	Mean	Std. Deviation
Motivation to Share Resources in Institutional Repositories (MSRIR)	60	1.22	4.61	3.4667	.65072
Passive Innovation Resistance (PIR = IRC + SQS) Total	60	1.00	3.50	2.4236	.45196
Inclination to Resist Change (IRC)	60	1.00	3.75	2.3472	.61490
Status Quo Satisfaction (SQS = SQSI + SQSP)	58	1.83	3.50	2.6092	.40532
Routine Seeking (RS)	60	1.00	4.00	1.6500	.61807
Emotional Response (ER)	60	1.00	4.67	2.6444	1.00632
Short-term Focus (STF)	60	1.00	4.00	2.2056	.88531
Cognitive Rigidity (CR)	60	1.00	4.33	2.8889	.62787
Satisfaction with the Extent of Innovation (SQSI)	58	1.67	5.00	2.4885	.64953
Satisfaction with Existing Products (SQSP)	58	1.00	4.00	2.7299	.71861
Valid N (listwise) = 0					

Figure 12: MSRIR-PIR mean scores comparison for depositing researchers



A graph depicting the mean scores for the above statistics is presented in Figure 12. It is observed that the MSRIR scores are higher on average (mean score = 3.5) than those for PIR Total (mean score = 2.4) and its sub-scores.

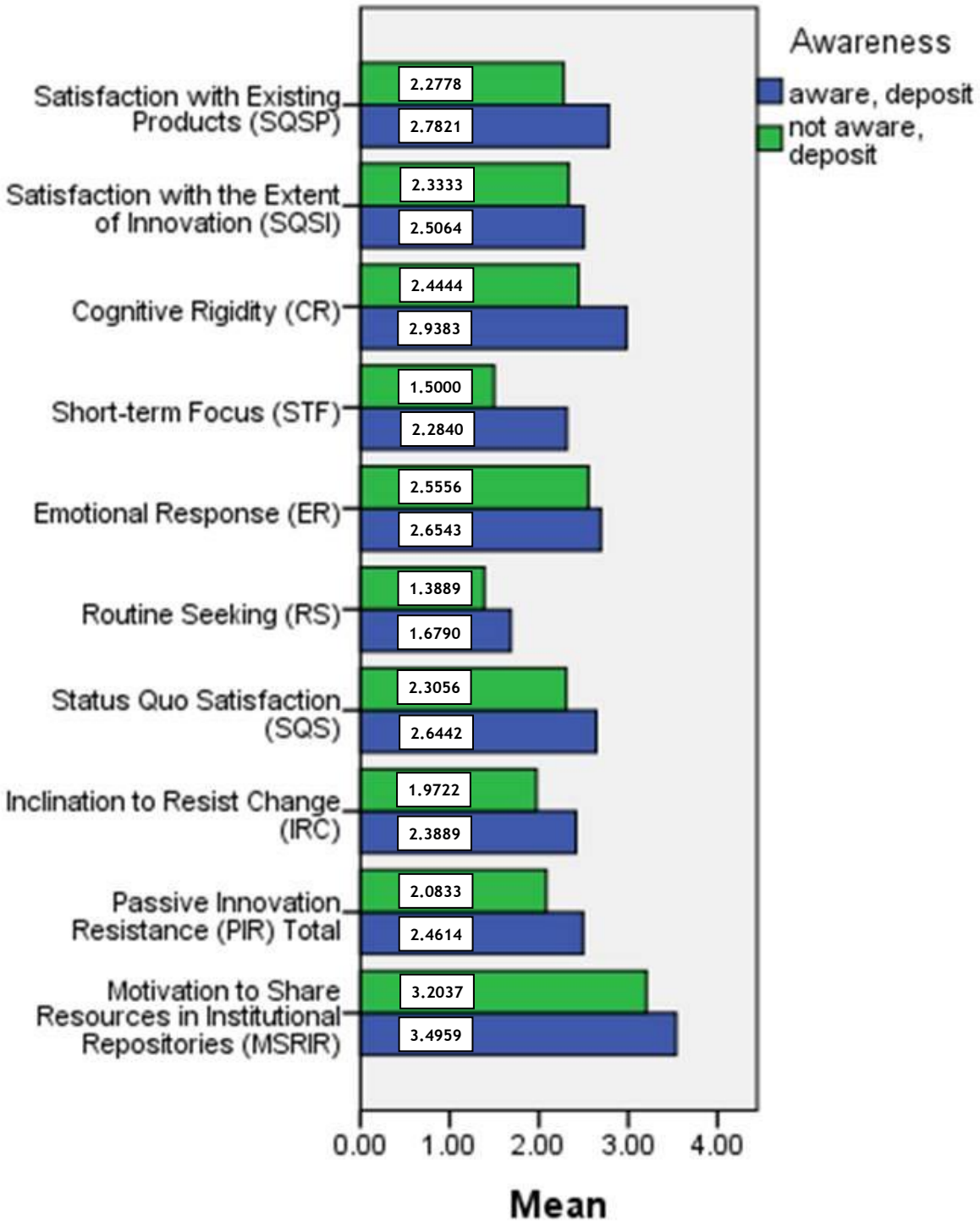
Table 27 presents the descriptive statistics for the two awareness categories ('aware, deposit'; 'not aware, deposit') for the researchers that have deposited in the IR.

Table 27: Awareness category descriptive statistics - depositing group

	N		Mean		Standard Deviation	
	Awareness		Awareness		Awareness	
	aware, deposit	not aware, deposit	aware, deposit	not aware, deposit	aware, deposit	not aware, deposit
Motivation to Share Resources in Institutional Repositories (MSRIR)	54	6	3.4959	3.2037	.61806	.92474
Passive Innovation Resistance (PIR) Total	54	6	2.4614	2.0833	.44137	.43709
Inclination to Resist Change (IRC = STF + ER + RS + CR)	54	6	2.3889	1.9722	.60829	.59317
Status Quo Satisfaction (SQS = SQSI + SQSP)	52	6	2.6442	2.3056	.40292	.30581
Routine Seeking (RS)	54	6	1.6790	1.3889	.62767	.49065
Emotional Response (ER)	54	6	2.6543	2.5556	.98832	1.25904
Short-term Focus (STF)	54	6	2.2840	1.5000	.88880	.45947
Cognitive Rigidity (CR)	54	6	2.9383	2.4444	.63469	.34427
Satisfaction with the Extent of Innovation (SQSI)	52	6	2.5064	2.3333	.66500	.51640
Satisfaction with Existing Products (SQSP)	52	6	2.7821	2.2778	.71973	.57413
Valid N (listwise) = 0						

Figure 13 below graphically represents the mean scores for the depositing awareness groups ('aware, deposit'; 'not aware, deposit').

Figure 13: MSRIR-PIR mean scores for depositing researchers



To determine whether there is a difference between the aware and non-aware depositors in relation to their MSRIR and PIR scores, an Independent Samples Mann-Whitney U test was conducted. The outcome is displayed in Table 28. As with the Mann-Whitney U test in

Section 4.1.1.4, the null hypothesis was that no difference exists between the two groups. Different to the case of the non-depositors' test (in Section 4.1.1.4) however, is that, in two instances, the null hypothesis is rejected. There appears to be a significant difference (p = <.05) between the two groups of depositors in relation to the Short-term Focus (STF: α = .025) and Cognitive Rigidity (CR: α = 0.18) PIR sub-constructs at the 0.05 significance level.

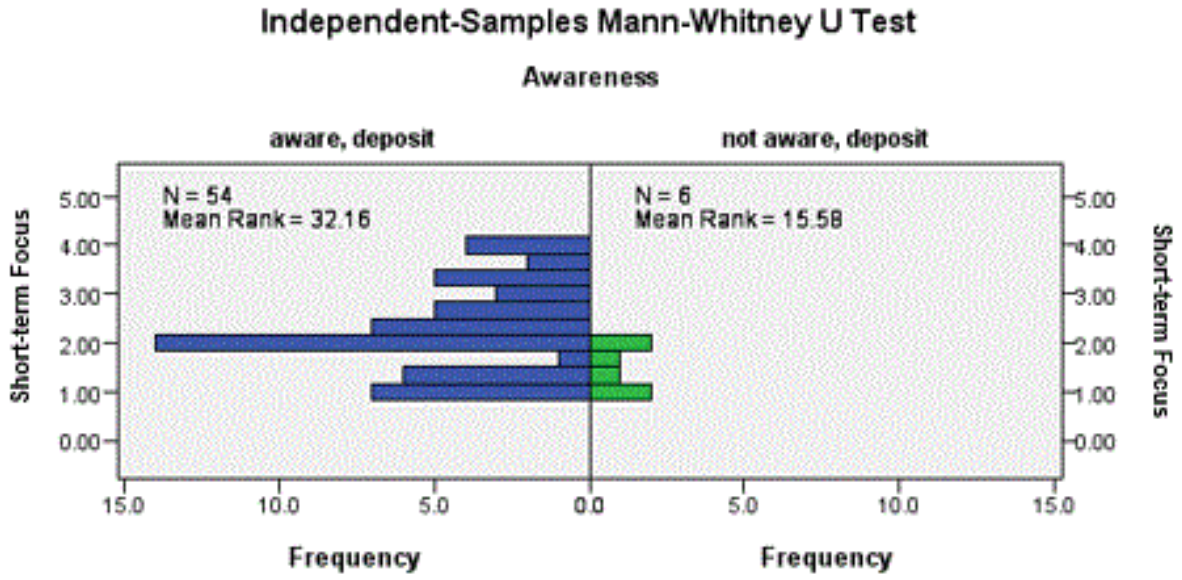
Table 28: Mann-Whitney U test results – depositors

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Motivation to Share Resources in Institutional Repositories (MSRIR) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.605[1]	Retain the null hypothesis.
2	The distribution of Passive Innovation Resistance (PIR) Total is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.055[1]	Retain the null hypothesis.
3	The distribution of Inclination to Resist Change (IRC) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.168[1]	Retain the null hypothesis.
4	The distribution of Status Quo Satisfaction (SQS) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.052[1]	Retain the null hypothesis.
5	The distribution of Routine Seeking (RS) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.327[1]	Retain the null hypothesis.
6	The distribution of Emotional Response (ER) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.952[1]	Retain the null hypothesis.
7	The distribution of Short-term Focus (STF) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.025[1]	**Reject the null hypothesis.**
8	The distribution of Cognitive Rigidity (CR) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.018[1]	**Reject the null hypothesis.**
9	The distribution of Satisfaction with the Extent of Innovation (SQSI) is the same across categories of Awareness.	Independent Samples Mann-Whitney U Test	.528[1]	Retain the null hypothesis.
10	The distribution of Satisfaction with Existing Products (SQSP) is the same across categories of Awareness	Independent Samples Mann-Whitney U Test	.076[1]	Retain the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.
[1] Exact significance is displayed for this test.

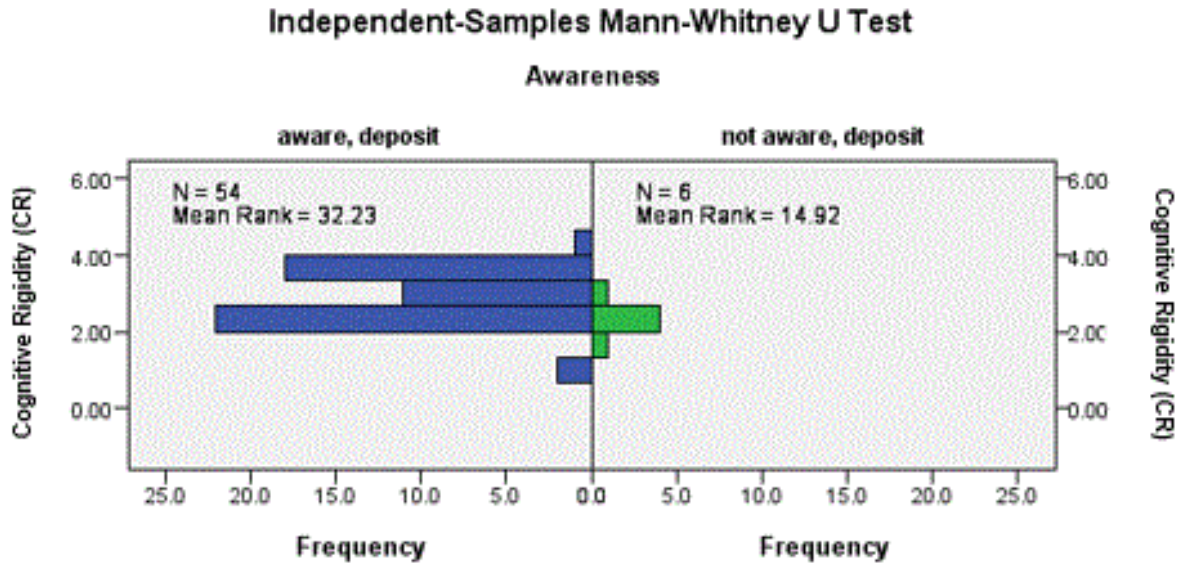
These are graphically represented in Figures 14 and 15, which present the mean ranks distribution of the MSRIR and PIR scores for the two categories of depositing groups of researchers (‘aware, deposit’; ‘not aware, deposit’). In each case, the distribution of mean ranks for the ‘aware, deposit’ group is significantly larger than that for the ‘aware, no deposit’ group.

Figure 14: Mann-Whitney U test result - Short-term Focus (STF)



Total N	60
Mann-Whitney U	72.500
Wilcoxon W	93.500
Test Statistic	72.500
Standard Error	40.034
Standardized Test Statistic	-2.236
Asymptotic Sig. (2-sided test)	.025
Exact Sig. (2-sided test)	.025

Figure 15: Mann-Whitney U test result - Cognitive Rigidity (CR)



Total N	60
Mann-Whitney U	68.500
Wilcoxon W	89.500
Test Statistic	68.500
Standard Error	39.891
Standardized Test Statistic	-2.344
Asymptotic Sig. (2-sided test)	.019
Exact Sig. (2-sided test)	.018

However, since the sample sizes of the two groups are very uneven ('aware, deposit': N = 54; 'not aware, deposit': N = 6), this finding is not considered meaningful.

Using the summed mean scores, the Spearman Rank Correlation test was used to calculate the correlations between the MSRIR and PIR (and its sub-constructs) responses for the two groups of depositing researchers, that is, (1) 'aware, deposit', and (2) 'not aware, deposit'. The results are presented in Table 29.

Table 29: Spearman's rho (ρ) MSRIR-PIR correlations for depositing researchers

		Motivation to Share Resources in Institutional Repositories (MSRIR)
Passive Innovation Resistance (PIR) Total	Correlation Coefficient	-.222
	Sig. (2-tailed)	.088
	N	60
Inclination to Resist Change (IRC)	Correlation Coefficient	-.176
	Sig. (2-tailed)	.180
	N	60
Status Quo Satisfaction (SQS)	Correlation Coefficient	-.125
	Sig. (2-tailed)	.349
	N	58
Routine Seeking (RS)	Correlation Coefficient	-.249
	Sig. (2-tailed)	.055
	N	60
Emotional Response (ER)	Correlation Coefficient	-.153
	Sig. (2-tailed)	.244
	N	60
Short-term Focus (STF)	Correlation Coefficient	-.187
	Sig. (2-tailed)	.508
	N	60
Cognitive Rigidity (CR)	Correlation Coefficient	-.002
	Sig. (2-tailed)	.985
	N	60
Satisfaction with the Extent of Innovation (SQSI)	Correlation Coefficient	-.168
	Sig. (2-tailed)	.208
	N	58
Satisfaction with Existing Products (SQSP)	Correlation Coefficient	-.005
	Sig. (2-tailed)	.970
	N	60

It is observed that the correlations are negative, indicating that as scores for MSRIR increase, those for PIR decrease, resulting in what Coleman (2012: 1404) terms a “negative monotonic relationship”. However, these figures are quite small, indicating weak correlations. In addition, no p-value is less than .05, so there are no significant correlational relationships between the two variables.

4.1.1.6 Passive Innovation Resistance and Institutional Repository Deposit

Table 30 below presents descriptive statistics for the entire group of respondents in all three question sets (MSRIR, RSRIR and PIR):

Table 30: RSRIR-MSRIR-PIR descriptive statistics - all respondents

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Motivation to Share Resources in Institutional Repositories (MSRIR)	61	1.22	4.67	3.4863	.66331
Resistance to Sharing Resources in Institutional Repositories (RSRIR)	10	1.00	3.17	2.4167	.68104
Passive Innovation Resistance (PIR) Total	105	1.00	4.28	2.5320	.46540
Inclination to Resist Change (IRC)	105	1.00	5.00	2.4651	.64236
Status Quo Satisfaction (SQS)	102	1.83	3.83	2.6879	.42713
Routine Seeking (RS)	105	1.00	5.00	1.8349	.73106
Emotional Response (ER)	105	1.00	5.00	2.7714	.97983
Short-term Focus (STF)	105	1.00	5.00	2.3651	.89934
Cognitive Rigidity (CR)	105	1.00	5.00	2.8889	.61787
Satisfaction with the Extent of Innovation (SQSI)	102	1.00	5.00	2.5261	.72884
Satisfaction with Existing Products (SQSP)	102	1.00	4.00	2.7497	.65102
Valid N (listwise) = 0					

The researcher compared the deposit and non-deposit groups of respondents to see if there was a difference between the two in terms of their PIR responses (both groups have responses to the PIR question set). Table 31 presents the mean scores for the two groups.

Table 31: Means - deposit vs. non-deposit groups

	Means			
	Deposit Group		No Deposit Group	
	aware, deposit	not aware, deposit	aware, no deposit	not aware, no deposit
Motivation to Share Resources in Institutional Repositories (MSRIR)	3.4959	3.2037		
Resistance to Sharing Resources in Institutional Repositories (RSRIR)			2.4167	
Passive Innovation Resistance (PIR) Total	2.4614	2.0833	2.6481	2.6836
Inclination to Resist Change (IRC)	2.3889	1.9722	2.6852	2.6065
Status Quo Satisfaction (SQS)	2.6442	2.3056	2.5833	2.8380
Routine Seeking (RS)	1.6790	1.3889	2.0000	2.1019
Emotional Response (ER)	2.6543	2.5556	3.1852	2.8796
Short-term Focus (STF)	2.2840	1.5000	2.5926	2.5741
Cognitive Rigidity (CR)	2.9383	2.4444	2.9630	2.8704
Satisfaction with the Extent of Innovation (SQSI)	2.5064	2.3333	2.2083	2.6574
Satisfaction with Existing Products (SQSP)	2.7821	2.2778	2.9583	3.0185

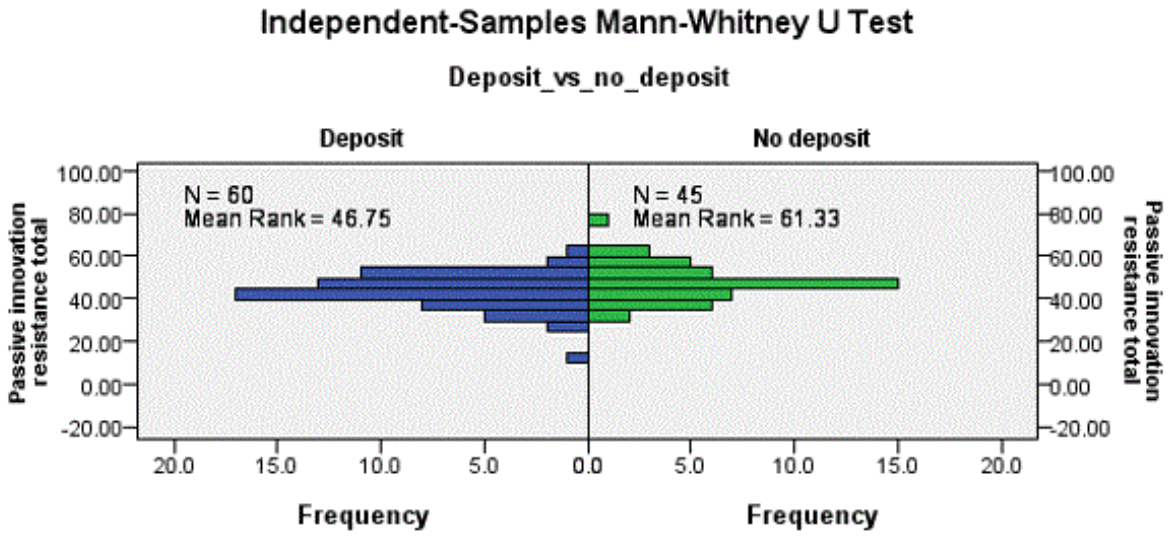
A Mann-Whitney U Test for Independent Samples was performed to compare the two groups in relation to their PIR scores. As with the previous tests (Sections 4.1.1.4 and 4.1.1.5), the null hypothesis was that there is no difference between the deposit and no-deposit groups with regard to their PIR levels. The test results show that there was a significant difference between the two groups with regard to their PIR ($p < 0.05$), as can be observed in the test results in Table 32 below:

Table 32: Mann-Whitney U test result - deposit vs. no-deposit groups

Hypothesis Test Summary			
Null Hypothesis	**Test**	**Sig.**	**Decision**
The distribution of Passive Innovation Resistance (PIR) Total is the same across categories of deposit vs. no-deposit.	Independent Samples Mann-Whitney U Test.	.015	**Reject the null hypothesis.**
Asymptotic significances are displayed. The significance level is .05.			

Inspection of mean ranks in Figure 16 shows that the no-deposit group had a significantly higher PIR score than the deposit group. From this, it would appear that those researchers who have not deposited in OpenUCT may be dispositionally more passively resistant to innovations in general than those who have deposited, although it is recognised that other factors may influence this behaviour as well.

Figure 16: Mann-Whitney U test result - PIR total (depositors vs. non-depositors)



Total N	105
Mann-Whitney U	1,725.000
Wilcoxon W	2,760.000
Test Statistic	1,725.000
Standard Error	154.243
Standardized Test Statistic	2.431
Asymptotic Sig. (2-sided test)	.015

4.2 Interviews with Repository Staff

This section presents data from interviews that were collected to address RQ5 and RQ6.

4.2.1 Researcher Reporting of Non-deposit

According to the IR team, there has been no reporting of reasons for non-deposit of resources by UCT researchers. The team also does not follow up with academic staff as no monitoring of deposit or non-deposit is carried out:

> "…that has never been met. That part of the Open Access Policy is not focused on at all."

> "…about 90% of the academics don't, even though it's part of the criteria. I don't follow up with them, so there's no monitoring and evaluation."

Various reasons appear to contribute to the lack of deposit, and also the lack of reporting of non-deposit. One of these is the perception that academic freedom exempts research staff from following the Policy to the letter. The release of the NRF's OA Statement (NRF, 2015) resulted in increased interest in OA publishing and engagement of UCT researchers with the Policy, but it appears the NRF monitoring and evaluation of compliance with their policy may not be as rigorous as it could be:

> "At UCT, the culture is definitely 'don't tell me what to do'. I think that's despite the fact that we have an open access policy, and to add to it there's an NRF open access statement that says that your work must be in a repository with a 12-month embargo, if need be. That, when it came out, started…academics would call…but, again, there's no monitoring and evaluation from the NRF side, so they don't comply."

The IR team also appears to perceive the Policy imperative to deposit as not mandatory as it does not specify who is responsible for enforcing compliance. Their role, therefore, is not to enforce compliance, but to promote and support it:

> "I think the catch with our policy, it *encourages* the deposit, and for me as a person working at the repository, I find it hard to make a follow-up to a person, 'why are you not depositing your work?'…but maybe to share with academics what the policy is saying and the benefits of this policy to their work and the community – that is what we have been doing."

> "I think our policy does not really specify who is really responsible to drive the policy, so unless maybe there is going to be some kind of working group to do follow-up on why people are not depositing…"

One of the most effective ways of promoting deposit has been the Libraries' management of the Open Access Journal Publication Fund (OAJPF), which academics can apply for as a means of paying the APCs levied by publishing houses when authors would like their work to be published in OA journals. Researchers can apply for this money once their articles have been accepted for publication in OA journals, or hybrid journals that have an OA option (UCT Libraries, 2014). The fund appears to be the only aspect of the Policy that is adhered to by academics:

> "The only part of the Open Access Policy that is 100% adhered to would be the fund, and the good thing about the Open Access Journal Publications Fund is that, from this year, the University Central has increased the budget, so they see the value of making work open access."

This compliance behaviour has caused the IR team to consider ways in which the fund might be used to enhance deposit of subsidized articles in the IR:

> "…if we withheld their money, just like some of the agencies do where they withhold some of the funds, and only when you prove the article is available openly do you then get the other amount, but we don't have that in place here, so it's not possible."

The major drawback of the OAJPF, however, is that it is limited, so academics are not guaranteed financial support for open access publishing, which may, quite possibly, make them more hesitant to publish OA.

4.2.2 UCT Libraries IR Management and CSFs for IR Success

The researcher sought to gauge how UCT Libraries IR Management has fared in relation to the six CSFs of Lagzian, Abrizah and Wee (2015a; 2015b). These are discussed briefly below.

4.2.2.1 People and Management

For the IR team managing the OpenUCT repository, its governance strategy, as a function of the OA Policy, is clear:

> "The Open Access Policy feeds into the Libraries' strategy that feeds into the Institution's strategic goals and it's making UCT scholarship accessible, discoverable and visible, and obviously because we are a research-intensive university in Africa, it's our responsibility to make our research available to the rest of Africa who don't have all the resources we have. It's important that we make as much of our research publicly accessible, and we do that very well with OpenUCT – the 'green route', the institutional repository, as well as open access publishing."

From the Libraries' perspective, however, the existence of a policy that mandates deposit activity will not necessarily be complied with:

> "At UCT, the culture is definitely 'don't tell me what to do'."

Operationally, increased IR deposit by academics may not be the best thing for the small repository team, which already works against a backlog of records requiring moderation. Of the two staff members in the IR team, one is responsible for moderation. According to the IR team, this is not an unusual occurrence, even though the scholarly communications team originally numbered seven people:

> "If you look at the literature and how big scholarly communications offices are, they're always very small. It's never six people; there are just always many other trends that libraries are involved in – the other new trends – so there's never the capacity to have an office of six."

> "…when I was hired…my organogram had seven people in the scholarly communications office, and that was a huge luxury."

The IR manager indicated that an extra person was being recruited to the team due to their need to incorporate OA monographs and textbooks into their workflows in open access publishing. This person would require skills such as a high level of computer literacy, approximately one year's experience in scholarly communications work, have had a "level of interaction" with OpenUCT but not necessarily know how to use the platforms on which OpenUCT is managed, as that could be learned.

The IR team also works with staff from other UCT Libraries departments to process the moderation queue backlog and special projects and occasionally receives assistance from staff in other faculties, such as CHED. These staff are trained to moderate bulk-ingested items and UCT Libraries management supports staff participation in special IR projects within the constraints of their departments' operational requirements. Extra staff from other Library departments may also be requested by the IR team for work on these special projects, and this request is made at Library management level. When moderation support is offered by individuals not part of the Libraries, the IR team accepts this and spot checks this moderation for quality control purposes. This is something the IR team also does for each other, given the global exposure of the work in the repository. Staff assisting with moderation or special projects are allowed to report this in their performance review documents, thereby enhancing their performance ratings.

4.2.2.2 Resources

The OpenUCT repository is populated with content via a few avenues:

1. Ingestion of content harvested from open access databases, to which the Library subscribes, via the SWORD (Simple Web-service Offering Repository Deposit) protocol ("SWORD", n.d.). The IR Team explained this as follows:

> "…you make your API available to an open access publisher, like BioMed Central – we have a subscription with BioMed Central. Then they push all UCT-affiliated journals into our back-end – into the moderating pool, and then that doesn't need to be moderated per se because it's already cleared in terms of copyright and is then pushed to the specific communities."

   APIs, or Application Programming Interfaces, may be described as "sets of standardized requests that allow different computer programs to communicate with each other" ("API", 2008). According to Allinson, François and Lewis (2008), the API is able to request collections from a predetermined list of repositories that the repository manager (in this case, the UCT Libraries IR team) is then able to deposit into OpenUCT en masse, needing only to allocate the new resources to the various discipline-specific communities by which OpenUCT is organised.

   According to one interview participant, this process is one of the main reasons that OpenUCT has so many content items – it does not rely solely on mediated or self-archiving.

2. All articles in an audited journals list supplied by the UCT Research Office are imported into an in-house database with pre-set fields, from where they need to be moderated. This mostly entails quality control of metadata and verification of copyright of the resources prior to uploading them to OpenUCT. These are only articles that have been published in OA journals and are uploaded straight into OpenUCT from the Libraries' database.

3. Self-archiving into OpenUCT, which is performed by researchers themselves, or by departmental assistants or research assistants on their behalf. The IR team defines the latter activity as mediated archiving, which it does not do:

> "We won't be able to because you see moderation is still a process whereby you check if this is the right quality, if this is the right version and copyright issues, so it's already a cumbersome job on its own. So for an individual to come and say, 'this is my work, can you deposit it for me?' it would be kind of difficult and, looking at the deadlines that you have also sometimes from other departments, it's very difficult."

Due to the moderation backlog, UCT Libraries is moving to a system whereby authors self-archive grey literature, and they are responsible for ensuring that they have obtained copyright clearance or permission from funders or other concerned parties. Self-archived journal articles (post-prints only) still go into the moderation queue. According to the IR team, the UCT Web Content Migration Project also mandated the deposit of all scholarly content into OpenUCT, so that resulted in additional content contributions:

> "There's also the web migration project, a uni-wide project, where it was decided, before my time, that all scholarly content would be put into OpenUCT, when the websites moved from whatever platform they were on to Drupal, so that's when the web owners get to know about the Open Access Policy and they see that they now need to put their content into OpenUCT – that's where a bit of self-archiving takes place."

4. All theses and dissertations authored by students also need to be deposited into OpenUCT. However, students do not deposit directly into OpenUCT. Instead, their work is pushed into the repository via PeopleSoft (the student administration system), through the UCT Graduate Research Management system for postgraduate students. This is then exported to the Libraries' workflow (in-house) database.

Researcher self-archiving via OpenUCT is, therefore, only one way in which resources are uploaded into OpenUCT.

4.2.2.3 Self-archiving Practices

Funding for OA publishing appears to be one of the main factors compelling researchers to deposit into OpenUCT. As indicated previously, researchers can apply to the OAJPF for money to pay for APCs levied by publishing houses for publishing an article in an open access or hybrid journal. Although this money is only awarded once the researcher has provided proof, to the Libraries, of the article(s) having been published OA, along with having met other criteria stipulated on the Libraries' website (UCT Libraries, 2014), the IR team had the following to say:

> "…the Open Access Fund, the academic takes charge of that because they have a vested interest in it."

The view is that researchers deposit in OpenUCT because they have received money from the Fund or, at least, some source of funding:

> "The one thing that would get an academic to deposit their work would be if all funders (because it comes down to money) have an open access mandate. Some of the major funders do, so that forces them (academics) to publish their work open access."

According to the IR team, because funding is such an important issue for researchers, they tend to overlook other OA publishing options available to them if there is a lack of funding, and just publish via 'traditional' routes:

> "…because they don't understand 'gold' and 'hybrid', they just see a price tag. They don't understand that they don't have to publish in 'hybrid' because the price is so much, they can actually make the work available via the 'green route', which is make a version available in the repository."

The IR team informs researchers of the option of depositing the post peer-reviewed, accepted version of an article just before it goes back to the publisher for final publication. This would also constitute compliance with the Policy. As indicated previously, one way in which more researcher deposit might be achieved, according to the IR team, would be to award part of the APC amount once proof of article publication (as OA) has been provided. Once it has been established that the article has been deposited in OpenUCT, also in accordance with OAJPF criteria, the remaining amount could then be awarded. This is currently not possible due to lack of capacity.

Although the IR team is aware of the fact that most academics do not do their own deposit, they appear sympathetic to other demands on their time:

> "I wouldn't know what determines the motivation to do it, maybe some they feel it's a lot of work because they've got massive work and for them to balance their time to do their self-archiving, add metadata and doing their everyday work it would become challenging..."

There are exceptions to this practice though:

> "…there is one academic in Law – she does it herself, if I'm not mistaken, because when she writes, she knows what exactly is in there and how much is in there…"

In recognition of support staff being tasked with deposit on behalf of academics, the IR team provides training and support, by way of follow-up emails, phone calls, and group or one-on-one training sessions in self-archiving in OpenUCT to administrators and other support staff:

> "there are various departments that are approaching us to train their support staff to do self-archiving…After training, one or two questions, that's why we try to create time to meet face-to-face and not just send a module for them to say, "follow this", because they need to understand the entire process and maybe also to try and clarify to them the publications *what is this?, what is that?* so at least they can be able to understand. Sometimes some call for a refresher course once or twice…"

4.2.2.4 Services

Besides moderating deposited articles and supporting researchers support staff depositing on their behalf, the IR Team provides assistance with navigating the copyright issues relating to the resource deposit:

> "…so what we are asking them to do is that they have sought copyright from their funder and they have sought copyright…if there are images and so on…any kind of copyright infringement – they have looked through…"

> "Even when they make the choice to publish, they need to understand issues relating to copyright so that, by the time they do the process of selecting a journal, they understand what are the implications of publishing in a specific journal…"

When researchers deposit grey literature, the onus is on them to have cleared copyright prior to depositing and complete the metadata fields in each record they create. In the case of journal article deposit, the Libraries is still responsible for copyright checking and ensuring the quality of the accompanying metadata, although this sometimes proves more complicated than initially anticipated, as one staff member related. Academics might have unwittingly signed away their copyright to a publisher or published their article in a journal not subscribed to by UCT Libraries and then want to make their article available in OpenUCT after the fact. Others may be sharing their articles on social media or other online locations and want to share on OpenUCT from there. It appears the IR team spends quite a bit of time helping academics navigate the complex world of copyright and open access sharing. This is in addition to assisting support staff and academics deposit in OpenUCT.

4.2.2.5 Technology

Section 4.2.2.2 discussed the four ways in which resources are deposited into OpenUCT, which is managed on a DSpace platform (http://www.dspace.org/), an open source, customisable repository software application. The Libraries has plans to upgrade to DSpace version 6.0, which will make more useful functionality possible in OpenUCT. One of the major new components will be an online form for researchers to complete when depositing material. In the case of grey literature deposit, the material will be uploaded into OpenUCT without needing to be moderated, while journal article deposit will still go into the moderation queue for metadata quality control and copyright clearance. This will improve the moderation backlog considerably and fix some of the problems that the team has had with the current system, such as problematic search functionality, interoperability and ORCID integration. Improved interoperability will, for example, enable OpenUCT to be able to harvest metadata from Converis - software used to run the UCT Research Portal (http://eraonline.uct.ac.za/) - so that, for example, it would be possible for OpenUCT to obtain one record containing the ORCID identifiers of multiple researchers authoring a single article.

In order to facilitate the ingestion of new records, the Library Information Technology (IT) department configured a back-end interface and used a list of OA journal titles supplied by the Libraries to search the audited journals list supplied by the UCT Research Office for articles and bulk-ingest those into OpenUCT. At last count, this activity harvested 2,110 journal articles. If available on Google Scholar, these records would be populated with metadata from Google Scholar and then marked as being on OpenUCT and redirected to the appropriate pool in OpenUCT. All of this is done via the back end, and the IR team is not involved in it. A lot of the information is, however, already available from the journal list supplied by the Research Office in the form of fields in an MS Excel spreadsheet.

In addition to the improvement of interoperability between the UCT Research Portal and OpenUCT, the latter is already able to harvest metadata from WorldCat (https://www.worldcat.org/), to which UCT Libraries subscribes. According to the Libraries, the OAI-PMH interoperability protocol is integrated into the repository software, so it should be better able to harvest metadata from other repositories than it currently is. This is ascribed to problems with repository customisation.

The IR team received complaints about the repository three times in 2017, when server-related problems caused it to become unavailable. Some complainants were users unable to search the repository, and some were librarians assisting with deposit. In the past, this would have been addressed by the in-house Library IT department. Due to the implementation of University-wide austerity measures, however, this department was absorbed into UCT's central Information Technology Service (ICTS), so the IR team needs to log a call with the service when they encounter any technical problems with OpenUCT. This results in slower resolution of problems when they do arise.

4.2.3 Outreach and Advocacy

Promoting awareness of the work of OpenUCT is pivotal to its success, although advocacy and outreach activities are few. The IR Team or UCT Libraries management may usually present on OpenUCT and the Policy at high-level University meetings if invited to do so. The IR team is responsible for providing training for UCT Libraries staff supporting them during projects assigned to them, particularly in moderating articles uploaded by researchers and their staff and also retrospective uploading of theses and dissertations. Outreach and advocacy to other UCT departments is at the invitation of these departments, and usually due to the efforts of subject librarians who promote the repository to the departments they service:

> "We speak to people and even if some people interact with other people, especially people who advocate for open access and who advocate for the development of the repository, they meet with people, they chat with them about the Open Access Policy and the advantages of sharing their work, and some come to us via those people and we meet with some people according to our own arrangements. So we've tried to speak to people for them to be able to understand how is this policy an advantage to their own work and to the UCT community, and to the Continent and globally."

One of the reasons provided for this is the fact that the OpenUCT is a strategic initiative not aligned with any particular faculty. In future, the IR team would like to take a more structured approach to outreach activities, such as creating a programme, in collaboration with subject librarians, which includes specific dates for joining in on departmental teas as a way of introducing OA publishing and OpenUCT to these target groups in more informal settings. The predominant outreach and advocacy strategy remains that of engaging academic staff, especially early-career researchers, in discussions around the existence of the repository, the benefits of publishing OA and depositing in OpenUCT, relying on word-of-mouth and the occasional formal presentation session:

> "…it is kind of an awareness campaign of what they can do with their resources and how they can make use of the repository and how they can take note of the impact of copyright in their work and for them also to understand if they send work to us, if we do check copyright, why can we not share there, because it is important for people to understand the background behind sharing in an open access repository. If we do not have the permission, if we do not have the right, we cannot put the institution at risk, so it's the period where we discuss all these issues to give clarity, to why we can't do with this and why we can only do with this…we can advise them or we can discuss with them the availability of licenses and how it's related to copyright so that they can be able to carry on sharing their work understanding how it's connected with copyright."

Following these sessions, the IR team would try to obtain feedback on the effectiveness of their training and information sessions, starting with (online) forms.

4.3 Summary

The first part of this chapter presented the results of a survey questionnaire generated to gauge UCT researchers' disposition to the use of IRs and their perceptions of its value to their work, career enhancement and the University. The survey also sought to determine whether varying levels of PIR may be related to researchers' disposition to deposit in the IR and was designed to address the first four research questions of this study.

In answer to RQ 1, almost half of the survey respondents (49.1%) indicated awareness of the existence of OpenUCT and the OA Policy and have deposited their openly licensed, peer-reviewed journal articles into it. A substantial 33.1% of respondents were not aware of either the repository or the Policy or both. This suggests a need for more targeted and vigorous marketing of the IR and the benefits, to researchers, of engaging with it.

RQ 2 responses came from respondents that were aware of the IR and OA Policy but had no intention of depositing in it. In addition to providing information regarding the reasons researchers resist depositing in IRs, the analysis revealed no significant correlations between RSRIR and PIR. However, the Libraries could use the information contained in researcher responses to focus their outreach efforts on finding out why researchers might not want to engage with the IR. These may include existing deposit practices in subject/discipline-specific IRs.

Analysis for RQ 3 looked at the PIR levels of non-depositing researchers, that is, those categorised as ‘aware, no deposit’ and ‘not-aware, no deposit’, to see if any differences existed between the two groups in relation to their PIR scores. An Independent Samples Mann-Whitney U test revealed no differences in PIR scores between the two groups.

In analysis for RQ 4, several factors were found to influence depositing researchers’ engagement with IRs, the most prominent being the exposure to the global research community that deposit in the IR facilitates. An Independent Samples Mann-Whitney U test for differences between the two groups of depositing researchers (‘aware, deposit’; ‘not aware, deposit’) revealed statistical significance for two measures of PIR, those of STF and CR. However, these results were found not to be very meaningful due to the large discrepancy in sample size between the two groups (‘aware, deposit’: N = 54; ‘not aware, deposit’: N = 6).

Overall, the most valuable finding of the analysis was that the PIR levels of non-depositing researchers was significantly higher than those of depositing researchers.

The second part of this chapter reported on interviews conducted with UCT Libraries IR team.

In terms of RQ 5, it was found that no researchers have reported their non-deposit to the Libraries and there is no follow-up process in place to track non-compliance with the Policy requirements.

In addition to evaluation of the IR in relation to the six CSFs of Lagzian, Abrizah and Wee (2015a; 2015b), RQ 6 investigations revealed the many and varied attempts by the Libraries’ IR Team to persuade UCT researchers to deposit in the IR, in addition to the resource ingestion channels that the Libraries has created as a way of building the IR journal article collection. Although support from the Libraries management team facilitates collaborative project work of the IR Team with librarians from other Library departments, quality control in the form of moderation of deposited materials remains a bottleneck due to the limited number of IR staff.

Another of the main areas of concern is the financial climate in which the University finds itself. It is observed that limited budgets for employing staff to work on the IR and financing APCs to support researchers in publishing their work in OA journals plays a significant role in the development, maintenance and promotion of the IR.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

In view of the data analysis and presentation of findings in Chapter Four, which included answers to the research questions raised in Section 1.5, this chapter addresses the issue of UCT researcher deposit in OpenUCT from two complementary angles:

1. UCT researcher disposition towards and engagement with IRs and the possibility that their deposit behaviour is influenced by PIR, a phenomenon proposed by Heidenreich and Handrich (2015) to explain the propensity to reject innovations without having had any prior exposure to them.

2. What the efforts of UCT Libraries have been to develop and promote researcher deposit of openly-licensed, peer reviewed journal articles into the IR in accordance with the requirements of the Policy. These efforts are examined against the CSFs for IRs identified by Lagzian, Abrizah and Wee (2015a; 2015b).

The researcher sought to use these two perspectives to determine the reasons that UCT researcher engagement with the IR appears minimal. Researchers positively or negatively disposed to IRs would also respond in certain ways to attempts by the Libraries to persuade them to engage. It is important for the Library, as manager, developer, marketer and custodian of the IR to understand these reasons and devise strategies to improve their advocacy of the IR to the UCT research community, simultaneously conscious of their efforts to improve the IR according to guidelines such as the CSFs for IRs posited by Lagzian, Abrizah and Wee (2015a; 2015b). This chapter briefly addresses the findings of the investigation, proposes some recommendations for strategies that may be used to persuade researchers to engage with the UCT IR more extensively, and suggests some avenues for future research.

5.1 IR Deposit by Researchers

Based on the data presented in Chapter Four (Sections 4.1.1.2 – 4.1.1.6), one of the major findings of this study was that the PIR scores for the researchers that have not deposited in the IR, out of choice or ignorance of the UCT OA Policy requirements, are much higher than the PIR scores of researchers who have already deposited or intend depositing. Based on the mean ranking of PIR scores for the deposit and no-deposit groups (Section 4.1.1.6: mean

rank, deposit group = 46.75; mean rank, no-deposit group = 61.33), the PIR scores of non-depositing researchers are much higher than those for depositing researchers. This result suggests that PIR influences the propensity of researchers to engage with the IR as an institutional instrument of change. PIR is, therefore, recognised as a dispositional factor influencing the IR deposit activity of UCT researchers.

5.1.1 Non-depositing Researchers

Alongside researchers who reported awareness of the Policy and willingness to deposit in the IR (49.54%) was those who had no knowledge of the IR or Policy and, for this reason, had never deposited (33.94%). Among those researchers resistant to depositing in the IR, prominent reasons for not wanting to deposit included:

- concern regarding the long-term sustainability of the IR;
- the association of IRs with low prestige;
- limited visibility of work;
- the length of time taken up by the deposit process.

As the researcher conducting this study is known to many of the respondents, some felt they needed to comment on their responses, as the survey (a) made some assumptions about their lack of engagement, and (b) did not afford the opportunity for them to comment. These respondents therefore emailed their comments to the researcher directly. Although this is data that typically belongs in Chapter Four, it is considered to add value to the concluding discussion, and so are included here.

One of the assumptions of the study was that lack of engagement and deposit in IRs is due to resistance. Consonant with Kingsley (2008a) and others' (Swan & Brown, 2005; Davis & Connelly, 2007; Kim, 2010) assertions that researchers may be more willing to deposit in subject/discipline-specific repositories than in their IRs, a researcher in the Science faculty indicated that their discipline believes in fully open and available access to research publications, research data and ideas, and so researchers in his profession already publish in repositories such as arXiv ePrints (https://arXiv.org) and the SAO/NASA Astrophysics Data System (http://adsabs.harvard.edu/). In this instance, the belief is that the research is made more visible to other researchers in the field and, because repository deposit activity is

already being performed and the work is available openly elsewhere, the need to deposit in IRs, such as OpenUCT, is not considered an imperative.

A researcher in the Faculty of Health Sciences (FHS) identified the issue of finding time to deposit as problematic. Although he conducted research as a component of the conditions of his employment, this needed to be done extramurally due to the demands of his current work commitments. Therefore, this researcher was not opposed to depositing in the IR or publishing OA, but does not find the time to engage with new ways of sharing information.

Another researcher in FHS expressed a keen desire to deposit his postprints in OpenUCT, but did not know how to go about doing so in a non-manual way, that is, in a way that did not entail his having to go through the steps that deposit in OpenUCT currently entails. He was quite happy that he is able to upload his postprints to Research Gate (https://www.researchgate.net/), since the process appears mostly automated. His main point was that he would like to see the technical functionality of IRs improved to the extent that it was not necessary for researchers to upload their articles manually.

Regarding technical issues, one researcher complained that her department had encountered many problems with depositing articles during the implementation of OpenUCT, and continued to encounter further technical issues with OpenUCT following the roll-out of the new UCT web site.

5.1.2 Depositing Researchers

Those who deposit in the IR do so because they believe that:

- the visibility of their work is enhanced by the practice;
- deposit in IRs is a good way of making their work available to the world;
- deposit in IRs increases the findability of their work;
- IR deposit will increase their readership;
- IR deposit enhances their professional prestige and that of their institution;
- IR deposit encourages other researchers to share their research output in the same way;
- IR sharing works as an effective networking tool.

Most researchers were also comfortable with using IR technology to find information and indicated they were technologically comfortable with IR deposit processes. Many researchers indicated willingness to share resources in the IR because their librarian believed it to be a good idea.

Those UCT researchers that support OA practices in general also offered feedback on their attitudes to the deposit of scholarly publications in the IR. One indicated that she would like to see all articles by UCT researchers deposited in the IR, but that UCT should be negotiating for this with publishers on behalf of its researchers. A similarly-oriented researcher indicated that she publishes all her research in OA journals, so did not find depositing in the IR useful for purposes of enhancing access and visibility to her research.

5.1.3 General Comments

Although some moderate correlations between the RSRIR and PIR (and its sub-constructs) variables surfaced in Chapter 4, Section 4.1.1.3, most notably, that between RSRIR and SQS ($\rho = 0.654$), the significance level of this (or any other construct) did not fall below .050, and so none of the correlations were found to be significant. This may also be due to the small number of respondents that answered this question set (N = 8/9). On the other hand, a promising result in Chapter 4, Section 4.1.1.5 is that weak to moderate correlations turned up between the MSRIR and PIR (and its sub-constructs) variables, indicating an inverse relationship between the two constructs, that is, as PIR (or levels of its sub-constructs), increase, MSRIR decreases, and vice-versa. However, none of the significance levels of these correlations fell below the .050 level, so they cannot be considered to be significant.

5.2 UCT Libraries and CSFs

In the case of UCT Libraries, the *people* and *management* CSFs appear to assert most of the influence on the extent of researcher engagement with the IR. IR team staff manage the moderation of scholarly publications into the IR as well as they can, given their small staff complement, and they are assisted in their efforts by other Libraries' staff. As they do not have the capacity to archive on behalf of researchers, they offer training to researchers and the staff supporting these researchers so they can self-archive. This assistance includes navigating copyright agreements so that as many publications as possible can be published OA. In their efforts to promote the use of the IR and deposit into it, they are assisted by

subject liaison librarians in providing workshops on the OA Policy and IR deposit, often at departmental meetings, which provide crucial networking opportunities. Another strong motivator driving deposit into the IR is the reimbursement that UCT Libraries provides to researchers who pay APCs to publish OA. According to Raju, Claassen and Moll (2016), this is a progressive practice, as many universities do not have mechanisms to reimburse their researchers in this way. The Libraries has managed this APC Fund since the inception of the Policy, in the face of University-wide budget cuts and increased demand for APC funding. Reflective of the severe austerity climate in which UCT is currently operating, however, the University Research Council refused an application by the Libraries to increase the 2017 budget allocation for APCs (UCT, Library Working Group [LWG], 2017).

5.3 Recommendations for Improving the Libraries' IR Advocacy to UCT Researchers

Given that the PIR assessment, as a psychometric test, is based on the construct of psychological resistance as discussed in Chapter Two, Section 2.1.1, it is considered appropriate to propose strategies for persuading researchers to deposit in the IR that encourage behaviour modification, conscious or subconscious, in researcher IR deposit practices. In keeping with Knowles and Linn's (2004a) suggestion that persuasion is an exercise in resistance reduction and having established raised levels of PIR in UCT researchers that have not deposited in the IR, the utilisation of some strategies designed to counteract resistance may be incorporated into the outreach and advocacy strategies of the UCT Libraries IR team to try and reduce this resistance. Knowles and Linn (2004b) have recommended *alpha* and *omega* strategies for achieving the reduction of resistance and encouraging the acceptance of change. Each of these is discussed below with suggestions for implementation specific to the context in which the IR team operates.

It is important to note that the above is not a negation of the results of the RSRIR and MSRIR responses. The researcher chose to propose more psychologically-motivated recommendations given the strength of the results of the deposit vs. non-deposit PIR levels test.

5.3.1 Alpha and Omega Persuasion Strategies

Traditional approaches to persuasion have been alpha-oriented as they work to convince the user, through messages designed to make the change attractive, of how the proposed change will benefit the user. These approaches tend to be more apparent, transparent, and direct. The

Libraries' current outreach strategies are designed in this way. Omega strategies, on the other hand, work on removing obstacles to change resistance, and are more subtle and indirect.

5.3.1.1 Alpha Persuasion Strategies

The relationship of PIR to the construct of psychological resistance was explored in Chapter Two, Section 2.2.1. In this context, the alpha persuasion strategies that the Libraries can and have been using to persuade researchers to deposit in IRs include (Knowles & Linn, 2004b: 120 – 122; Quinn, 2010: 70 – 71):

1. **Making messages more persuasive**. This strategy uses logic and reasoning to compel the user to adopt the proposed change. If coming from peers (for example, other academics) already using the IR who can speak about its benefits to their careers, the difficulties and challenges they experienced and how these were overcome, this message can be more effective than if coming from a librarian or non-academic institutional representative. As the IR team has already identified individuals who are strong supporters of the IR (one such person is mentioned in the interviews in Section 4.2.2.3) they need to engage the help of more individuals such as these to advocate on their behalf.

2. **Increase source credibility**. Using a person experienced in operating in the area of the proposed change, or who is very knowledgeable on the subject, influences the user at whom the proposed change is directed. For example, a high-ranking academic who publishes OA may be able to convince other researchers of the benefits of publishing OA. Quinn (2010: 70) calls this *priming*, as a non-depositing researcher would be primed by a compliant or even enthusiastic, depositing researcher to be more accepting of the message being offered.

3. **Provide consensus information**. Simply put, target researchers may find OA intriguing and want to know more about it if they are presented with examples of instances in which other researchers have published OA, especially if the researchers promoting the practice are enthusiastic about their activities. Providing resistant researchers with information about their peers' OA IR publishing practices may persuade them to follow suit through their perception of social imperative to conform (Quinn, 2010: 71), what Quinn terms "perceived consensus and social modelling". Social modelling, says Quinn (2010: 71 –

72), “addresses both the cognitive dimension of how resistant users should behave and also the affective dimension by offering models that serve as a source of motivation to resistant users to change their behavior [*sic*] in the desired direction”.

These three strategies are quite similar in their use of peers (other researchers) to market the IR to academics. In the employment of these strategies, the main job of the Libraries would be to identify academics willing to assist them in persuading other researchers of the advantages of depositing in the IR for their careers, the University and the global community.

5.3.1.2 Omega Persuasion Strategies

Examples of omega strategies include (Knowles & Linn, 2004b: 122 – 141; Knowles & Riner, 2006; Quinn, 2010: 67, 69, 74):

1. **Depersonalise the interaction.** This works by redirecting the change imperative away from the individual and making it a group imperative. For example, instead of telling individual researchers that they should publish OA or deposit in OpenUCT, a message may be more effective if it is directed at researchers in general, such as saying that *researchers* should publish in OpenUCT.

2. **Minimize the request.** This entails requesting small changes in behaviour, and gradually increasing them so that the target does not feel the magnitude of the proposed change. With researchers, a small change request may be to ask them for their opinion on an aspect of information provided on the UCT Libraries Open Scholarship site (www.openaccess.lib.uct.ac.za). The next step would be to ask them if they would like to attend a seminar on OA publishing. Quinn (2010) also provides the example of asking researchers to submit a single article to the IR. They would still need to go through all the steps required to do so, but having done so may reduce their resistance to (or fear of) the unknown.

3. **Raise the comparison.** Introduce a comparison that would make OA publishing attractive to the researcher. For example, highlight its benefits to the University in mitigating the costs of subscribing to closed-access journals and the advantages of increased or enhanced exposure of their research on a much wider scale for their career advancement. This may go some way to persuading researchers to publish OA.

4. **Pushing the choice into the future.** This works on the premise that there is more chance of proposed change being acceptable to the target if it is not an immediate imperative. The suggested change time frame should be expansive enough to be assimilated into a researcher's busy schedule at a determined point in the future rather than him/her having to adopt it immediately.

5. **Address resistance directly.** This entails trying to address resistance at the source and employs a method called counter-arguing resistance, which consists of providing arguments that present researchers with a double-sided message. The positive and negative aspects of OA publishing are acknowledged, but the persuasion strategy places more emphasis on the positive aspects as a means of convincing the target users that the proposed change is more desirable.

6. **Address resistance indirectly.** A strategy for achieving this is to raise researcher self-esteem. Some researchers may perceive OA publishing as subjecting their work to increased scrutiny by a wider research community and feel intimidated by this. Reminding these individuals of the acclaim that their research has enjoyed and employing other strategies to boost their confidence in their published research may make them more amenable to publishing OA.

7. **Use resistance to promote change.** Acknowledging an expectation of resistance or the existence of resistance to proposed change may have the effect of making resistors less averse to listening to the message that persuaders are attempting to convey. Librarians may have more success in reducing researcher resistance to IR deposit if they acknowledge to researchers, at the outset, that there may be resistance to the proposed new behaviour due to copyright and plagiarism concerns or technology-related anxiety, for example. Having acknowledged the types of concerns that give rise to resistance, librarians can begin to address each of these (Quinn, 2010). In addition, users may also be able to identify more with librarians who acknowledge having encountered difficulties and frustrations with the IR, as candidness about its shortcomings may engender some level of trust in the librarian by non-depositing researchers.

In addition to the above approaches, many additional strategies for engaging researchers on issues of OA and IR deposit exist in the literature, some of which the Libraries IR team has already attempted, with varying measures of success, such as (Bell, Foster & Gibbons, 2005: 289; Swan & Brown, 2005; Ratanya, 2017):

- Scanning the University's web site content to see what else could be incorporated into the IR;
- Utilising relationships with academics to vigorously market the IR to their colleagues and other University networks to which they have access;
- Approaching retirees for permission to include their work in the IR (Library staff digitise where necessary), or finding out if they would like to self-archive;
- Soliciting the help of departmental administrators in reporting back to the Library on the content they assist academics in administering, for example, for research report purposes, then approaching academics to deposit these as IR contributions;
- Approaching researchers to discuss their research, and using opportunities that arise in those talks to promote the IR by highlighting its features and what benefits IR deposit holds for them;
- Using all available connections, personal and professional, to encourage contribution to the IR;
- Using usage statistics to promote the IR to academics as a research dissemination channel;
- Investigating whether University management would consider incorporating the self-archiving process into the criteria by which academics are evaluated;
- Offering information literacy training to staff and students that includes navigating the IR for research purposes in order to enhance awareness and promote deposit in it.

No single solution will work for every institution. The UCT Libraries IR team will have to continue to use what has been favourably received and discard those strategies that do not appear to work.

In conclusion, however, reflecting on the objectives in Section 1.4, the study has successfully:

1. Determined the level of UCT researcher awareness of the OA Policy and its requirement of depositing into OpenUCT;

2. Determined the extent to which researchers that are aware of the Policy requirements have engaged with it regarding the deposit, into OpenUCT, of the scholarly publications they produce under the auspices of UCT;
3. Investigated the ways in which UCT Libraries has attempted to develop and encourage researcher engagement with the IR and made recommendations that incorporate persuasive strategies for reducing resistance to change that the Libraries can use in their advocacy and outreach efforts to improve researcher deposit into the IR.

5.4 Suggestions for Further Research

Even though researchers were not asked to comment on their responses to the survey, some felt it necessary to email the researcher directly to provide their qualitative input. A further research opportunity lies in contacting the same researchers to whom the survey was distributed to find out if they would be willing to be interviewed on their perceptions and attitudes to engagement with IRs and OpenUCT specifically.

The present study focused on academic staff at UCT. For reasons stated in Sections 3.3.1 and 3.4, students and non-academic staff were not surveyed, even though the OA Policy includes them in its definition of 'Author' (UCT, 2014: 2). An additional research opportunity lies in surveying these two groups.

The researcher proposes continuous monitoring and evaluation of the success of the IR, based on the number of resources. A cross-referencing of subsidy-attracting resources in the UCT Annual Research Report 2014-2015 with the resources in OpenUCT was performed for purposes of this study. However, as the Annual Research Report is released biennially, there is scope for a comparison to be conducted, possibly as a digital curation exercise, either by UCT Libraries staff (particularly the IR Team) or students of LISC. Alternatively, as the IR Team is already unable to monitor researcher compliance with the OA Policy deposit requirements, as indicated in Section 4.2.1, perhaps this responsibility could be assigned to other Libraries staff that already assist the IR team in IR-related activities. The data that these exercises would generate could be used to benchmark the success of the OpenUCT Policy.

5.5 Summary and General Conclusions

OpenUCT is a work in progress, as is persuading UCT researchers to engage with it. In the context of the OA Policy, peer-reviewed journal articles are one type of resource that the

University would like its researchers to deposit into the IR. Government compensation for this type of output is a significant attractor of funds to the University, so it is understandable that researchers would be most interested in publishing in the subsidy-attracting journals approved by DHET. Since not all of these journals are OA and UCT Libraries may not be financially able to subscribe to all of the closed access publications on the DHET approved list, the real possibility exists that the UCT community may never have access to some of the research work produced by its own academics. Neither will the broader society in which UCT operates, which includes taxpayers whose money contributes to the funding that the DHET is able to provide. The development and maintenance of an environment in which sharing research for the benefit of society within a "social justice ethos" is emphasised by Raju, Claassen and Moll (2016: 37). Improving researcher deposit into the UCT IR is in the interests of supporting this ethos.

UCT Libraries needs to exhaust every avenue available to improve this deposit activity. Doing so with increasingly limited financial resources in a period of austerity measures is proving no easy feat, but the University management's commitment to the growth and success of the IR is promising. In keeping with the aforementioned social justice ethos, Goal 5 of UCT's Strategic Planning Framework 2016 – 2020 is "to enhance the scope, quality and impact of engaged scholarship with an emphasis on addressing development and social justice" (UCT, 2016b: 5). This particular goal accommodates the transformation agenda of the University. One of the strategic objectives of the transformation plan, that of "developing inclusive curricula and engaging with African voices" (UCT, 2017), is increased recognition of African voices in research and teaching. The IR is able to facilitate this increased recognition through the showcasing of research output by UCT researchers. In developing the IR in support of this aim, academics and librarians need to work together to ensure that everyone is able to benefit from the knowledge generated through research output, not just those able to afford access.

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APPENDICES

APPENDIX A: Survey Questionnaire

Section A: Demographic Information

1. How many years have you worked as a researcher?

   Options:

   - 0 to 5 years
   - 6 to 10 years
   - 11 to 15 years
   - 16 to 20 years
   - 21 to 25 years
   - 26 to 30 years
   - 30 years+

2. In which faculty are you employed?

   Options:

   - Health Sciences (FHS)
   - Engineering & the Built Environment (EBE)
   - Centre for Higher Education Development (CHED)
   - Science
   - Humanities
   - Law
   - Commerce (includes the Graduate School of Business)

3. What is your position of employment at UCT?

   Options:

   - Lecturer
   - Senior Lecturer
   - Associate Professor
   - Professor
   - Emeritus Professor
   - Other (please specify)

Section B: Awareness of the UCT Open Access Policy

The following statements pertain to your awareness of the UCT Open Access Policy and its requirement that openly-licensed, peer-reviewed journal articles be deposited into the OpenUCT institutional repository. Please select an option that applies to you:

A. I am aware of the Open Access Policy and have already contributed/intend contributing my openly-licensed, peer-reviewed articles to OpenUCT.
B. I am aware of the Open Access Policy but do not intend contributing my openly-licensed, peer-reviewed articles to OpenUCT.
C. I am not aware of the Open Access Policy but I have contributed my openly licensed, peer-reviewed article(s) to OpenUCT.
D. I am not aware of the Open Access Policy and have not deposited anything into OpenUCT or any other institutional repository.

Response Group Differentiation

Depending on their selection of options in Section B, respondents were presented with question sets as follows:

Selectors of Option A or C received Question Set 1, then Question Set 3.

Selectors of Option B received Question Set 2, then Question Set 3.

Selectors of Option D received Question Set 3 only.

Section C: Please respond to the statements that follow

Question Set 1: Motivation to share resources in institutional repositories (Abrizah, Hilmi and Kassim, 2015: 739 - 740) (adapted version)

Instruction: Please respond to all statements below.

Question: I am motivated to share my resources in institutional repositories because…

Motivation to Share Resources in Institutional Repositories (MSRIR): Section A

1. I believe that depositing my research work in institutional repositories makes my work more **visible** to society.
2. I believe that depositing my research work in institutional repositories is a way of making my work **available** to the world.

3. I find that knowledge sharing through institutional repositories allows readers to find my articles more easily.
4. I believe that depositing my research work in institutional repositories will increase my readership.

Motivation to Share Resources in Institutional Repositories(MSRIR): Section B

5. I believe that depositing my research work in institutional repositories will enhance my professional prestige.
6. I believe that depositing my research work in institutional repositories will bring about prestige to my institution.
7. Academics who support knowledge sharing through depositing articles in institutional repositories enjoy more professional prestige than those who do not.

Motivation to Share Resources in Institutional Repositories (MSRIR): Section C

8. I find knowledge sharing through institutional repositories useful for disseminating my research output.
9. I find that knowledge sharing through institutional repositories encourages the communication of research output by other researchers.
10. I believe that depositing my research work in institutional repositories makes it easier for me to connect with other researchers worldwide.

Motivation to Share Resources in Institutional Repositories (MSRIR): Section D

11. I find it easy to use institutional repository technology to share resources.
12. I am comfortable with using institutional repository technology for finding information.
13. I am comfortable with using institutional repository technology for sharing my research output.
14. I am technologically comfortable with depositing materials for knowledge sharing through institutional repositories.
15. Knowledge sharing in institutional repositories is not time-consuming.

Motivation to Share Resources in Institutional Repositories (MSRIR): Section E

16. Other researchers think I should share my research work via deposit in institutional

repositories.

17. My students think I should share my research work through depositing in institutional repositories.
18. My librarian thinks I should share my research work through depositing in institutional repositories.

Item response scale quantification:

1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree.

Question Set 2: Resistance to Sharing Resources in Institutional Repositories (RSRIR) (Abrizah, Hilmi & Kassim, 2015: 743) (adapted version)

Instruction: Please respond to all statements below.

Question: I resist sharing resources in institutional repositories because…

Resistance to Sharing Resources in Institutional Repositories (RSRIR): Section A

1. I am concerned about plagiarism.
2. I am concerned that the University might do something with my work without my permission.
3. I am concerned that someone might want to change or delete my work.
4. I am concerned that I might be infringing on the copyright of my previously published material.
5. I am concerned about what would happen to my work if I move to another institution.

Resistance to Sharing Resources in Institutional Repositories (RSRIR): Section B

6. I am concerned about the newness and initially small scale of repositories.
7. I am concerned that the institutional repository managers might choose to remove my work after a long period of time.
8. I am concerned about the long-term sustainability of repositories.

Resistance to Sharing Resources in Institutional Repositories (RSRIR): Section C

9. I believe that the repository has low prestige.
10. I believe that few people would see my work in institutional repositories.

11. I believe that the readership of institutional repositories is too broad and not targeted to my field of work.
12. I do not want my work to be deposited alongside work from other disciplines.
13. I do not want to store my work alongside work that has not been peer-reviewed because I fear that my work will be considered to be of low quality.

Resistance to Sharing Resources in Institutional Repositories (RSRIR): Section D

14. I prefer to make my work available via my personal website.
15. I prefer to make my work available via my departmental website.
16. I am concerned that the University might expect me to publish in open access journals.
17. I do not have the necessary technical skills.
18. I'm afraid the deposit process might take too much time.

The rating scale and quantification for the scale items was the same as for Question Set 1.

Question Set 3: Adapted version of the Passive Resistance to Innovation (PIR) Survey Questionnaire (Heidenreich & Handrich, 2015: 885)

Disposition to Innovation and Change (Passive Innovation Resistance – PIR):

Section A

Please respond to each of the statements below.

1. I generally consider change to be a negative thing.
2. I like to do the same old things rather than try new and different ones.
3. I'd rather be bored than surprised.
4. I would probably feel stressed if informed when there's going to be a significant change in the way things are done at work.
5. I feel slightly tense when informed of a change of plan.
6. I feel stressed when things don't go according to plan.
7. I often feel a bit uncomfortable about change, even if it may potentially improve my life.
8. I tend to resist when someone pressures me to change something, even if I think the change may ultimately benefit me.
9. I sometimes find myself avoiding changes that I know will be good for me.

10. I change my mind often.
11. I don’t change my mind easily.
12. My views are very consistent over time.

Disposition to Innovation and Change (PIR): Section B

In the statements below, the term **digital tools** is referred to in the context of digital literacy, which is defined here as "the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyse and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process" (Martin & Grudziecki, 2006: 255).

References

Martin, A. & Grudziecki, J. 2006. DigEuLit: concepts and tools for digital literacy development. *Innovation in Teaching and Learning in Information and Computer Sciences*. 5(4): 1 – 19. DOI: http://dx.doi.org/10.11120/ital.2006.05040249.

Please respond to each of the statements below.

13. Overall, my personal need for innovations in the field of digital tools has not been met in the past.
14. Overall, I consider the number of innovations in the field of digital tools as being too low.
15. Overall, I consider the pace of innovations in the field of digital tools as being too slow.
16. I have been very satisfied with available digital tools in the past.
17. In my opinion, past digital tools were completely satisfactory.
18. Past digital tools fully met my requirements.

The rating scale to which participants needed to respond is the same as that of Question Sets 1 and 2.

APPENDIX B: Cronbach's Alpha Tables

Question Set 1: Motivation to Share Resources in Institutional Repositories (MSRIR)

Scale Statistics

Mean	Variance	Std. Deviation	N of Items	Cronbach's α
62.7541	142.555	11.93965	18	.925

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
MSRIR1	58.5902	125.679	.748	.918
MSRIR2	58.3934	129.576	.644	.921
MSRIR3	58.8033	128.127	.588	.922
MSRIR4	58.8361	127.639	.612	.921
MSRIR5	59.4098	123.546	.710	.919
MSRIR6	59.1639	125.373	.669	.920
MSRIR7	59.7869	126.070	.665	.920
MSRIR8	59.0492	126.781	.691	.920
MSRIR9	58.9836	125.750	.742	.919
MSRIR10	59.2295	124.646	.666	.920
MSRIR11	59.5574	128.451	.659	.921
MSRIR12	59.3934	124.143	.694	.919
MSRIR13	59.1639	126.306	.745	.919
MSRIR14	59.3279	123.157	.690	.920
MSRIR15	59.6885	127.451	.626	.921
MSRIR16	59.8033	133.661	.397	.926
MSRIR17	60.0656	137.096	.239	.929
MSRIR18	59.5738	135.382	.262	.930

Question Set 2: Resistance to Sharing Resources in Institutional Repositories (RSRIR)

Scale Statistics

Mean	Variance	Std. Deviation	N of Items	Cronbach's α
46.3333	78.750	8.87412	18	.713

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
RSRIR1	44.2222	58.194	.832	.632
RSRIR2	44.8889	71.111	.580	.686
RSRIR3	44.7778	68.944	.521	.682
RSRIR4	43.6667	84.500	-.284	.771
RSRIR5	43.7778	58.194	.699	.644
RSRIR6	43.7778	68.194	.332	.698
RSRIR7	44.6667	66.250	.706	.666
RSRIR8	42.8889	63.361	.704	.657
RSRIR9	42.8889	73.111	.411	.697
RSRIR10	43.0000	74.000	.349	.701
RSRIR11	43.2222	82.944	-.276	.748
RSRIR12	43.8889	73.361	.212	.709
RSRIR13	43.5556	77.278	.014	.726
RSRIR14	43.7778	78.694	-.061	.733
RSRIR15	43.6667	76.250	.047	.725
RSRIR16	43.8889	62.861	.667	.658
RSRIR17	44.3333	73.000	.278	.703
RSRIR18	42.7778	75.444	.066	.726

Question Set 3: Passive Resistance to Innovation (PIR)

Scale Statistics

Mean	Variance	Std. Deviation	N of Items	Cronbach's α
45.9020	64.367	8.02288	18	.789

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PIR1RS1	44.1275	55.736	.686	.762
PIR2RS2	43.9412	54.551	.697	.758
PIR3RS3	44.1078	56.355	.563	.768
PIR4ER1	43.4314	53.020	.649	.757
PIR5ER2	43.2843	52.602	.649	.757
PIR6ER3	42.5882	53.532	.564	.764
PIR7STF1	43.4118	53.393	.650	.758
PIR8STF2	43.6078	52.914	.657	.757
PIR9STF3	43.5588	54.190	.588	.763
PIR10CR1	43.0980	62.347	.064	.801
PIR11CR2	43.1373	59.941	.237	.788
PIR12CR3	42.7549	59.949	.257	.787
PIR13SQSI1	43.3039	63.065	.029	.801
PIR14SQSI2	43.3725	62.355	.085	.797
PIR15SQSI3	43.4510	63.359	.017	.801
PIR16SQSP1	42.6078	63.389	.032	.798
PIR17SQSP2	43.2843	61.710	.162	.791
PIR18SQSP3	43.2647	63.840	-.017	.803

APPENDIX C: Interview Instrument

Question Set 1: **Reporting of non-deposit**

1.1. Have UCT researchers, in accordance with the UCT Open Access Policy of 2014 (revised in 2016), reported their reasons for non-deposit of their peer-reviewed journal articles into OpenUCT to UCT Libraries, especially published work reported in the UCT Annual Research Report 2014-2015? If so, how would you describe your experiences in obtaining this information?

1.2. If you have documented this reporting, would you be willing to share the data for purposes of this study?

1.3. Does UCT Libraries staff usually approach researchers with requests to publish their work in the repository, or is the onus on the researchers to deposit or report their reasons for non-deposit? What challenges, if any, have you encountered in carrying out this activity?

Question Set 2: Critical Success Factors and OpenUCT

Recent literature (Abrizah, Hilmi & Kassim, 2015) on institutional repositories has conceptualised six critical success factors necessary for institutional repositories to grow and develop as representatives of institutional research output and facilitators of scholarly communication exchange. These factors are: resources, technology, self-archiving, management, people and services. How do you view the growth and development of OpenUCT in light of these factors?

Question Set 3: OpenUCT Outreach and Advocacy Among Researchers

Please describe your advocacy and outreach efforts to promote the use of OpenUCT among UCT researchers and your experiences in doing so.

References

Abrizah, A., Hilmi, M. & Kassim, N. 2015. Resource-sharing through an inter-institutional repository: motivations and resistance of library and information science scholars. *The Electronic Library.* 33(4): 730 - 748. DOI: 10.1108/EL-02-2014-0040.

APPENDIX D: Ethics Approval Letter

Appendices we removed to avoid exposing signatures of authorities Online.

APPENDIX E: HR Permission to Access Human Participants