INVESTIGATING FACTORS THAT AFFECT FACULTY ATTITUDES

TOWARDS PARTICIPATION IN OPEN ACCESS

INSTITUTIONAL REPOSITORIES

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Open access institutional repositories (OA IRs) are electronic systems that capture, preserve, and provide access to the scholarly digital work of an institution. As a new channel of scholarly communications IRs offer faculty a new way to disseminate their work to a wider audience, which in turn can increase the visibility to their work and impact factors, and at the same time increase institutions prestige and value. However, despite the increased popularity of IRs in numbers, research shows that IRs remain thinly populated in large part due to faculty reluctance to participate. There have been studies on the topic of open access repositories with the focus on external factors (social or technological context) that affect faculty attitudes towards participation in IRs, and there is a lack of understanding of the internal factors and the psychology of the reluctance. The goal of this mix method study was to identify the overall factors that affect faculty attitudes towards participation in IRs and examine the extent to which these factors influenced faculty willingness to participate in IRs. First, from literature review and the Model of Factors Affecting Faculty Self-Archiving this study identified eleven factors that influenced faculty members' intention to participate in OA repositories. Theory of Planned Behavior (TPB) postulated that faculty intention to participate in IR was determined by three categories of factors: five attitudinal, four external (social) and two individual factors. Within the framework of the TPB this study (1) confirmed the measurement scale for each factor using principal component analysis, (2) it examined the influence that each factor had on the faculty likelihood to participate in IR using logistic regression, and (3) it weighted the relative importance of each factor on faculty intent to participate, utilizing relative weight analysis. Quantitative analysis revealed that four out of 11 factors proved to be statistically significant in

faculty members' intention to participate in IRs; difficulty with the submission process, discoverability access and readership, altruism, and faculty perception of IRs as low-quality publishing venues. While qualitative analysis revealed that more than half of the faculty remain unfamiliar with OA and its goals, and while they supported the principles of OA, they also had a myriad of concerns regarding participation in IRs.

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CHAPTER 1

INTRODUCTION

With the advent of the Internet, a whole new way of open access (OA) publishing was

made possible. This created a paradigmatic shift in publishing practices. With the OA movement,

we have seen a paradigm shift in the way scholarly and scientific knowledge is contributed and

accessed in the online world. The growth of OA publishing mode and OA repositories in the last

decades has made academic libraries an important player in the debate over the future of

scholarly publishing. However, despite the increased popularity of OA repositories worldwide

they have been met with resistance by faculty members. In an effort to explore faculty views on

OA repositories this study investigated faculty attitudes toward participation in OA repositories.

This chapter starts by defining intuitional repositories (IR), present the research problem, the

purpose of the study, the research questions, the significance of the study and the definition of

relevant terms.

1.1   Open Access Institutional Repositories

Open access institutional repositories (OA IRs) are electronic systems that capture,

preserve, and provide access to the scholarly digital work of an institution. Thus, IRs are

primarily but not exclusively academic and research institutions. The birth of open access IR is

significant within the context of scholarly communication. Crow (2002a) describes the IR as a

"new scholarly publishing paradigm" that is the foundation for a new disaggregated model of

scholarly publishing. IRs not only gather information generated by research faculty, students,

and preserve it, but also make it searchable through interoperable digital repositories. In the

marketplace of competitive ideas and with the aid of enabling technologies, a number of

libraries, universities and scholars now are promoting IRs as a way to correct the perceived inequities and inefficiencies that have crept into the cycle of research, knowledge generation and academic publishing (Thomas, McDonald, Smith & Walters, 2005).

According to Crow (2002a), IRs answers two challenges that are currently facing academic institutions. First, they reform scholarly communication by stimulating innovation in a disaggregated publishing structure. Second, they serve as tangible indicators of an institution's quality, thus increasing its visibility, prestige and value.

IRs provide long-term sustainable storage, preservation and open access to resources. IRs also serve as tangible indicators of an institution's productivity, and thereby increasing an institution's visibility, prestige and value. Previous studies show that there is a significant advantage in favor of articles that are made available through OA by their authors (Harnad & Brody, 2004). However, this is a value that has to be communicated to faculty and researchers as they are an integral part that can make-or-break an IR.

1.1.1   Open Access Institutional Repositories and the New Role of Libraries

In the broadest sense the term open access (OA) is used to describe knowledge resources that are made available in the public domain for public access, without any hindrance of subscription fee or access charge. Open access is defined by Suber (2012) as literature in digital format, online, free of charge, and free of most copyright and licensing restrictions.   The concept of open access publishing has proliferated after the three OA declarations, commonly known as BBB declarations. These are the Budapest Open Access Initiative (February 2002), the Bethesda Statement on Open Access Publishing (June 2003), and the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (October 2003).

Before the OA initiative the OA publishing was rather limited to a small portion of journal literature, and other small collections. However, the Budapest Open Initiative recommends two complementary strategies to achieve open access for scholarly journal literature. The first one is "self-archiving" where scholars can deposit their work in open web based archives with assistance from their respective institutions. Second, open access journals are a platform where scholars should be able to launch a new form of online journal publications committed to OA. According to Budapest Open Access Initiative, the institutional "self-archiving" is the first step toward true open access that stands for unrestricted access and unrestricted reuse.

1.1.2   Defining Institutional Repositories

The open access movement led to an exponential increase of open access digital repositories in different academic fields and as a result the culture of academics started to consider open access repositories as an alternative medium to traditional journal publishing houses. At the same time IRs are considered a byproduct of the emerging development of information and communication technologies (ICT), which led to the open access (OA) philosophy of global sharing of knowledge and the unbridled universal access to information resources (Chan, 2004). Figure 1 illustrates the different modes of OA publishing and user access. Open access literature is disseminated through three main channels. The gold open access is primarily used for OA journals or publishers, where authors or funders may be charged a processing fee. The green OA publishing refers to the self-archiving in an OA web based archive. Institutional Repositories are the main mode of green OA, which enables academic institutions to completely record and disseminate the scholarly output of their respective faculty.

Furthermore, green OA may host articles such as preprints, non-peer reviewed journal publications, peer-reviewed conference proceedings, papers and monographs. In gold OA, it is up to the authors to decide what they want to deposit or are allowed to deposit. IRs and disciplinary based repositories are the main types of the green OA publication. A growing number of academic institutions have created a web-based institutional repository and have adopted policies (mandates) to encourage their faculty to deposit into university repositories. Also, in addition to green and gold model there is a hybrid model where traditional subscription journals allow individual authors the possibility to open up their articles for free access from day one, after receiving certain article processing charges from the authors.

Table 1.1

Modes of Open Access Publishing and User Access

Routes to OA publishing		Type of users access rights in OA	
Answers the question of how is it delivered		Answers the question of how open is it	
Gold OA	Green OA	Gratis OA	Libre OA
Open journals/publishers	OA repositories	Removes the price barriers	Removes price + permission barriers
Peer reviewed work	No peer review process	Free of charge	Free of charge
May charge the author	Self-archiving/deposit	Seeks permission to exceed fair use	Free of some copyrights and licensing
No embargo period	No charge for the author		
Obtain the rights from the rights holder			

In an effort to preserve and disseminate the scholarly output of their institutions, universities can adopt and implement either of these routes. However, the green open access route is more commonly implemented among universities and it is usually classified into three main categories: institutional repositories, subject/discipline specific repositories, and data repositories. According to the recent statistics from OPEN DOAR, the majority (85.6 %) of open access repositories are institutional repositories (http://www.opendoar.org/).

Many technology trends and developmental efforts came together to make the IR possible. IRs emerged mainly due to the fact that the online storage costs dropped significantly and standards like the open archives metadata harvesting protocol were put in place. At the same time there was an escalating cost for access to scholarly publishing, which led many to protest because technology was not delivering upon its promise of making information more widely and easily available. These concerns arose from the continuous increases in subscription costs for scientific journals and increasing amount of scholarly work that researchers produced.

Historically, publisher contributions to the scholarly publishing value chain concentrated on the distribution component; typewriting, printing, marketing, and fulfillment. These were specialized and expensive tasks that authors gladly delegated to publisher. However, with the evolution of digital publishing and networked distribution technologies, the relative value of print production and distribution declined. Also, with the recent development in the information and communication technology (ICT) the scholarly and scientific information could be distributed more widely and quickly. Therefore, authors and readers no longer have to depend heavily on the commercial publishers. In the last decade, vocal scholars, academic librarians, and university administrators have advocated reclaiming the scholarly communication process from the sole control of the commercial publishing industry. These stakeholders believe that the traditional system of scholarly publication in unsustainable.

1.1.3 The Role of Libraries in OA Era

The development of open access publishing mode and web based Institutional Repositories (IR) in the last decade has made academic libraries a key player in the debate over

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the future of scholarly publishing. Academic libraries have a significant role in advocating for and supporting technological solutions to expedite new forms of publishing.

For more than decade libraries have been faced with new challenges with the emergence of the Internet and the Web, and the popularity in use of search engines. However, libraries have long been in "the content business" and not just merely in the business of providing access to content. In the last decade alone librarians have been taking a more active role in the development of content itself.

The network power of the Internet and the ability to share resources, as well as new information and communication technology environment in libraries, has enabled libraries to better serve the needs of their communities. Some of the libraries new roles in the publication process include tasks such as electronic publishing/archival support services, digitization of academic resource materials, as well as other forms of electronic content management services.

In the recent years we have seen an expanded role of libraries in the publication process that was imposed by financial pressures of the current/traditional scholarly publishing environment. Today commercial publishers dominate the market by imposing high subscription prices and through highly restrictive copyright rules. The rising prices of journals (215 %) in the last 15 years has forced libraries to take an advocacy stance of defining the nature of scholarly publishing (Helfer, 2004). Suber (2003) writes that librarians can do a lot to alleviate the "publishing crisis" by better understanding their community and promoting open access publishing to their institutions.

Librarians are in a long and uphill struggle to address issues of scholarly publishing and copyright laws. The progress that has been made in the last two decades with the OA publishing movement has brought to attention the crisis in scholarly publishing.

The role of libraries in the open access "revolution" has been an evolving leadership role. In the last two decades, libraries have been faced with many challenges that emerged with the massive popularity of the Internet and use of search engines by their patrons. One of the major challenges that libraries face in the information age is in re-defining their role to meet the needs of the community they serve. As described in the guidelines of the American Library Association, adopted June 2004, the core value of librarianship lies on service, social responsibility and public good.

While some public libraries have transformed themselves into technology access points and have broader technology goals, academic libraries are also very important service institutions to their scholarly community.

1.2   Overview of the Research

By definition, institutional repositories represent a historical and tangible embodiment of the intellectual life and output of an institution. The goal of the IR is to have all the material indexed in a standardized way, made searchable using one interface, and also provide a foundation for a new model of scholarly publishing. However, Albanese (2009) argues that IRs have failed to fulfill their mission by rushing to create IRs without a clear vision and expecting faculty to deposit their work. Salo (2008) noted that the current situation with institutional repositories paints an abysmal picture of faculty disinterest, and futile outreach efforts by institutions. In spite of the increased popularity of IRs worldwide they have been met with resistance by faculty members. In practice, there is no evidence that IRs are increasing access to scholarly journal literature through faculty initiative (McDowell, 2007). Some of the issues of concern still remain, such as copyright issues, access (open vs. restricted), institutional branding,

peer review, cost, faculty compliance and other challenges that make the implementation or IRs difficult and costly. One of the main challenges facing IRs today is resistance by faculty to voluntarily deposit their works (Albanese, 2009).

Even though a majority of surveys show that faculty supports open access initiatives they have been reluctant to deposit their work in IRs (McDowell, 2007; Salo, 2008). McDowell's (2007) findings show that only 37% of items in IRs are faculty scholarly output; out of that only 23% are gray literature, items that have not been subjected to peer review but are scholarly in nature. According to a more recent survey by Primary Research Group (2014), only 5% of journal articles published by the faculty members of the organizations have been archived in IRs. Finding a solution to low faculty participation in IRs is a complicated task that requires a multifaceted approach. Possible solutions to low participation can be addressed by outreach and education, imposing institutional mandates, and by increasing the discoverability of items in IR. However, the first and foremost approach is the promotion of faculty participation through targeted education and outreach. To implement the education and outreach programs, librarians first have to identify the main reasons that faculty decide to participate or not in an IR.

The literature review identified the needs and major concerns of faculty members regarding IR. It has also categorized these concerns. This is followed by the discussion of research framework and methodology employed to investigate factors affecting faculty reluctance to participate in IR.

1.2.1   Purpose of the Study

When the institutional repository concept was born, the key characteristic was interoperability. Generally, open access digital repositories have implemented the Open Archive

Initiative-Protocol for Metadata Harvesting (OAI-PMH) as a mechanism to achieve

interoperability in the exchange of meta-information with other systems (Muhammad & Burk,

2007). However, the process of implementing an IR proved to be neither simple nor immediate.

The stakes were high for all the stakeholders involved in the process; faculty (authors),

institutions with librarians and administrators, and publishers.

1.2.2   Stakeholders Involved in Scholarly Communications

Currently, the scholarly communication process involves individual scholars and

researchers, academic institutions and librarians, scholarly and scientific society publishers,

commercial publishers, government institutions, and others. Crow (2002a) describes IRs as a

catalyst for change and explores their impact on major stakeholders in the scholarly

communication process. There is a complex and interwoven relationship among all the

stakeholders that is best illustrated in Figure 1.1 Each stakeholder group plays an important role

in the scholarly communication process. Faculty members at most research universities are

considered to be the primary authors and consumers of research literature in academia. They

also depend on libraries to purchase and provide access to current and past knowledge. In

addition, faculty and researchers rely on the financial support of funding agencies and academic

institutions. At the same time, academic institutions depend on faculty and researchers to help

build and maintain an institution's prestige. Publishers are mainly involved in packaging,

preserving and distributing scholarly knowledge, but also rely on faculty and researchers to

provide content and peer review process.
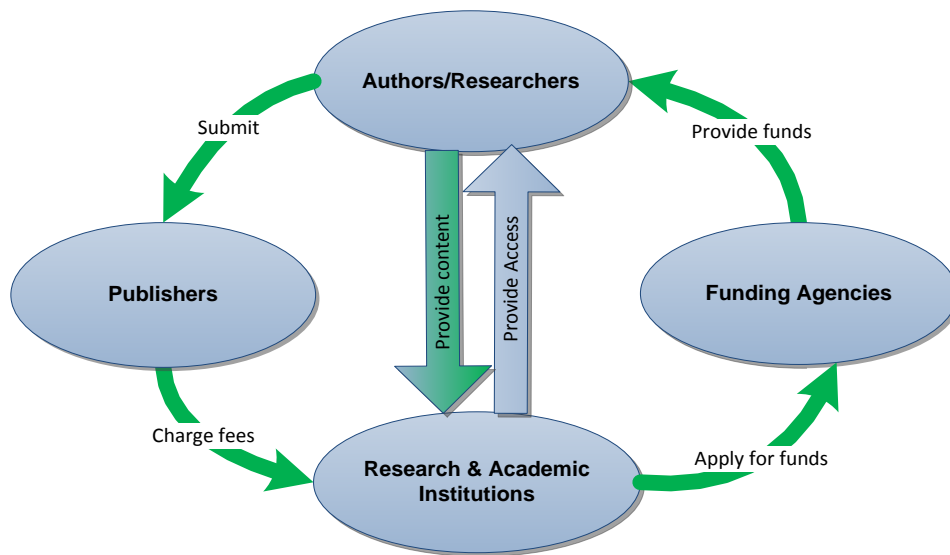
Figure 1.1. The stakeholders involved in scholarly communication process.

All of these stakeholders have an important role and wish to benefit from greater sharing of information. However, faculty members at most research universities are considered to be the primary authors, consumers and quality controllers of research literature in academia. Therefore, faculty members are the key players in scholarly communication process, and are a crucial factor to developing and maintaining a successful IR. To implement the education and outreach program, librarians first have to identify the main reasons why faculty decide to participate or not in an IR. Therefore, the purpose of this study is to further investigate the faculty attitude towards IR, in particular why faculty members choose to participate or not participate in UNT Scholarly Works repository.

1.2.3   Research Problem

A number of exploratory studies investigated incentives and influences that affect faculty members in depositing their scholarly work in open access institutional repositories. The majority of these studies employed qualitative approaches using surveys and interviews (Foster, & Gibbons, 2005; Gadd, Oppenheim, & Probets, 2003; Kim, 2007; Kim 2010; Kim 2011;

Lercher 2008; Watson, 2007). However, little has been done to study the attitude-behavior relationship that uncover the barriers perceived by faculty as they relate to the actual deposits in IR. Furthermore, numerous studies that investigated faculty behavior towards OA repositories have employed quantitative approach and assessed deposit data directly from repositories (Covey, 2009; Xia, 2008; Salo, 2008; Xia & Sun, 2007). However, they have not directly addressed the reasons why faculty members choose to deposit or not to deposit their work into an IR.

Many of these previous studies have investigated the motivating and hindering factors, using different forms of surveys that focused on external factors, which were either social or technological in context. However, the literature on OA repositories contains very little on internal factors and the psychology of the resistance. Studies on faculty attitudes toward OA repositories revealed that scholars tend to be motivated not only by social and contextual factors but by their psychological judgment, as well (i.e., perceptions) (Heterick, 2002; Devakos, 2006).

Johnson (2002) writes that the problem of resistance from faculty members is more one of indifference than active resistance. Furthermore, Quinn (2010) argues that faculty resistance can manifests itself in both cognitive and affective or behavioral level. Therefore, to better understand faculty resistance towards IR, while taking into account the differences in personality traits as well as academic disciplines, this study employed a psychological approach. A psychological approach helps to differentiate between the state of not being persuaded (passive resistance) and an actual motivation not to comply (an active resistance). Quinn describes motivation as an affective state (i.e., misunderstanding or confusion) that comes as a result of a cognitive state (i.e., misinformation or misinterpretation). In addition, other studies (Dulle, 2010; Mann, Walter, Hess, & Wigand, 2009) found that attitude is a significant predictor of scholars'

behavioral intention to participate open access publishing. The purpose of this mixed method study was to analyze whether a relationship exists between faculty attitudes (perception) of IR (active and passive resistance), and their willingness to deposit their work into an IR (actual deposits). Thus, all the faculty concerns regarding the faculty participation in an IR, identified from previous studies, were summarized and categorized in two groups of factors that affect faculty deposits in IR. Table 1.2 shows the first group that contains cognitive factors and the second group that contains affective factors.

Table 1.2

Cognitive vs Affective Factors Affecting Faculty Attitude Towards IRs

Summarized faculty concerns regarding participation in IRs	
Cognitive factors	**Affective**
Not familiar with IR goals	Lack of trust in IR
Doesn't know or recall how to submit to IR	Afraid of technical steps
Doesn't know copyright laws	Afraid of copyright infringement
Doesn't know if publisher permits	Afraid of someone plagiarizing their work
Perceived IRs as low quality platforms	Afraid of their work being tainted

1.2.4   Research Questions

In an effort to shed more light on faculty reluctance to deposit their work into an IR, and specifically their attitude-behavior relationship, this study examined the relationship between the faculty member's perceived barriers, their cognitive and affective state, and their willingness to deposits their work into IR. Findings form previous studies (Kocken & Wical, 2013; Hahn & Wyatt, 2014) found that majority of faculty were not aware of open access repositories and their purpose. Thus, the first research question is intended to reveal the faculty familiarity with OA and awareness of open access policy. The purpose of the research questions 2, 3, and 4 is to investigate the factors affecting faculty members' intention to participate in IRs and the relationship of these factors with the intention to deposit.

1. How does familiarity with OA and OA policy affect faculty intent to participate in IR based on age, college, rank and status?

2. What are the factors (attitudinal, social, and individual) that affect faculty attitudes towards participation in IRs?

3. How do these factors affect faculty likelihood to participate in OA IR?

4. What is the extent of each factor affecting faculty participation in IR?

1.2.5   Research Approach: Joint Effects of Affect and Cognition

According to the most popular conceptualization of attitude theory, the expectancy-value model, the evaluative meaning arises spontaneously and inevitably as we form beliefs about the object (Ajzen & Fishbein, 1980). The assumption behind the expectancy-value model of attitude is that evaluative judgments are the result of cognitive processes: associations between the attitudes object and valued attributes. According to this model each belief associates the object with a certain attribute, and a person's overall attitude toward an object is determined by the subjective values of the object's attributes in interaction with the strength of the associations. Although it is known that people can form many different beliefs about an object, this model assumes that only beliefs that are readily accessible in memory influence attitudes at any given moment. However, some theorists have challenged this assumption, proposing that evaluations may also be controlled by affective processes. According to Zajonc and Markus (1982), the affective primacy hypothesis assigns precedence to affect over cognition. Therefore, an alternative and more popular position was developed based on the multi-component view of attitude, the theory of reasoned action. This position assumes that evaluations are influenced by cognition as well as affect (Eagly & Chaiken, 1993). In other words, individuals differ in their reliance on cognition versus affect as determinants of attitude, and the two components also take on different degrees of importance for different attitude objects. Studies on faculty attitudes

toward OA repositories revealed that scholars tend to be motivated by not only social and contextual factors but by their psychological judgment/perceptions as well. The purpose of this study is to identify both factors (affective and cognitive) that affect faculty participation in IR and to examine the extent to which these factors influence faculty deposits. Thus, this research approach is the most suitable for the current research.

The attitude-behavior relations have been one the largest topics of study in the social and behavioral sciences. Attitude is now recognized as relevant for understanding and predicting social behavior. A large number of studies on attitude-behavior relation applied or tested the theories of reasoned action and planned behavior. According to Ajzen (1991), there is now little doubt that these theories can be usefully employed in various domains. Other studies have explored the cognitive processes that mediate the relation between intentions and behavior (Gollwitzer & Brandstaetter, 1997; Gollwitzer & Schaal, 1998). The expectancy-value model developed by Feather (1967) and & Ajzen (1975) has provided a useful framework for research on attitude formation and organization, but the debate over the cognitive versus affective basis of attitudes has yet to be completely resolved. The literature review regarding the attitude-behavior relationship shows that the contributions of affect and cognition to overall evaluation vary with the attitude object (i.e., intrinsic, extrinsic and contextual factors) and individual differences (i.e., personality traits). Thus in order to incorporate all the factors that affect faculty participation in IR, and investigate the attitude-behavior relation, as well intention-behavior relation, the current research will use the theory of planned behavior.

1.3   Overview of Theoretical Framework

1.3.1 Overview of the Theory of Planned Behavior

There are a great number of publications on research and theory dedicated to showing attitude as a predictor of behavioral intentions and overt behavior. The majority of studies concerned with the prediction of behavior from attitudinal variables were conducted in the framework of the theory of planned behavior (Ajzen, 1991) and to a lesser extent, its predecessor, the theory of reasoned action (Ajzen & Fishbein, 1980). Thus, to investigate the faculty attitudes toward participation in IR, this is further rationale for employing the theory of planned behavior. Theory of planned behavior was used in the majority of studies concerned with the prediction of behavior from attitudinal variables, and its predecessor, the theory of reasoned action.

1.3.2 Model of Factors Affecting Faculty Self-Archiving

To understand faculty members' attitudes and behavior towards participation in OA repositories it is necessary to first identify factors that affect faculty self-archiving. The most prominent model regarding the faculty self-archiving that identifies main factors affecting faculty members' self-archiving behavior was developed by Kim (2007, 2010). This model was developed based on the empirical study conducted in 17 universities, with 684 faculty members. Kim's (2007, 2010) research included all types of self-archiving venues such as personal webpage, departmental/university website, disciplinary repertoires and IRs. However, the current research is an attempt to better understand faculty members' perceptions of IR, specifically their attitudes towards participation in OA IR. Therefore, the current research used a modified model, which included other affecting factors based on the literature review findings. The current

research employed the impeding factors identified in the model of factors affecting faculty self-archiving in order to study faculty members' attitudes towards participation in IR.

1.4 Significance of the Study

Although open access idea has been around for almost three decades' research shows that majority of faculty members still consider publishing in open access repositories as detrimental to their academic career, potentially posing a threat to earning tenure or risking their chances at obtaining research grants. However, there are several benefits to faculty when adopting OA, but these benefits differ for various communities. Thus, the significance of this research is to shed light in faculty attitudes towards OA publishing as a positive change in the scholarly communication system. If it is to become widespread the benefits of OA have to be communicated to a number of stakeholders. However, this change starts with the authors, which are the cornerstone of open access publishing. Here at UNT as well other universities librarians and other proponents of OA have been engaged in efforts to better promoted OA.

1.4.1 Education and Outreach Efforts

Academic libraries play an important role in facilitating the scholarly communication process and transforming the publication process. Both the development of IR and open access journals have made libraries key stakeholders in the debate of the future of scholarly communication (Willinsky, 2006). Institutional repositories offer an open access platform for faculty and an easy submission process of scholarly work that encourages cross-campus collaboration. However, despite all the benefits described by the proponents of IR, the fact remains that a large number of IRs remain thinly populated. The findings from this research will

be a source of information for librarians and IR staff in developing more effective outreach

programs. The results from this study of faculty needs and concerns regarding IRs should be a

great source of information that could be useful for outreach efforts.

In order for the IRs to meet the needs of faculty and increase faculty participation a very

important issue to consider is the faculty attitudes and behavior towards IRs. Therefore, the

direct benefits to the faculty need to be articulated clearly and emphatically to increase their

participation and support.

1.4.2   Background of UNT Scholarly Works Repository and Outreach Efforts

The University of North Texas (UNT) was the first public institution in the state of Texas

to implement a policy in support of open access (Approved on February 1, 2012). Since the UNT

Scholarly Works was officially launched in October 2010, the staff has been very active in

promoting this IR. They have provided a web presence on the UNT library website, the

university website, and the UNT open access policy webpage. In addition, they have presented at

several departmental meetings around campus (e.g., World Languages, Literatures and Cultures,

Sociology, Electrical Engineering, etc.) as well as Faculty Senate meetings every semester, and

have also met with individuals or groups of faculty members to discuss UNT Scholarly Works

and their services. Also, the Scholarly Works staff sends an annual holiday e-mail card, in each

department providing them with an update of the content of Scholarly Works repository and

remind them to include their work in the repository. In addition, the staff hold 2-3 events during

the annual international open access week that is held every year on campus, and a data day

event every semester where they provide information about UNT Scholarly Works. They also

distribute UNT Scholarly Works brochures, post-it notes, and pens at every meeting and events

as well as throughout campus.

1.4.3   Education and Outreach Results

According to a survey of the Association of Research Libraries (ARL) members the current practices are not successful. Most of the libraries from this survey have used different outreach strategies, such as presenting to faculty, offering to deposit electronic materials for authors, advocating for subject specialist, and doing more targeted outreach (University of Houston Libraries, 2006). However, almost two thirds described content recruitment as difficult.

Despite all the enthusiasm from the UNT Scholarly Works staff, UNT faculty members have shown reluctance towards depositing their work into UNT Scholarly Works Repository. As shown in the previous section, IR contains a very small number of journal articles by their respective faculty members. Table 1.3 shows the highest rate of deposits in 2012, the same year UNT adopted an open access mandate. The graph shows a significant decrease in the next year, 2013, a slight increase in 2014 followed by a slight drop in 2015 and 2016. Nicholas, Watkinson, Brown, Russell, and Jamali (2013) and Salo (2008) agree that mandates alone may not be the determining factor in the success of IR, but are an enabling tool to change the mindset and culture of participation in OA repositories.
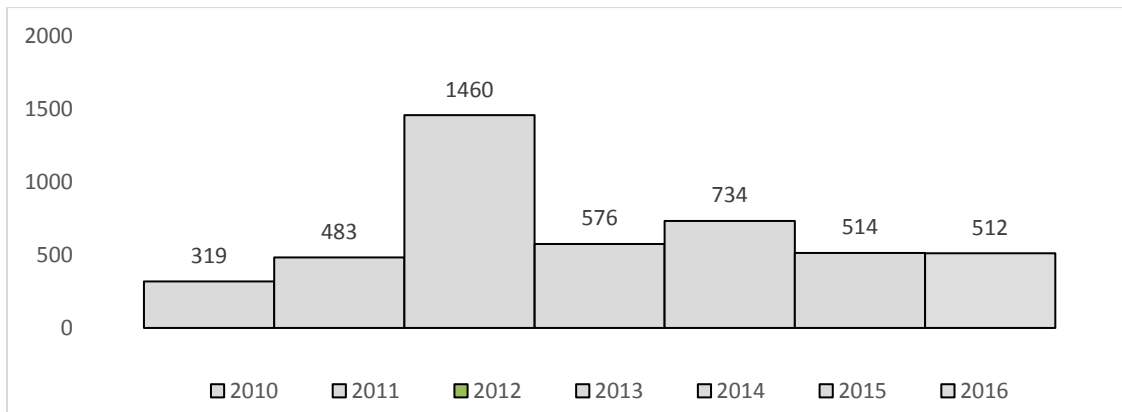
Figure 1.2. UNT scholarly works number of items deposited by year.

1.5   Implications and Limitations

The current research may serve as a practical guideline in evaluating and promoting open

access publishing in general. The methods developed by this study offer a theoretical approach

for identifying factors affecting faculty attitudes towards open access in respect to three distinct

types of influences: attitudes, subjective norms, and perceived control. However, this study

makes several assumptions that need to be addressed. The participants are faculty members at a

public university in North Texas. Therefore, readers are cautioned when using the results of the

current study due to the following limitations.

First, faculty members are frequently engaged in research activity and produce work that

could be classified as scholarly, but not all faculty are engaged in research activity and produce

scholarly work. However, all faculty members do have the potential to engage in academic

research and produce scholarly work. Therefore, in this research study I decided to focus on all

faculty that work within institutions of higher education. In particular, this study included only

those individuals that are classified as faculty by University of North Texas policy and does not

include students or other individuals working within the institution.

Second, while the open access IRs are an international phenomenon with a wide variety

of open access philosophies and practices, this research is focused on the current attitudes and

perceptions toward OA within United States, in particular within a large public university in

Texas.

Third, as previous research shows over the half of faculty are not familiar with open

access meaning and its goals. For a number of faculty open access publishing is rather

synonymous with open access journals that may or may not require authors to go through the

peer review process. However, this research focuses on scholarly work in IR that includes

research articles, books, conference presentations and proceedings, as well as other types of scholarly work, which can be peer reviewed or non-peer reviewed, published or non-published. Institutional repositories as a subset of open access publishing are even less known among the faculty therefore the assumption remains that a large number of faculty that chose not to participate in the survey are likely to be unfamiliar with the OA IR.

1.6   Definitions of Terms

1.6.1   Open Access (OA)

In its broadest sense, the term open access is used to describe knowledge resources that are made available in the public domain for public access, without the hindrance of subscription fee or access charges. Open access is defined by the Budapest Open Access Initiative (BOAI) (2002) as:

> free availability on the public Internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the Internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited. (p. 3)

The concept of open access publishing has proliferated after the three OA declarations, commonly known as the BBB declarations. Similarly, open access is defined by the other two OA declarations, Berlin and Bethesda. The philosophy behind these three initiatives is to provide free of charge and unhindered access to research and its publications without copyright restrictions. The premise of this philosophy is that research funded by tax payers should be available free of charge to tax payers and research as a public good should be available to all irrespective of their paying capacity. These organization argue that open access research literature has not only made new ideas easy and quick to disseminate, but the impact of research

can be quantitatively evaluated by various bibliometric, scientometric and webometric methods. These three movements got the support from scholars, scientists, educationists, publishers, research institutions, professional associations and library organizations. According to Pomerantz and Peek (2016), the term *open* continues to be used in new ways which will lead to more "phraseological neologisms." The same authors provide a brief description of the journey of the term *open,* which is used to indicate that the resources are accessible for no monetary cost. Furthermore, the same authors explain that often times the term open access is synonymous with "free access" a term commonly used to describe an unbridled access to educational and scientific information. Pomerantz, and Peek (2016) explain that the term *open* has been applied in variety of contexts to create words with new and different meanings. However, in the current context open access means rights to use, share, distribute, and build upon work with possible restrictions. According to the same authors being able to make use of the resources is crucial, therefore *open* means *rights* to use, reuse, and reproduce the material that may be patentable or copyrightable. *Open* also implies *use* which means the right to read material, cite it or republish it (with proper citations or credit to authors) (Pomerantz & Peek, 2016).

1.6.2   Institutional Repositories (IRs)

The 'institutional repositories' term is closely related to the term 'digital libraries', 'digital repositories', 'digital collections', 'open access repositories', 'web based digital repositories' and 'digital archives'. This is most likely due to the fact that IR are closely related to some digital libraries and digital archives. There are cases when digital collections that were created and maintained by an academic library have gradually changed into a de facto open access repository. Open access repositories can assume many forms and serve a variety of

purposes. Depending on the goals established by each institution, an open access repository can contain any work product generated by the institution's students, faculty, non-faculty researchers, and staff. The first academic institutional repositories begun around the time Budapest Open Access Initiative was adopted in 2001. The web based institutional repositories are defined as electronic systems that capture, preserve, and provide access to the intellectual output of a community in a digital format (Piorun, Comes, & Billings, 2007).

Open access digital repositories fall into roughly two classes: Institutional Repositories (IRs) and Disciplinary Repositories (DRs). Institutional repositories (IRs) are defined as digital collections that capture and preserve the intellectual output of a single university or multi-partner community (Crow, 2002a). Foster and Gibson (2005) define IRs as an electronic system that captures, preserves, and provides access to the digital work products of an institution. According to these definitions IRs are primarily but not exclusively academic and research institutions, and they represent a historical and tangible embodiment of the intellectual life and output of an institution. The majority of the IRs are not discipline-specific and aim to archive an entire range of a university's intellectual output. This type of IR is the focus of the current research.

1.6.3   Faculty

According to UNT draft policy (see Appendix B) faculty members that are subjected to annual review are divided into professors, librarian, instructor, lecturer and clinical faculty. The same document provides the definition for each faculty position. However, for the purpose of this study, faculty members are defined as any type of faculty at universities that produce scholarly works, such as peer review articles, non-peer reviewed article, white paper, conference proceedings, data sets, and learning objects. The current study also included researchers who are

frequently but not always faculty members employed by university to primarily engage in

research activity and publish the results in traditional or OA journals.

1.6.4   Scholarly Works

Faculty members can contribute published journal articles (pre-prints or post prints), grey

literature such as white papers, technical reports, conference proceedings, data sets, et cetera.

They can also deposit learning and instructional materials such as syllabi or digital learning

objects. All these materials are accessible via the Web through the repository. UNT defines

scholarly works as "any and all products created by UNT Community Members in the course of

academic activities supported directly or indirectly by UNT"

(https://policy.unt.edu/policydesc/open-access-self-archiving-and-long-term-digital-stewardship-

university-north-texas-schol).

1.6.5   Faculty Participation

Harnad (1992), coined the term "self-archiving", when he posted a message on a mailing

list calling on fellow researchers to make their papers freely available on the internet. In the

broader sense, self-archiving refers to the practice of depositing one's own work in an OA

repository. In other words, it is the act whereby an author deposits a free copy of an electronic

document in an OA repository accessible via the World Wide Web. This often means that a

faculty member personally submits his or her work and completes the metadata, or it could mean

that faculty submits though a mediator (i.e., librarian, departmental secretary, etc). Kim (2007)

broadly defines self-archiving as making research publicly available on the Web. The term *self-*

archiving continues to have different meaning with the evolution of the open access publishing modes.

There is not one true definition within the literature when it comes to self-archiving. Dubinsky (2014) notes that when IR administrators were asked how they defined the term "self-archiving" as it relates to faculty submission of content to an IR, responses revealed a variety of definitions. In the broader sense, self-archiving means a faculty agreement to have their scholarly work included in the IR. In some instances, it can mean an individual faculty member personally submits his or her own work into the IR and completes the required metadata submission form. However, in other instances it could mean that faculty submits through a proxy (i.e., librarian, staff) who completes the necessary submission form and process. UNT defines self-archiving as "a process by which UNT Community Members deposit their own scholarly works in an open access digital repository" (https://policy.unt.edu/policydesc/open-access-self-archiving-and-long-term-digital-stewardship-university-north-texas-schol).

On the other hand, Xia and Sun (2007) suggest that "self-archiving" is a myth, and that much of self-archiving is in fact mediated by librarians and/or staff who manage deposits on behalf of faculty. This can lead to the belief that self-archiving barriers are not as important as most of the faculty members have support in depositing their work within their respective institutions. The majority of academic institutions have dedicated mediators (i.e., librarians, IR staff member, etc.) in assisting faculty members with self-archiving in IR.

One can see that without defining these terms, measuring faculty participation and faculty self-archiving in IR is a difficult task. Both terms can be either narrowly or broadly defined. This study used a broad definition of self-archiving, which is more in line with the UNT definition. However, the current study will use the term *faculty participation,* which entails any

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deliberate action or agreement by faculty member to have their scholarly work included in an IR. This means any inclusion of the faculty-authored content reflects *faculty participation*, and no attempt was made to determine how faculty content was added to the IRs (i.e., whether by self-archiving or mediated deposit).

CHAPTER 2

REVIEW OF RELEVANT LITERATURE REGARDING SCHOLARLY COMMUNICATION

AND OPEN ACCESSS REPOSITORIES

This chapter reviews the literature relevant to scholarly communication and open access. It begins with the notion of knowledge as a public good, followed by a brief history regarding the transformation of scholarly communication and its different forms of information dissemination. The last portion of the first sections reviews the role and importance of the open access repositories in scholarly communication. However, the main focus of the literature review is on the factors that affect faculty participation in OA IR.

2.1   Historical Context: Scholarly Communications and Open Access

2.1.1   Scientific Knowledge as Public Good

There is no one agreed upon definition of knowledge among the scholarly community. Scholars continue to debate the concept of knowledge and its various aspects, as well as the many ways we can obtain knowledge. However, one thing that most scholars agree upon is that it is the desire to know and the pursuit of facts that drive most of scholars. Therefore, for the purpose of this study I focused on propositional knowledge, which refers to knowledge of facts or true postpositions (Lemos, 2007).

It is widely believed within academic circles that the knowledge created by an individual and then recorded by an institution or organization should become available for later use, thus laying the foundation for future knowledge. This conclusion is reached based on the assumption that individual discoveries and scholarly contributions is what makes nearly all new discoveries possible. In other words, the new knowledge is built upon previous knowledge, through recall of prior learning (Gagne, 1985). Furthermore, according to Bruner (1961), the thorough reading and

comprehension of prior knowledge enables us to internalize that knowledge and thus generate new ideas, new discoveries, and solve new problems.

Also, the incremental growth of knowledge overtime, as well as preservation and dissemination of that knowledge can result in great new discoveries and advances in different fields such as medicine, technology, social sciences, and others. However, this progression from old to new knowledge or from one field to the other is not always clear or direct because according to Gleick (1987), the potential of some specific previously recorded knowledge can never be predicted. To illustrate this point Gleick describes how a 20th century mathematician, Benoit Mandelbrot, solved an engineering problem of reducing noise in telephone lines transmitting computer data, while using a 19th century mathematical discovery known as Cantor. One can clearly see that using the earlier work of a mathematician, a real solution to an engineering problem came to light. Without access to this prior knowledge engineers would have to choose less efficient ways to solve this problem, with the greater possibility of not finding a solution. Therefore, one can argue that the failure to communicate knowledge and distribute information can significantly hinder the potential for new ideas. Thus, as most proponents of OA would argue the broad and uninterrupted dissemination of knowledge should remain a priority for all researchers and those supporting their work.

Furthermore, there are those who believe that scientific knowledge is meant to exist as a "common property" (Merton, 1968, p. 611), as it derives from the federal, state and local government funds in the United States. The National Science Foundation (NSF) 2015 budget appropriation was $7.344 billion. NSF is a federal agency dedicated to the support of basic research and education across all fields of science and engineering. In addition, most colleges and universities commit tens of billions of their own dollars each year to support research, with some funding originating at the state level. However, the colleges and universities are required to pay an

access fee for many of the scholarly and research journals originating from publicly funded research. It is widely believed that most faculty and researchers do not agree with the publications that keep articles behind paywalls. According to an article published in *The Guardian* in 2012, more than 10,000 academics have already joined a boycott of Elsevier, the gigantic Dutch publisher, in protest of its journal pricing and access policies.

(http://www.theguardian.com/science/2012/apr/24/harvard-university-journal-publishers-prices).

The possibility of adding to scientific knowledge and making a significant contribution to society at large is a motivating factor for scholars and researchers, in addition to the financial compensation. Their notable contribution to their respective field of study often leads to recognition of scholars and researchers as well to new opportunities to advance one's research and career. Therefore, the wider dissemination of scholarly work is believed to be in the best interests of faculty and researchers. Also, it is the willingness of faculty and researchers to share information that seems to support Merton's view of scientific knowledge as a form of common property that should be accessible to all. Many in academia believe that university-created knowledge is largely meant to be shared, unless restricted for national security reasons, or for reasons of intellectual property or proprietary arrangements with private corporations. Machlup (1980) describes knowledge as a social or public good of the "purest type" (p. 159). Rawls and Kelly (2001) argue that in order to prosper, a society should distribute social primary goods items equally such as civil rights, power and opportunity. This view of fairness should apply in regard to access of information and knowledge as a social primary good that society should distribute equally. This view is particularly relevant when it comes to faculty and researchers in their quest to produce more knowledge for the benefit of all. In support of open access to knowledge, Scherlen and Robinson (2008) state that " international law suggests that all human beings have a right to knowledge… and an equal right to benefit from advances in knowledge" (p. 68). Another

proponent of OA, Willinsky, identifies knowledge as a public good that should be "provided to everyone who seeks it, without their use of it diminishing its value" (2006, p. 9). The notion of the knowledge as a public good has existed throughout the history of scholarly communication. However, academic institutions are faced with opposing forces of the market. On one hand, in a capitalist free market environment, citizens buy and sell goods that hold an agreed upon value. At the same time, there are institutions/libraries who wish to pursue what is best for society and provide access to knowledge for all who seek it. One can easily understand the argument of restricting access to information when the author wishes to do so for competitive or security related reasons. However, most of the scholars and researchers are willing to share information widely. Other issues arise in cases when public universities receive funds from private entities for the purpose of conducting research. These types of legal issues of intellectual property often evolve into complex disputes, and continue to be a matter of controversy in an open or traditional system of knowledge dissemination. However, these issues are beyond the scope of this study. What remains apparent as described in this section is the notion of knowledge as a public good, which is believed to be one of the primary drivers behind the OA movement. Today, colleges and universities increasingly seek for opportunities to move closer toward an environment of open access to scholarly research through steps such as the creation of open access journals, and OA repositories.

2.1.2   Scholarly and Scientific Communication

Before examining the attitudes of faculty towards open access publishing, it is important to understand the history of scholarly communication and scholarly publishing. This section reviews the evolution of scholarly and scientific communication and its transition towards open access publishing.

In the broadest definition, scholarly communication can be described as a system intended to facilitate the exchange of ideas through a broad range of mediums. This description is more aligned with Shaughenessy (1989), who defines scholarly communication broadly as "the social phenomenon whereby intellectual and creative activity is transmitted from one scholar to another" (p. 69). In a similar way Borgman (2000) defines scholarly communication as "the study of how scholars in any field – whether physical, biology, social, behavioral sciences, humanities, or even technology – use and disseminate information through formal and informal channels" (p. 414). The scientific communication is defined in a similar way but the term is used to describe a more specific group of scholars. Scientific communication is defined by Garvey and Griffith (1980), as "information-exchange activities which take place mainly among scientists actively involved on the research front" (p. 9). According to the same authors scientific communication involves the ongoing discussion between two scientists through informal means such as conversations, to the most formal means such as journal articles, books, reviews, and other mediums. In other words, the exchange of scientific knowledge among scientists is conducted through both informal and formal channels. The dissemination of knowledge through informal channels is usually considered to be personal conversation, email messages, personal letters, conferences, and similar means. This form of scholarly communication is known as the "invisible college" and typically refers to "an elite of mutually interacting and productive scientists within a research area" (Crane, 1972, p.34). On the other hand, the formal channels by which faculty and researchers exchange their information and knowledge is conducted through scholarly publication. Scholarly publishing is a crucial subset of scholarly communication with a focus on works that are published – primarily peer-reviewed journal articles – but can include other forms that are made available in open access publishing platform, such as an online journal or a type of web-based digital repository. The scholarly publishing process involves the peer review and validation of manuscripts, as well as publication in

the form of a journal article or monograph. According to Crane (1972), the information is evaluated and validated before it is disseminated to a wider scholarly community, thus this process is known as formal scholarly communication.

Based on the above definitions scientific communication appears to have has similar features as scholarly communication, but with more narrow focus. Thus, one can argue that scientific communication is a part of scholarly communication. The current research used the term scholarly communication to imply both scholarly and scientific communications. The next section will describe the major developments in the system of scholarly communication.

2.1.3   Scholarly Publishing

The first means of scholarly communication is believed to be rather informal, mainly through the writing of letters. Over three centuries ago, the scholarly journal was created by a small group of scientists as the first formal means of scholarly communication. Most historians recognize the *Journal des Scavans* as the first in print scholarly journal from Europe, which enabled scientists to share their knowledge and ideas. Within approximately the same time, the Royal Society of London published the first issue of *Philosophical Transactions*, which was the first publisher to use an editorial board to select articles for publication (Willinsky, 2006). Today, the peer review process is a common practice among scholarly journals and is defined by Brown (2004), as the "evaluation of research findings for competence, significance, and originality by qualified experts" (p.7). In order to divert the focus of criticism from the person to the scholarly writing Henry Oldenburg, editor of *Philosophical Transactions,* which was the first person to institute a form of blind peer review. The blind peer review is still a common practice today and is commonly known as peer review. This peer review process is a crucial element of many scholarly journals.

Furthermore, the peer review process determines the quality of the publication and characterizes it as "scholarly".

Over the years, scholarly journals have undergone several transformations. The most significant are considered the electronic scholarly journals and open access journals. Electronic journals are considered the birth of the modern system of scholarly communication, and they have evolved since their inception, especially concerning their delivery mechanism (Shorley & Jobb, 2013). Today, most publishers offer continuous access to content and citations that can be linked straight from the paper. However, the idea of electronic communication and management of scholarly works is not new. Bush (1945) envisioned something very similar to the computers and electronic databases that we use today to manage and distribute information. Bush described a device "in which an individual stores all his books, records, and communications, and which is mechanized so that it may be consulted with exceeding speed and flexibility" (p. 106). Bush is also credited for the introduction of the information retrieval concept, which is a vital part of scholarly communication process.

In the late 1960s and 1970s, scholars attempted to better coordinate and manage the exchange of information among themselves, utilizing the available technology at the time. This took the form of the Information Exchange Groups (IEGs) system. This system grouped a list of members who then were able to receive copies of items submitted by any other member. Central to this system were the staff that was able to produce and send multiple copies of e-mail to all the members on the list once the e-mail was received (Houghton, 1975). This is the beginnings of what we know today as "email lists" or "listserv". However, once the IEG became too large it also became too costly to manage and did not survive (Houghton, 1975). Nevertheless, this remains a vital part in the transformation of the scholarly communications process. In the late 1970s, Senders (1977) wrote an article that quite accurately predicted the current process of the scholarly

publishing process. Senders described the process by which researchers would be able to type into a typewriter connected to a television screen, connect to other computers to communicate with colleagues, and submit the final work to the publisher via the intranet network. This type of scholarly communication system very much resembles the current one, where researchers regularly submit journal articles, reviewed and made available by publishers and then stored in databases for later use. The members of the American Council of Learned Societies shared a similar vision in 1979. While the basic technology for implementing this vision was existent at the time, it was a rather drastic change that was not going to happen very quickly. The American Council of Learned Societies (1979) noted that the issues in establishing this type of system were not only technical in nature but organizational and behavioral as well.

The first electronic peer-reviewed journals started to appear in the early 1990s. Stevan Harnad, in cooperation with the American Psychological Association, is believed to have launched the first refereed electronic journal, *Psycoloquy.* It was launched in 1989 and distributed via e-mail and Usenet newsgroup (Harnad, 1992). Soon after in 1991, six other refereed electronic journals were established (Wilson, 1991). However, concerns over the quality control and lack of fast processing computers were still prevalent. In the mid-1990s, the number of electronic scholarly journals has started to increase rapidly. According to the Association of Research Libraries 73 peer-reviewed electronic journals and newsletters existed by 1994, 417 by 1996, and 1,049 by 1997 (Mogge, 1998). The number continued to grow rapidly with the development of the World Wide Web and the Internet technologies.

2.1.4   Open Access Scholarly Publishing

With the advent of the Internet and the Web a whole new way of OA publishing was possible. This created a paradigmatic shift in scholarly publishing practices. Scholars now have the

opportunity to move from formal scholarly communication to other forms of communicating through personal web pages, departmental web pages, and institutional web-based repositories. These different platforms offer scholars the opportunity to not only diffuse knowledge quickly and more widely, but to also collaborate with other academic disciplines across the world. Before Harnad coined the term 'self-archiving,' the 'self-archiving' practices started as a collection of digital documents, which later turned into digital repositories. The first OA repository was called arXiv.org and was launched in 1991, which allowed researchers to self-archive the preprints of their electronic scientific papers in the field of physics, mathematics and other hard sciences.

In the recent decades, we have seen the emergence of the open access publishing movement that has emerged from a long evolutionary history of scholarly communication. Open access publishing is a more specific form of scholarly publishing, which strives to counterbalance the domination of the commercial publishing industry and has received more attention over the last decade. With rounds of journal price increases, much of research literature is inaccessible to many researchers, students, and others. Thus, the current system of scholarly communication limits and obscures the readership and research. Therefore, the role of alternative scholarly publishing models, such as OA repositories in breaking the monopolies of publishers are crucial. Moreover, institutional repositories can serve this function whether they are implemented on individual campuses or in a collaborative project. IRs can be viewed as one of the new channels of scholarly communication and a platform for faculty to disseminate their work to the world via World Wide Web.

2.2   The Role of Institutional Repositories

According to Crow (2002a), IRs are the foundation for a new disaggregated model of scholarly publishing. IRs are not a threat to the traditional publishing models but rather provide an

immediate and valuable complement to the existing scholarly publishing model. Crow (2002a) notes that IRs "stimulate innovation in a new disaggregated publishing structure that will evolve to improve over time" (p.4).

2.2.1   Institutional Repository Benefits

The goal of an IR is to collect, preserve, and make persistently accessible a variety of scholarly materials (Palmer, Teffeau & Newton, 2008). The IRs are intrinsically dependent on open access as they have implemented the Open Archive Initiative-Protocol for Metadata Harvesting (OAI-PMH) as a mechanism to achieve interoperability. Institutional repositories do not only host digital items but they preserve them from loss or damage. While libraries do facilitate communication among faculty and researchers, IRs seeks to go beyond the facilitating role to contribute actively to the evolution of scholarly communication. Institutional repositories make faculty and students' work more easily accessible to the members of the institution and others through different Web search engines (Lynch, 2003). At the same time the authors have the option to maintain ownership of their own work in order to control who can access it. According to Thomas, McDonald, Smith, and Walters (2005) potential benefits of IRs are as follows: student research projects can continue from where the last class left off; other universities can evaluate their research compared to the host university research output and global digital libraries. They also have postulated that e-journals can link their resources to the host university as well as access the collective digital output in one place.

Under the traditional system of scholarly communication, most of the intellectual output and value of the institution's intellectual property diffuses through thousands of scholarly journals. This increases both the visibility and the reputation of the institution's status by reflecting high quality scholarship, which can then lead to funding from both public and private sources. Thus, IRs

can help increase the scientific, social and financial value of the institution, while faculty publication reflects positively on the host university.

The Open Archive Initiative (OAI) protocols created the potential for a global network of cross-references and searchable research information. Institutional repositories as interoperable repositories that "support the researcher's ability to search seamlessly across repository types, facilitating interdisciplinary research and discovery" (Crow, 2002a, p. 10). By design, networked open access repositories lower access barriers and offer the widest possible dissemination of scholar's work. This is increasingly valuable because the trend towards multidisciplinary approaches has increased across the sciences, social sciences and humanities. Open access IRs enable faculty to offer their scholarly work to a worldwide audience. This can increase citations of their scholarly work, thus maximizing their *impact factor*. Impact factors refer to the number of subsequent citations a work receives (Donovan & Watson, 2011). Author benefit derives from the increased article impact that open access articles experience compared to their offline counterparts. According to Crow (2002a), research has demonstrated that "with appropriate indexing and search mechanism in place, open access online articles have appreciably higher citation rates than traditionally published articles" (p.23). A number of studies have shown citation impact advantages for open access (Antelman, 2004; Eysenbach, 2006; Brody & Harnad, 2004; Norris, Oppenheim, & Rowland, 2008; Perkel, 2006; Xia & Nakanishi, 2012). This type of visibility and awareness bodes well for both the individual author and for the author's host institution.

2.2.2   IR Foster Interdisciplinary Collaboration

In the recent years, there has been a big push by major funding agencies and academic institutions to encourage interdisciplinary research (Shorely & Jobb, 2013). The same authors argue that the main reason for this drive is the belief that the major new breakthroughs will not

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necessarily come by digging deeper and deeper into more and more narrow disciplines but by bringing together findings and ideas from different disciplines. The traditional print publishing that bundles together a group of similar papers and volumes is not necessarily the best way to encourage interdisciplinary research. However, different channels of scholarly communication such as web based institutional repositories are an ideal platform for academics to disseminate their work and access others scholarly work and encourage collaboration.

Scholarly journals are considered the birth of a modern system of scholarly communication, and they have evolved since their inception, especially in regards to delivery mechanism. It is very true that publishers today offer a continuous access to content in desktop computer, and citations can be linked straight from the paper. However, Shorley and Jobb (2013) note that the underpinnings of journal publishing have not changed. Publishers still use the old structure and print in the same way that many argue is not conducive to either communication or to the reproducibility of the results. On the other had IRs provide a scholarly communication platform that supports different publishing formats, with a faster paste of dissemination.

2.3   Studies Related to Factors Affecting Faculty Attitudes Towards Open Access Repositories

When the first journal article *Journal des Scavans* was launched in 1665, and *The Philosophical Transactions of the Royal Society* in 1966, it was not the norm for scientist to share their findings. Shorley and Jobb (2013) remind us that there was reluctance from researchers to embrace publishing in these early scientific journals. According to the same author the first scientists to publish in *The Philosophical Transactions of the Royal Society* did this in secrecy, until Henry Oldenburg, a renowned German theologian wrote to all the leading researchers at the time, explaining the advantages of publishing in journals as a means of establishing authority (Shorley & Jobb, 2013, p. 40). The literature review in regards to faculty attitudes towards open access publishing shows similar resistance of faculty members in publishing their work in IR. A

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survey of directors of Association of Research Libraries (ARL) showed that two-thirds of their participants responded that the majority of faculty members at their institutions were not contributing (Association of Research Libraries, 2006).

The reward system (tenure and promotion) that faculty are exposed to can come in the form of a social status and financial returns, which is a very influential factor. This is a system of employment for faculty in higher education that has been established and formalized by the American Association of University Professors (AAUP), in 1915.

It is evident that this system is still influential today in the academic world, especially as it concerns scholarly publishing and open access publishing. In spite of advancements in digital technology that enables academics to publish in different platforms and disseminate their work more widely, there is still a reluctance from faculty to participate in web-based IR. In addition, there is a difference in the way knowledge is produced and shared between academic disciplines. These are all significant factors that this study will took into account when selecting the most suitable framework for investigating faculty reluctance to deposit their work into an IR.

In spite of the fact that IRs are an improvement in scholarly communication, they have still been met with a resistance from faculty members. While a range of factors seem to influence use of repositories by faculty there is still no agreement how to resolve the challenge of getting authors to deposit content. The most recent survey by Nicholas et al (2013) suggested that while the size and use of repositories have been relatively modest, almost half of all institutions either have, or are planning, a repository mandate requiring deposit. A number of institutions have already adopted mandates that require faculty members to deposit their work. According to Nicholas et al., (2013), some research shows that mandates have been successful in increasing faculty deposits. The same study concludes that only 22 percent of the researchers were directly influenced by mandate to deposit their work, and this varied based on the age. This leads us to believe that an increased rate

of self-archiving in an IR may be due to other reasons than to the adoption of a mandate or policy. However, Xia, Gilchrist, Smith, Kingery, Radecki, Wilhelm, Mahn (2012) concludes that despite these successes, the institutional mandate effect is unpredictable and there is little or no visible impact on OA repository development and success. One thing that researchers agree on is that a mandate policy issued by funders or institutions would be able to raise scholars' awareness on information sharing, and improve self-archiving of scholarly works.

2.3.1   Faculty Perceptions and Awareness of OA and IR

Overall, research shows that there is much more support for OA in theory than in practice. A study conducted by Morris and Thorn (2009), with scholars in Europe, the Americas and Asia reveals that the majority of respondents supported the idea of OA. The results from the same study show that there was less awareness of self-archiving practices (48.25%) and even less certainty with repositories (23.27%), than of OA journals (74.11%). A study by Oguz and Assefa (2014) reveals that over half (53%) of the faculty members had positive perception of the repositories.

A 2007 survey conducted by the Office of Scholarly Communication at University of California in 2007, reveals that 82 % of respondents were "not aware of" or were "aware of but don't know much about" IR. More than half (59%) of the faculty surveyed by Primary Research Group (2009) understood the term *institutional digital repositories*. Another study conducted by Kocken and Wical (2013), at the University of Wisconsin-Eau Claire reveals that faculty did not have a satisfactory understanding of OA, and around 70% of respondents were not aware of OA and its goals. The most recent survey conducted by Hahn and Wyatt (2014) with business faculty from 125 academic research libraries (ARL) concludes that the majority of the faculty were unaware of the IR in their respective institutions, and most of the faculty were not familiar with OA goals. A Charleston Observatory study (2012) shows higher rates, where 57% of faculty in the

study said that they were aware of the digital repository for faculty publication maintained by their library or institution. The overall results from the Primary Research Group (2009) study show that 37.9 % do not understand it or were not sure what OA movement stands for and only 3.5 % did not sympathize with OA goals. Another 30.5% were not interested in it or had some sympathy with OA goals, but felt that it was more important to cooperate with commercial publishers. Additionally, 28 % sympathized with OA goals and tried to provide open access to their material as much as they can. Finally, 42.1 % were not sure what open access and digital repositories were.

Kim's (2011) study investigating faculty perceptions of IR revealed that 60% of faculty members were unaware of their university IR. Similarly, the Primary Research Group (2014) survey with colleges and universities in United States and Canada revealed that more 57% of faculty members in the sample were aware that their libraries maintain a digital repository for faculty publications. The same study revealed a difference in faculty ranks, full professors with 51% awareness, and assistant professors with 62% awareness. In addition, the study reveals differences in faculty awareness by academic discipline. Only slightly over 37% of faculty from chemistry and physics department were aware of a digital repository hosted by their institution, compared to more than two thirds of faculty from biology, medicine, psychology and counseling. In addition, Davis and Connolly (2007) found that the size and the focus (research versus teaching) of the institution could and can affect the faculty perception and willingness to participate in IRs.

2.3.2   Faculty Views and Participation rates

A survey conducted by Schonfeld and Houseright (2010) revealed that less than 30% of faculty in U.S. colleges and universities were contributing to IR. The current situation of IRs is rather bleak and calls to question the effectiveness of the current ways of recruiting content. A survey conducted by Primary Research Group (2009), with colleges and universities in North

America, reveals that only 9.7% of faculty members in the sample have ever contributed a publication to their library's digital repository. Only 5% of journal articles published by the faculty members of the organizations have been archived in the institutional repositories. Similarly, a report published in 2012 by Charleston Observatory Strategic Directions for Digital Repositories, reveals that only 9.7 % of faculty have ever contributed a publication to their libraries' digital repository. The same study found that 87% of the content submitted to IRs consisted of journal articles, with 28% prior to peer review and 25% that have been peer reviewed.

Moreover, a survey conducted more recently by Primary Research Group (2014) reveals that out of all the books published in the last two years by faculty at their respective institutions, only 6.8% of them were archived in an institutional repository. The archival rates are more favorable for journal articles "with a mean of 19.8% of these items archived in an institutional repository" (p. 55). A study conducted by Jantz and Wilson (2008) shows that faculty contribution to IR, in ARL institutions was low to non-existent in one third of participants.

Another study revealed that when participants were asked about their own self-archiving behavior, "12.53% said that they did self-archive their own articles whenever possible; 7.58% did so sometimes; 8.63% rarely (thus, 28.74% in total); but 71.26% never did so" (Morris & Thorn, 2009, p. 232.)

Overall, a number of other studies have been conducted at different institutions and all of them show similar results, faculty reluctance to participate in IR. These studies were conducted at Cornell by Davis and Connolly (2007), in the University of Rochester by Foster and Gibbons (2005) and at the University of Kansas by Mercer, Rosenblum, and Emmett (2007). They also have been conducted at the University of Malaya by Abrizah (2009), and at eight universities in New Zealand by Cullen and Chawner (2011).

2.4   Understanding Faculty Needs and Concerns

In this section faculty, concerns regarding IRs are discussed via the examination of several studies as well as the barriers to faculty participation in IR. The literature review revealed that a number of studies focused on faculty attitudes and perceptions toward OA publishing and IR have been conducted in the last two decades. The surveys were administered to faculty from large research institutions to small colleges, across a variety of disciplines, and shared similar findings that reveal low faculty participation. Furthermore, surveys administered to faculty in order to assess their attitude and knowledge concerning scholarly communication revealed several reasons why faculty members hesitate to participate in IRs.

According to Foster and Gibson (2005), IR administrators and planners need to take a new approach towards their respective faculty in an effort to better understand what faculty members want. A very important issue to consider while planning to build an IR is faculty behavior and attitudes. This is in order for the IR to meet the needs of faculty and increase faculty participation. Therefore, the direct concerns of faculty must be articulated clearly and emphatically to increase their participation and bring about faculty support.

Based on the literature review there are numerous reasons that prompt faculty to not participate in IR. The main factors identified by Kim (2010) that affect faculty participation are: copyright concerns, lack of time (or additional time needed), fear of plagiarism, and self-archiving culture and/or peer pressure, and reward system (tenure and promotion). Davis and Connolly (2007) found technical barriers, fear of plagiarism, as well as lack of understating the purpose of IRs and a fear of low quality materials being published in IR as contributing factors (i.e., it may 'taint' their work).

2.4.1   Overall Factors Affecting Faculty Participation in IR

Overall, the studies that investigate faculty attitudes toward IRs reveal a wide range of issues in regards to faculty members embracing IRs. These concerns start out with a clear lack of awareness of IRs on the part of faculty members (Primary Research Group, 2009) and confusion regarding the name "institutional repositories" (Seaman, 2011). Other faculty needs and concerns include management and distribution of their teaching and research materials, digitization and conversion services, long-term institutional commitment to an IR, services to create and manage digital material, data processing services, and data storage solutions (Seaman, 2011). Considering that the needs and concerns of faculty members vary based on their personality traits, departmental culture, and reward system, further research opportunities still exist in examining different factors that affect faculty member attitudes in more specific disciplines or institutions.

In a most recent study conducted by Laughtin-Dunker (2014), several faculty perceived publishing in IR as "low quality", "weaker", "easy to publish in", "probably not scholarly", "less prestige", and "less quality control than traditional journal" (p. 9). All of these different terms are used by faculty to describe their perception of IRs as low quality publishing venues, and can be classified as cognitive factors. According to Foster and Gibson (2005), this faculty cognitive state is the main reason faculty have been slow to embrace IRs and slow to deposit their work in IRs. This state entails a lack of understanding of the benefits and risks of participating in IR, and confusion regarding the purpose of IR. Devakos (2006) also suggested that one source of faculty resistance is cognitive in origin. The Laughtin-Dunker (2014) study revealed that faculty members want to learn about OA and scholarly communication in a variety of ways, and more importantly, they want to know how they can benefit directly. Dubinsky (2014) conducted a survey with IR administrators regarding the reasons and concerns declared by faculty about the reluctance to participate in their IR. The study revealed similar hindering factors: lack of awareness of the

repository, copyright concerns, prefer disciplinary repository, perceived difficulties with submission process, and fear of plagiarism.

2.5   Summary of Factors that Influence Faculty Participation in IR

In order to investigate factors that affect faculty participation in IR, it was necessary to identify from the previous studies what influenced their attitudes towards IR. The next section reviews and summarizes factors that affect faculty participation in OA publishing platform, such as institutional repositories.

2.5.1   Influence of Altruism

Altruism has been a subject of debate among scholars and philosophers for centuries, in particular whether altruism even exists as "a desire to benefit someone else for his or her sake rather than one's own" (Batson, 2011, p. 3). In general, *altruism* is defined as a behavior that benefits others at a personal cost to the behaving individual. At the same time, there are many different interpretations of altruism, which in turn lead to different predications about the evolution of altruism. Overall, the focus of interpretations is on which party truly receives the benefit from altruistic behavior.

Eisenberg (1986) wrote that there are others philosophers such as Hobbs and psychologists such as Freud who argue that self-interest underlies all of our actions, and there is no such a thing as a true selfless behavior. The reason for the heated debate over altruism is because evidence of altruism is not easily found. Batson (2011) notes that under the scrutiny even heroes and saints may have done good deeds for reasons other than altruistic ones, such as to avoid unpleasant memoires, avoid situational and/or peer pressure, because the deeds invoke pleasant feeling, and so forth. However, the current research is not concerned with the true nature of altruism. Rather the label

altruism is meant to apply to any type of influence on faculty behavior, intrinsic reward (i.e. personal satisfaction) or extrinsic consequences such as peer, intuitional or departmental pressures.

One of the major reasons that faculty and researchers choose to publish their work is to communicate their research to colleagues (Swan & Brown, 2005). Casey (2012) found that the primary reason for tenured faculty to contribute to IR was the desire to make their work more easily accessible to colleagues and students. This type of motivation is compatible with the OA IR goals and is defined by Kim (2007) as altruism. It gives faculty the opportunity to disseminate their work beyond those institutions that can afford a subscription. According to Tschider (2006), OA publishing is regarded as "the act of gifting" scientific knowledge, which in return, can result in citations of OA articles. Therefore, according to same author, OA publishing can be both self-interested and somewhat altruistic.

However, Merton (1968) argues that scientific knowledge as a common property that enables free and open communication among scholars is an institutionalized practice rather than an altruistic one. In other words, free and open communication is expected of faculty members by their peers from whom they receive formal recognition as a form of reward. However, opposite to Merton's view of knowledge as a common good, Sismondo (2004) argues that scientific community in highly competitive areas has a norm of secrecy. The secrecy allows researchers to focus on their research without the fear of plagiarism or someone else working on the same research. However, since this study was conducted at a public university, Merton's norms could be used to justify faculty actions in scholarly dissemination. Thus, the approach of altruism in the current research is focused on the influence of subjective norms, rather than just pure individual motivations.

2.5.2   Influence of Academic Reward

Tenure and promotion are academic reward systems based on research output and other factors, such as teaching and other academic services. Boyer (1990) defines tenure as a guaranteed faculty position after an established probation period of generally no more than seven years. The tenure position is marked with a set of requirements that faculty members need to fulfill in a set of categories such as teaching, research, and service. Another very important faculty need is building a scholarly reputation for promotion/tenure. Faculty members need to provide evidence of continued output in the three above-mentioned categories in order to achieve promotion. Findings from 73 public and private institutions in Florida suggest that perceived tenure and promotion demands do influence research productivity, a phenomenon also known as the "vanity factor" (Willinsky, 2006). Willinsky describes this phenomenon as scholars' willingness to publish in prestigious journals as the only means of publishing, which raises their scholarly reputation and increases their chances for promotion and tenure. Shorely and Jubb (2013) explain that publishing in the digital age has reinforced traditional modes of scholarly communication rather than transforming the way in which research is disseminated. According to the same author, the reason why scholarly communication in the Internet age looks very similar to scholarly communication in the print age is because the needs of promotion, tenure and granting committees outweigh the needs of communication (p.45). This reward system is likely one of the reasons why faculty members are reluctant to deposit their work in IR, especially since IRs are considered by some faculty as low quality platforms to disseminate their work. The Office of Scholarly Communication at the University of California (2007) also found that faculty members are unlikely to fully embrace OA publishing due to this factor. Therefore, the promotion and tenure process are important needs that need to be addressed when investigating faculty participation in IR. The Primary Research Group (2009) survey shows that tenured professors are twice as likely (12 %)

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than untenured (6%) to contribute to an IR, despite the fact that tenured are less likely to have heard of digital repositories.

2.5.3   Influence of Academic Culture

The culture of academic discipline is also an important factor that influences faculty participation in IRs (Davis & Connolly, 2007; Mann et al., 2009). The abovementioned factors do not necessarily reflect the influence and practices of different academic disciplines. Studies conducted by Covey (2009), Cullen and Chawner (2011) show disciplinary differences and revealed that faculty participation in IR was much higher in science and engineering than other disciplines. Similarly, Jantz and Wilson (2008) found major differences in deposits by academic discipline, higher rates with sciences (60%), with lower rates in social sciences (27%) and very low rates of content with humanities (5%). Schonfeld and Houseright's (2010) survey with faculty found similar results, with fewer than 10% of faculty members in the humanities contributing to IR compared to more than 20% in economics and more than 40% in physics. A more recent study by Dubinsky (2014) shows fewer differences in deposit rates among disciplines, with 18% in social sciences and 21% in humanities. Surveys conducted by Primary Research Group (2014) also showed similar results; the biggest contributor proved to be the Physics department with 42%, followed by medical and biological sciences with 36%. At the same time, the Oguz and Assefa (2014) study shows differences in perceptions of IR by academic discipline. While a majority (62%) of faculty in social sciences and education held positive perceptions of IRs, only 21% of faculty in sciences and 46% in humanities had positive perception of open access repositories.

In addition, there is a difference between the nature and format of publishing for different academic disciplines. Davis and Connolly (2007) found that for humanities faculty the timeliness of dissemination is not important in their field. In addition, the requirement for tenure and

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promotion for the faculty in humanities is to publish a monograph (Harley, Earl-Novell, Arter, Lawrence, & King, 2006), and so faculty tend to keep their work private until it is ready to be published. Therefore, faculty members in the humanities do not perceive the benefits of participating in IR.   According to Davis and Connolly (2007), faculty tend to follow the action of others in their academic discipline. This type of common practice is referred to as peer pressure that affects the decision making process and it is difficult to overcome (Swan & Brown, 2005). Moreover, Covey (2009) found that there are varying degrees of pressure to deposit articles in different departments. The same study shows a strong pressure to archive pre-prints in business departments, and an increasing pressure to archive data along with papers in engineering and business. While in science, there was pressure to publish, but no pressure to deposit in open access repositories.

2.5.4   Influence of Discoverability and Ease of Access

An important thing to keep in mind is that faculty members are the producers and consumers of scholarly content. Therefore, faculty members as authors are concerned with the research impact and wider dissemination of their work. At the same time, faculty as consumers want to be able to search and have access to online available content. Kling and McKim, (1999) defined accessibility as a platform that enables reader "to access the document independent of the author, and in a stable manner, over time" (p. 897). This implies not only the unbridled ease of access but also a long-term stewardship of documents. Therefore, links to the IR should be in a more commonly visited section of the library's or institution's website so that researcher can easily find it. Grundmann (2009) found that the most common places to include links to the IRs were the library homepage or sub-pages of the library site. However, according to Swan and Carr (2008) IR needs to be linked to other parts of the institution's web presence in order to optimize the visibility and discoverability. Another factor affecting the discoverability of IR is

the name itself. Studies show that there is a confusion surrounding the name *institutional repositories* due to the fact there are different terms used to describe IR (see definitions section) (Seaman, 2011).

In addition, institutions should provide institutionalized stewardship and indexing mechanisms to ensure preservation and wider dissemination of faculty scholarly work. This can increase the visibility of their items and the 'impact factor'. The 'impact factor' refers to the number of subsequent citations a work receives (Donovan & Watson, 2011). The promotion of the 'OA citation advantage' is a common outreach strategy in trying to convince faculty of the value of depositing in IRs.

2.6   Additional Individual Traits that Affect Faculty Participation in IR

In addition to factors such as scientific culture, and the reward system, faculty resistance toward IRs can also come as a result of their personality traits. Individual traits that can possibly affect faculty participation in IR include faculty age, rank, status, and especially academic discipline as found by Allen (2005). Price (1986) explains that scientists are especially sensitive to their modes of gratification and many times, they turn to their profession for an emotional gratification. It is worth noting that the focus is on faculty contextual differences (i.e., junior or senior faculty) rather than their personality traits.

2.6.1   Faculty Status

The literature review also reveals somewhat mixed result in regards to faculty status (i.e., tenure, non-tenure) and participation in IR. Kim's (2010) study reports no major difference across faculty status and participation in IR. On the other hand, Cullen and Chawner's (2011) much larger study found that junior faculty deposits were lower, likely due to concerns of tenure and promotion. A recent study by Yang and Li (2015) on faculty at Texas A&M University revealed a

difference in faculty response rates based on rank. The results revealed that 39% were professors, followed by 26% associate professors, 14% assistant professors and 7% lecturers. A survey with faculty members from 10 academic research libraries found somewhat different results in response rates by faculty rank. There was a lower response from professors (21%), a higher response rate of associate professors (46%), much higher rate than previous study of assistant professors (32%), and a lower rate of lecturers (1%) (Carter, Snyder & Imre, 2007). The results from the Primary Research Group (2009) show differences in faculty ranks; the higher the rank of faculty member the more likely they were to contribute an article to a digital repository. More specifically, "only 3% of lecturers or instructors have contributed an article to a digital repository, while 13% of professors have done the same" (p. 17).

2.6.2 Faculty Age

In addition to faculty rank, studies have shown a difference in faculty age in regards to survey responses, reading literature in OA, and publishing in OA venues. A study by Morris and Thorn (2009) found that the number of respondents in the youngest and the two oldest groups were the lowest. When it comes to reading OA journals, the same study found somewhat similar rates between the age groups. However, when it comes to publishing in OA journals, the age groups 46-55 were the highest (30%), followed by age group 26-35, with 25% publications in OA journals. The lowest publishing rates were for the ages under 25 and over the age of 75.

2.6.3 Academic Field

The academic field has also shown to be an influential factor among the faculty who contribute to IRs. According to Casey (2012), faculty in the sciences contribute at a higher degree than do those in the social sciences and humanities. Schonfeld and Houseright, (2010) found that

fewer than 10% of faculty in departments of literature deposited in OA IRs compared to more than 20% of those in economics departments and more than 40% of physics professors. Furthermore, Jantz and Wilson (2008) found that IRs in ARL member institutions contain 5% humanities content as opposed to 27% social sciences and 67% sciences.

Oguz and Assefa (2014) found that faculty members' positive perception of IRs and their willingness to contribute their work into IR is closely related to their scholarly productivity, rather than to their awareness about the IR. Specifically, faculty members who tend to produce works that are more scholarly are more likely to contribute to the IR.

2.7   Summary of Perceived Faculty Concerns Regarding IR

2.7.1   Copyright Concerns

Copyright agreements are very important issues in the open access discussion because these agreements dictate what authors are permitted to do with their work. Authors are required to sign publisher copyright transfer agreements at the time their work is accepted for publication. The copyright agreements require that authors transfer to the publisher some or all of the exclusive rights granted by the U. S. copyright law. These exclusive rights include the right to reproduce, distribute, make "derivative" works, publicly perform, and publicly display the copyrighted work (Carter et al., 2007). Previous studies indicated that authors do not show much interest in copyright transfer agreements. A survey conducted by Rowlands, Nicholas, and Huntingdon (2007) found that only 13% of authors took a detailed interest, and 46% took no interest in copyright guidelines. Thus, faculty and researchers tend to be uniformed and often confused regarding the copyright issues. Swan and Brown (2005) found that 22% of authors did not know who retained copyright, 35% reported that they retained copyright, 37% said that the publisher was the copyright holder, and 6 % indicated another party as the copyright holder. In addition, the results from the Gadd,

Oppenheim and Probets (2003) survey showed that only 3% of authors insisted on retaining copyright, with 49% of them assigning copyright to publishers reluctantly, 41% assigning it freely and only 7% indicated that publishers did not retain copyright.

Concerning faculty attitudes towards IR, copyright issues have shown to be one of the major concerns of faculty participation in IR. According to Salo (2008), there is a misconception that self-archiving violates copyright agreements when in fact the author explains that majority of journal publishers allow some form of self-archiving of published articles. However, according to Salo (2008), caution may still be warranted due to the wide range of publisher polices, and this can lead to over-cautious behavior by faculty. In a similar fashion, a survey conducted in Europe by Van Westrienen and Lynch (2005) reveals low faculty participation in IRs due to confusion and uncertainty over copyright and intellectual property issues. Another case study with IR conducted at three universities in U.S. reveals that copyright issues are one of the major barriers of faculty participation in IR (Palmer, Teffeau, & Newton, 2008). A recent survey conducted by Dutta and Paul (2014) of selected science and technology faculty members of the University of Calcutta in India reveals that copyright issue was the most influential factor with regard to unwillingness to contribute. Other authors (Casey, 2012; Creaser et al., 2010; Kim, 2007) found copyright concerns as a major barrier to self-archiving.

2.7.2   Plagiarism Issues

Plagiarism is a form of academic dishonesty such as taking from sources without attribution. Most of empirical studies define plagiarism as taking and using another person's thoughts, writing, and inventions that are not well known and claiming as their own (Buckeridge & Watts, 2013). Others define plagiarism as stealing a portion of another person's writings or ideas that are not well known and claiming them as their own (Mahmood et al., 2010). There are other

forms of academic dishonesty, but plagiarism is the most common with 50% of the cases of scientific misconduct allegations investigated by the National Science foundation (Spiegel & Whitley, 2001). However, the same authors noted that the very little empirical data documenting the nature and extent of plagiarism exists and the most common form is "cryptomnesia, or "unconscious plagiarism" (p. 308). This issue of academic dishonesty involves the academic institution as a whole. Therefore, most institutions develop academic honesty and integrity policies that guide their mission as well as its student body and faculty members.

A survey conducted by Singeh, Abrizah, and Karim (2013) with faculty from five Malaysian universities regarding their awareness and participation in IR reveals that the main cause of their reluctance to deposit their work into IR was the fear of plagiarism. The same study reveals that faculty members were concerned with how their work might be used. For instance, the English faculty at Louisiana State University stated that they are protecting unsold screenplays from potential content theft (Lercher, 2008). According to the same author, this fear is likely to derive from the belief that freely distributing unpublished work would destroy the livelihood of authors whose work is commercial.

2.7.3   Perceived Difficulty with Submissions

Another hindering factor identified by Creaser et al (2010) was lack of knowledge on how to deposit material into an IR. Davis and Connolly (2007) describe this as the "learning curve" and as a major concern of faculty participation in IR. Yang and Li (2015) assessed faculty perceptions and attitudes towards IR at the Texas A&M University and revealed that over two thirds of the participants were not familiar with the deposit process. In addition, some of the faculty only heard from the colleagues that the deposit process is cumbersome and complicated, and thus they never dedicated the time to try it. The same study shows that level of awareness by faculty in using IR

software was very low, less than 10% of the respondents were aware of these important OA tools used for self-archiving. The authors argue that the lack of awareness of these tools and resources is likely to contribute to the fact that half of the respondents were unsure about whether they need libraries' assistance in using them. Thus, Yang and Li suggest that increasing faculty awareness of self-archiving tools and resources might increase IR participation rates.

2.7.4   Perception of IRs as Low Quality Publishing Venues

It is important to keep in mind that the major criteria that faculty use to judge colleagues' research for tenure and promotion decisions is its acceptance in a peer-reviewed publication. Publications in peer-reviewed journals are considered the most important criteria in tenure and promotion decisions. Furthermore, the prevailing opinion seems to be that print publications are more likely to undergo stringent peer review than electronic-only publications (Harley et al. 2006). The faculty members' perceptions of the quality of materials housed in the IRs is also one of the major concerns expressed by faculty. Again, a number of faculty are reluctant to deposit in IR because of they fear it will 'taint' their work. This concern derives from the perception that most of the materials in IRs are not peer-reviewed and thus IRs conflict with the prestige factor of publishing in respected journal, which is closely, associated with promotion and tenure decisions (Harnad, 2006). This is an indicator of faculty misconception regarding the purpose of IRs; the idea that they are a replacement of traditional journal publishing. However, as noted in the introduction and scholarly communication sections of this work, IRs are a supplement to traditional publishing and not a replacement. Van Westrienen and Lynch's (2005) study reveals a perception of IR content as low quality and conclude that faculty were afraid that publishing in OA IR could affect their scholarly reputation. In addition, other authors (Park & Qin, 2007; Dulle, 2010) found that authors did not deposit articles published in IRs due to the lack of quality control.

2.7.5 Perceived Concerns about Time

Another major concern that faculty have in regard to participation in IR is the perception that it takes too much time and/or it is often too complicated to deposit their work in an OA IR. Using time wisely is one of the higher priorities for faculty. Thus, concerns about time were one of the two major two concerns of faculty in the study conducted at Carnegie Mellon (Covey, 2009). Lack of time and additional effort needed is an important hindering factor identified by Foster and Gibbson (2005) as the faculty tend to "resist clerical responsibilities, and resent any additional activity that cuts into their research and writing time" (p. 3). Another study by Singeh, Abrizah, and Karim (2013) found that lack of time is the second major barrier of self-archiving, perceived by faculty. The same study revealed that faculty members felt like the process of self-archiving was too slow and time consuming. Covey's (2009) study revealed that time required to create metadata and digital copies into the IR was a significant barrier to deposit in the IR, for faculty in all participating colleges.

2.8   2.8 Chapter Summary

The first part of this chapter focused on the evolution of the scholarly and scientific communication process. The scholarly communication literature revealed the importance of knowledge dissemination and the different channels that scholars have used since the appearance of the first scholarly journal and open access publishing. The next section reviews studies that shows the role of IR in collecting, preserving and making scholarly works widely accessible. IRs play a crucial role in increasing institutions' prestige, increasing faculty members' impact factor and encouraging interdisciplinary and institutional collaboration. The larger portion of the literature review includes studies on faculty attitudes towards OA IR, including faculty views and participation rates in IR, and factors affecting faculty participation in IR. In addition to the factors

identified by the model of factors affecting faculty self-archiving (Kim 2007, 2010), the literature review identifies additional factors that affect faculty attitudes towards participation in IR. Literature review also reveals that the way faculty disseminate their work has both a cognitive and affective component. Thus, a relationship can be drawn between the factors affecting faculty attitudes towards IRs and the theory of planned behavior in the decision making process of faculty, demonstrating that human beings are rational.

CHAPTER 3

THEORETICAL FOUNDATION

3.1   Rational for the Model of Factors Affecting Faculty Self-Archiving

3.1.1   Overview of the Model of Factors Affecting Faculty Self-Archiving

Kim (2007, 2010) investigated factors that motivate or impede faculty participation in self-archiving behavior. In this study, the self-archiving behavior was considered any type of placement of research work in various types of archiving venues, such as a personal webpage, departmental/university webpage, disciplinary repository and institutional repositories (IRs). The study focuses on five types of research work: pre-refereed, refereed, un-refereed research articles, book chapters, and data sets. The research design used a combination of surveys and interviews from 17 Carnegie doctorate universities with DSpace institutional repositories. The analysis from survey responses of 684 professors and 41 telephone interviews revealed five groups of factors that affect faculty self-archiving behavior. These groups of factors are: cost factors (i.e., copyright concerns and additional time and effort needed), extrinsic benefits (i.e., academic reward, professional recognition, accessibility, publicity, and trustworthiness), intrinsic benefits (altruism), contextual factors (i.e., trust, self-archiving culture, influence of external actors) and individual traits (i.e., technical skills needed, age, rank and number of publications). Figure 3.1 shows the model created by Kim (2011).

By applying the model of factors affecting faculty self-archiving behavior, the current study presumes that before making a decision to participate in IRs, faculty members will consider costs factors, intrinsic and extrinsic factors, contextual factors as well as self-archiving culture. In addition, the current study will utilize the operationalized definitions of the aforementioned variables.
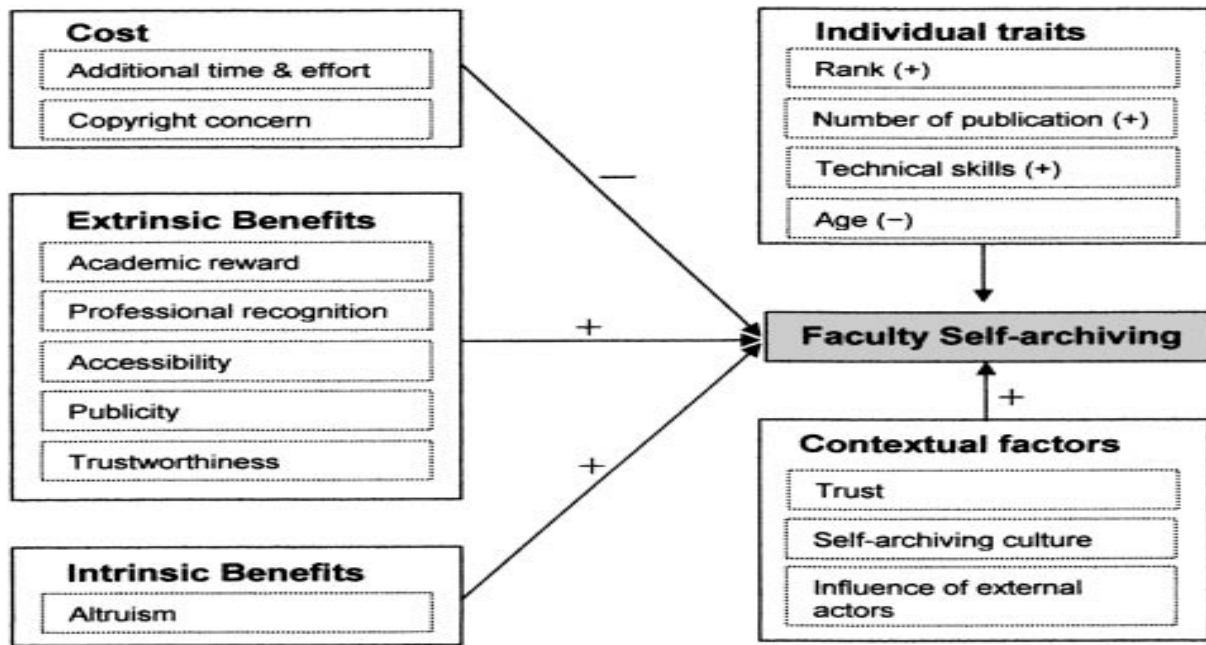
Figure 3.1. Model of factors affecting faculty self - archiving behavior (Kim, 2010).

3.1.2 Adapted Model of Factors Affecting IR Contribution

Kim's (2007) research captured faculty members' motivations as well as impeding factors. The adapted model for current research is based on the assumption that faculty members consider intrinsic, extrinsic, and contextual factors in regard to IR contribution. In addition, individual traits might also affect faculty IR contributions. All of these factors are summarized in the Table 2.

Table 3.1

Impeding Factors affecting Faculty Participation

Intrinsic & extrinsic factors	Contextual factors	Individual traits
Additional time and effort needed	Academic reward	Rank
Copyright concerns	Peer-pressure	Age
Plagiarism issues	Communication with peers	Technical skills

3.2   Rational for the Theory of Planned Behavior

3.2.1   Measurement of Attitudes

Measurement of attitude is important for determining whether attitude change has occurred. According to Cacioppo and Petty (1984), direct attitude measures are those that simply ask the respondent to report his or her attitude. A few librarian researchers have conducted a number of surveys in the last decade in an effort to measure direct attitudes of faculty members toward IRs. These measures are also known as *explicit measures* of attitude because they are transparent and make it obvious that attitude is being assessed. This category includes attitude measurement devices such as the Likert scale (Likert, 1932). On the other hand, there are indirect attitude measures that do not directly ask individuals to report their attitude. Based on this approach, an individual's attitude is inferred from his or her judgments, reactions, or behaviors. These are considered *implicit measures* of attitude because they do not make it obvious to an individual that their attitude is being assessed. The assumption of this approach is that a person completing an implicit measure is unaware that the measure is assessing his/her attitude. According Caciopo and Petty, this category includes test such as the Thematic Apperception Test, the information error test, the Implicit Association Test and the automatic evaluation test. A literature review on faculty behavior towards IRs found no studies that have used such a measure to assess faculty attitude and behavior towards IRs.

3.2.2   Attitude Investigation Approach

Attitude is one of the oldest and most studied phenomenon in social and behavioral psychology and many theories in the last 60 years have focused on the measurement of attitude. A plethora studies and literature in social psychology suggest ways to investigate the relationship between attitude and behavior. Researchers in social and behavioral psychology continue to

identify factors that moderate the effects of attitudes and intentions on overt behavior. Although the library community has increased efforts to heighten faculty awareness about the benefits of participating in IR, faculty members still fail to take action towards depositing their work in IR. The first step toward increasing faculty participation is to examine their attitude towards IR. Most of the social psychology researchers agree that it takes a considerable amount of cognitive effort to not only generate thoughts in response to messages but also cognitive effort when evaluating thoughts. There are two main social constructs driving open scholarly publishing (Carter et al., 2007). One is altruism, or the genuine desire to share and disseminate knowledge freely with the academic community and the public, and the other is the dissemination of scholarly work in a faster, wider, and more effective way. While the first one is a more internalized conviction that is more consistent and well thought out, the latter is more of a temporary attitude towards open access publishing that is more likely to change.

3.2.3   Conceptualizing Attitude

The constructs of attitude continue to be a major focus of theory and research in the social and behavioral sciences. Some of the major concepts studied by authors in the field of social and behavioral sciences are as followed: attitude change, persuasion, social influence, attitude formation and activation, attitude structure and function, and the attitude-behavior relation. Most of the authors in the fields of social and behavior sciences agree that attitude represents a summary evaluation of a psychological object captured in attribute dimensions such as good-bad, harmful-beneficial, pleasant-unpleasant, and likable-dislikable (Ajzen & Fishbein, 1980; Eagly & Chaiken, 1993). According to Azjen and Fishbein, the expectancy-value model provides the popular view on attitude conceptualization and considers attitudes to be made up of two components: beliefs or expectations about the likelihood that an outcome is associated with an action, and an evaluation of

these outcomes. According to this model, each belief associates the object with a certain attribute, and a person's overall attitude toward an object is determined by the subjective values of the object's attributes in interaction with the strength of the associations. Although people can form many different beliefs about an object, this model asserts that only beliefs that are readily accessible in memory influence attitude at any given moment. Despite the popularity of this model, many authors such as Haugtvedt (1997), Priester and Fleming (1997) have challenged this conclusion, reaffirming the idea that beliefs are only one possible influence on attitudes. However, this model has provided a basic framework for examining values within framing and in turn, led to the development of theory of reasoned action (TORA).

3.2.4   From Behavior to Actions

Many studies have investigated the moderators of attitude-behavior relation, as well as intention-behavior relation. The theory of reasoned action (TORA) was the first model to demonstrate a consistent link between attitudes towards a behavior and actual performance of a behavior (Burton, 2004). The focus of this theory is intention as a distinguishing point between those likely to carry out an action and those unlikely to do so. TORA hypothesizes that behavioral intentions (actual behavior) are guided by two factors: beliefs about the consequences of attributes of the behavior and their evaluation (behavioral beliefs), and beliefs about the expectations of others and the motivation to comply with this referent group (subjective norms). The theory of reasoned action was developed in an effort to address the gap between the attitude and behavioral intention. According to this theory, behavior is determined by both attitude and subjective norm. Therefore, Fishbein and Ajzen (1975) introduced the concept of intention as a mediator of attitudes and behavior. The assumption behind this theory is that human behavior is volitional rather than being controlled by external forces. Volitional control is when a person can readily and willfully

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enact a behavior or not. However, since not all human behavior is volitional, a third element known as perceived behavioral control was added. This addition gave birth to the theory of planned behavior (TPB).

TPB considers beliefs as the fundamental blocks of attitude, representing the information an individual has about specific behavior and the attributes of this behavior (Ajzen, 1988). TPB has frequently been shown a better predictor of behavioral intention than TORA (Ajzen, 1991) and has proved useful for the prediction of a wide range of behaviors.

According to TPB, people act in accordance with their intentions and perceptions of control over behavior, while intentions in turn are influenced by attitudes toward the behavior, subjective norms, and perceptions of behavior control (Ajzen, 2001, p. 43). The major assumption behind this theory is that human beings are rational and make systematic decisions based on available information. The theory of planned behavior derives from the theory of reasoned action developed by Fishbein and Ajzen (1980). TPB comes from the field of social psychology and maps out the relationships among beliefs, attitudes, subjective norm, behavioral controls, intentions, and behavior. This relationship is best described in a schematic representation of the theory, as shown below in Figure 3.2.
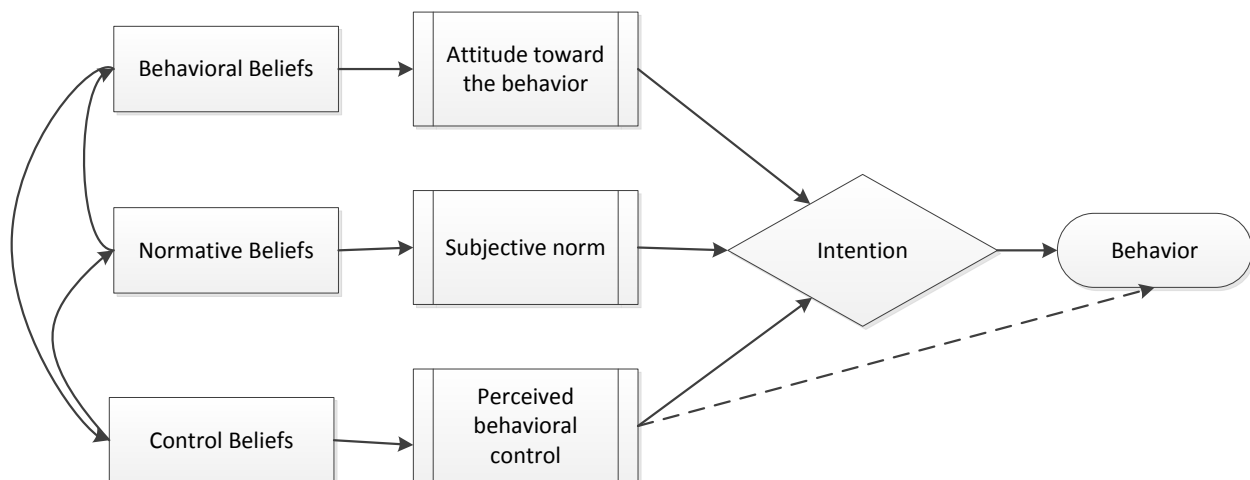
Figure 3.2. The theory of planned behavior (Ajzen, 1991, p. 182).

According to this theory, intention is the best predictor of behavior. Ajzen (1991) states that "a central factor in the theory of planned behavior is the individual's intention to perform a given behavior" (p. 181). In other words, intention is considered the direct determinant of behavior. Fishbein and Ajzen, (1975) define intention as a cognitive representation of a person's readiness to perform a given behavior. According to the same theory, intention is determined by three factors: attitude towards behavior (a favorable or unfavorable evaluation of the behavior), subjective norm (perceived social pressure to perform or not perform the behavior), and perceived behavioral control (self-efficacy in relation to the behavior). Beliefs are considered indirect influences on behavioral intention. Intention itself is mediated through latent factors: attitudes, subjective norms, perceived behavioral control, and aggregations of the different beliefs. The more positive the attitude, subjective norm and perceived behavioral control, the greater the likelihood an individual has of intending to carry out the behavior when the opportunity arises.

The general assumption behind this theory is that the more favorable the attitude, subjective norm, and the greater perceived control, the stronger should be a person's intention to perform a given behavior. Moreover, since some behavior is not completely volitional but controlled by certain conditions, it is important to include perceived behavioral control. According to the same theory, three different types of beliefs determine these three factors: behavioral beliefs, providing the cognitive foundations for attitudes, normative beliefs, which illustrate the perceived normative pressure or expectation in the population, and control beliefs, which represent the ease or difficulty an individual perceives he or she has in carrying out a behavior. The subjective probability that the behavior will produce a certain outcome is referred to as *behavior belief* (Fishbein &Ajzen, 1975). A person's perception regarding what others think about a given behavior is referred to as *normative belief.* And a person's perception of the level of control over a given behavior is known as *control belief.* Theory of planned behavior postulates that the effect of external variables such as demographic variables or personality traits on intention and behavior are mediated by attitude, subjective norms, and perceived

behavioral control. Thus, this is considered to be a complete theory, which claims that external variables affect intention and behavior through attitude, subjective norms, and perceived behavioral control.

3.2.4.1 Beliefs

Beliefs are considered multi-attribute and the number of attributes considered when facing a decision about an action will depend on the importance of the decision. Of interest, however, is the attitude towards an action, rather than the object of the attitude (e.g., deposits in IR, rather than the IR itself). An attitude towards a behavior is expected to be highly correlated with that behavior (Fishbein & Ajzen, 1997; Ajzen & Fishbein, 1980). Beliefs are considered an indirect influence on behavioral intention. In other words, beliefs are the underlining cognitive structure and are considered the antecedent of attitude, subjective norm, and perceived behavioral control (PBC). Each behavioral belief links a given behavior to a certain outcome, or to some other attribute, such as cost incurred in performing the behavior. Behavioral belief is best described in Fishbein and Ajzen's (1975) Expectancy-Value Model, which states that: the subjective value of a given outcome affects the attitude in direct proportion to the strength of the belief. Normative beliefs are considered to be the precursors of subjective norms. The underlying normative beliefs are concerned with the likelihood that specific individuals or groups (referents) with whom the individual is motivated to conform will approve or disapprove of the behavior. According to Ajzen (1991), control beliefs are the antecedents of PBC, and are concerned with the perceived power of specific factors to facilitate or inhibit performance of the behavior.

3.2.4.2 Attitude toward the Behavior

Attitude refers to a person's positive or negative perceptions about performing a given behavior (Fishbein & Ajzen, 1975). People tend to form intentions to perform behaviors toward which they have

a positive effect, thus attitude is related to behavioral intention. Attitude is determined by a person's beliefs about outcomes of a behavior. According to Ajzen and Fishbein (1980), beliefs are elicited from a representative sample from the population of interest by asking them to list advantages, disadvantages, or anything else they associate with the behavior of interest. Moreover, understanding the basis for the attitudes through the assessment of underlying beliefs will provide the information needed to develop interventions related to the behavior of interest (Ajzen & Fishbein, 1980).

Subjective norms

Subjective norms are beliefs about the expectations of others in the group and the motivation to comply with this referent group. In other words, subjective norms refer to an individual's perceptions of general social pressure to perform or not perform a behavior. These are very closely related to intentions because people often act based on the perception of what others want them to do. Subjective norms are a normative component that is intended to explain the influence of the social environment on intentions and behavior. If an individual perceives that significant number of others endorse (or disapprove of) the behavior, they are more (or less) likely to intend to perform it. Thus, attitude towards the behavior reflects the individual's global positive or negative evaluations of performing a particular behavior. Trafimow and Finlay (1996) found evidence to suggest a distinction between individuals whose actions are driven primarily by attitudes and those whose actions are driven primarily by subjective norms. The research has often reported strong correlations between attitudes and subjective norms. Subjective norm is determined by a person's belief about whether the referent approves a behavior and by their motivation to comply with that referent.

3.2.4.3 Perceived Behavioral Control

The theory of planned behavior focuses on objective environmental factors, in addition to attitude and subjective norms as subjective determinants of intention and behavior. The construct of whether people believe that they have volitional control over performance of a behavior is known as

perceived behavioral control (PBC). The perceived behavioral control is a less developed variable that was an addition from the theory of reasoned action, with the rationalization that people cannot control all their behaviors all the time, and that resources and availability of opportunity may impact that person's control over a behavior. According to Armitage and Conner (2001), PBC influences both intention and behavior (see previous Fig. 3). In contrast to attitude and subjective norms, PBC has a direct influence on both intention and behavior. According to Ajzen (1991), perceived behavioral control ought to have direct impact on behavior, to the degree that it reflects actual control. In addition, PBC should influence intention, since those who believe they cannot control a behavior should to be less likely to intend to perform that behavior. PBC is also believed to exert both direct and interactive (with behavioral intentions) effect on behavior. Ajzen (1991) argues that the magnitude of the PBC-intention relationship is dependent upon the type of behavior and the nature of the situation. Ajzen (1991) writes that, "the addition of perceived behavioral control should become increasingly useful as volitional control over behavior decreases" (p. 185). Thus, in the situations where prediction of behavior from intention is likely to be hindered by the level of actual control, "PBC should (1) facilitate the implementation of behavioral intentions into action, and (2) predict behavior directly" (Armitage & Conner, 2001, p. 473). Furthermore, due to the lack of evidence for the interactive effects of PBC on the intention-behavior relationship, Ajzen (1991) argues for a direct relationship between PBC and behavior. He states that in situations when behavioral intentions alone would only account for small amounts of variance in behavior (i.e., where there are problems of volitional control), PBC should be independently predictive of behavior

Ajzen (1991) notes, too, that perceived behavioral control is most compatible with the concept of perceived self-efficacy elaborated by Bandura (1997). The perceived self-efficacy is conceptualized as the degree of anticipated difficulty in performing a behavior, and is concerned with judgments of how well one can execute the courses of action required to deal with a prospective situation (Bandura, 1997, p. 122).

3.2.4.4 Behavioral Intentions

The intention construct is central to both the TRA and TPB. According to the theory of planned behavior, intention is the cognitive representation of a person's readiness to perform a given behavior (Fishbein & Ajzen, 1975). Furthermore, intention is seen as immediate determinant of behavior. Therefore, intentions are assumed to capture the motivational factors that influence a behavior and to indicate how hard people are willing to try or how much effort they would exert to perform the behavior (Ajzen, 1991, p. 181). As described by the same theory, intention is influenced by three elements: attitude toward performing the behavior, subjective norm, and perceived behavioral control.

3.2.5   Rationale for Choice of Theory and Relation this Study

The theory of planned behavior developed by Ajzen (1991) provided a useful framework to examine more closely the influencing factors of faculty participating in open access IRs. In addition, it allows for the evaluation of the importance of different factors, which affect faculty participation in IRs. TPB has been employed successfully in health and educational field. Marcoux and Shope (1997), employed TPB in study predicting and explaining use, frequency of use and misuse of alcohol among adolescents. Godin and Kok (1996), reviewed the application of TPB in the domain of health and to verify the efficiency of the theory to explain and predict health-related behaviors. The results indicated that the theory performs very well for the explanation of intention (Godin & Kok, 1996).

A significant number of meta-analyses have provided support for the TPB (e.g., Blue, 1995; Conner & Sparks, 1996; Godin, 1993; Ajzen, 1991; Godin & Kok, 1996; Hausenblas, Carron & Mack, 1997). Krathwohl (2009) explains that meta-analysis is a way to show average results after a conversion to standard metric called effect size. The author notes that effect sizes are measures of

treatment effects in a common measure. This method is routinely used to compare different test results from different studies, with different operational definitions but measuring the same construct. In our case, it is the accuracy of TPB to predict behavior. Ajzen (1991) notes that "intentions to perform behaviors of different kinds can be predicted with high accuracy from attitudes toward the behavior, subjective norms, and perceived behavioral control" (p. 179). The overall predictive validity of the theory of planned behavior is shown by the multiple correlations in Ajzen's (1991, p.186). The meta-analysis of the TPB found an average multiple correlation of attitude, subjective norm and PBC, with intention of $r = .71$ (19 correlations), and an average multiple correlation of $r = .51$ (17 correlations) for prediction of behavior from intention and PBC (Ajzen, 1991). The correlation coefficient 'r' measures the linear relationship between variables. The closer the absolute value of r is to 1, the stronger the linear association between the variables (Krathwohl, 2009). The meta-analysis by Armitage and Conner (2001) provides evidence supporting the use of the TPB for predicting intention and behavior. According to Armitage and Conner, the prediction of self-reported behavior is superior to observed behavior.

Also, the Sheppard, Hartwick, and Warshaw (1988) meta-analyses supported this view. Measures of self-predictions were found to have stronger relationships with behavior (mean r = .57) than did behavioral intentions (mean r = .49), although attitude and subjective norm accounted for more of the variance in intentions (mean r = .73) than did self-predictions (mean r = .61). Based on these findings the current research will use self-predictions as a guide when developing the questionnaire instrument as detailed in Chapter 4.

Overall findings from the TPB meta-analysis conducted by Jonas and Doll (1996), Armitage and Conner (2001) provided evidence supporting the use of the TPB for predicting intention and behavior. Moreover, there is evidence to show that prediction of self-reported behavior is superior to observed behavior. The same meta-analysis found a multiple correlation

(r= .52) on intention of PBC with behavior. Furthermore, Armitage and Conner (2001) note that PBC "was found to contribute uniquely to the prediction of behavior, demonstrating the efficacy of the PBC construct" (p. 486). Moksness, L. and Olsen (2017), conducted the most recent study that utilized TPB to investigate researchers' intention to publish in OA journals.

3.3   Current Research Framework

The theory of planned behavior was adapted for investigating faculty attitudes towards participation in UNT Scholarly Works repository. The theory postulates that a person's intention of depositing his or her scholarly work into a repository is determined by three categories of factors: attitude towards participation in OA IR, social influence of participation in OA IR, and perceived control of participation in OA IR.

The attitude towards participation in OA IR followed closely the definition from the theory of planned behavior. Attitude was defined as faculty member's positive or negative perception towards using OA IR for dissemination of their scholarly works. According to the theory, social influence refers to the faculty member's perception that most peers, colleagues and department heads think they should, or should not, use OA IR for disseminating their scholarly work. The first component is considered to be a direct influence on behavioral intentions while the second is considered to have an indirect influence. The perceived control behavior refers to faculty members' perception of their ability to use OA IR for disseminating their scholarly work. Based on the framework developed from the theory of planned behavior, intention to use OA IR is a dependent variable, which was measured through self-reporting, while independent variables comprise attitude, social influence, and perceived control.

Model of faculty self-archiving behavior

Theory of Planned Behavior

Predictor variables

Outcome Variable

Cost
- Additional time & effort
- Copyright concerns

Extrinsic factors
- Academic reward
- Professional recognition
- Accessibility
- Publicity
- Trustworthiness

Intrinsic factors
- Altruism

Contextual factors
- Academic reward
- Peer-pressure
- Communication with peers

Individual traits
- Rank
- Number of publications
- Age
- Technical skills

Attitude towards participation
- Perc. copyright concerns
- Perc. plagiarism issues
- Perc. difficulty with submission
- Perc. as low quality venues
- Perc. additional time needed

Influence of subjective norms on faculty participation
- Altruism
- Academic reward
- Academic culture & collaboration
- Discoverability and ease of access

Perceived control for participation
- Self-efficacy
- Controllability

Behavioral Intentions

Self-reported intent to deposit

Figure 3.3. Research framework for the current study.

3.3.1 Research (Predictor) Variables

This study incorporated the factors that affect faculty self-archiving, identified by Kim (2007), into the framework of the theory-planned behavior. Kim (2007) identified and categorized the major factors that affect faculty behavior towards participation in any type of Web-based digital repository. These are categorized into cost factors, intrinsic and extrinsic factors, contextual factors, and personal traits. Every category contains one or more variables that are defined by Kim (2007).

To assess overarching factors that affect faculty attitudes and behavior toward participation in IR, the current research employed the framework of the theory of planned behavior, which is divided into three categories of factors: attitudes towards participation in IR, the influence of subjective norms on faculty participation in IR, and perceived control for participation in IR. Each of these categories include variables adopted from Kim's model and additional variables identified

from the review of the literature. All the variables are defined and operationalized in the following section.

3.3.2 Attitude towards OA IR Participation

3.3.2.1 Perceived Copyrights Concerns

Copyright concerns are defined by Kim (2007), as "the extent to which professors perceive requirements to ask permission from publishers, possibilities of copyright infringement, and frictions among co-authors in self-archiving work" (p. 75). Many studies dealing with faculty deposits in open access repositories have identified copyright issues as one of the barriers that impedes faculty participation in OA repositories (Allen, 2005; Chan, 2004; Foster & Gibbons, 2005).

3.3.2.2 Perceived Plagiarism Concerns

In spite of the fact there is little empirical research that shows incidents of plagiarism, this phenomenon remains one of the faculty concerns regarding participation in IR. Ascertaining individuals' criteria for plagiarism is a difficult task. The extent of this form of academic dishonesty ranges from unconscious plagiarism, to improper citation, to complete failure to acknowledge the source. However, for this study the perceived faculty concerns were defined as any type of faculty concerns on how their work might be used.

3.3.2.3 Perceived Difficulty with Submission

The difficulty with the submission process was found to be one of the major barriers regarding faculty participation in IR according to Creaser et al. (2010). There are different ways faculty express the difficulty with the submission process. Some state "I am not familiar with the

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procedure" described by Davis and Connolly (2007) as the "learning curve" (p. 2), while others point out technical difficulties, such as difficulty using IR interface (Yang & Li, 2015).

3.3.2.4 Perceived as Low Quality Venues

Another major concern is the quality of material housed in IR. Harnad (2006) notes the perception by faculty that content in IR is not peer-reviewed and that depositing work in IR conflicts with the prestige of publishing in respected journals for promotion and tenure decision. Thus, perceived low quality was defined as the extent to which faculty members perceive IR as low-quality publishing venues and harmful to their academic careers.

3.3.2.5 Perceived Additional Time and Effort Needed

Kim (2008) defines this variable as "the extent to which self-archiving is perceived to require time and effort" (p. 76). According to Foster and Gibbons (2005), faculty tend to avoid clerical responsibility and avoid doing any type of additional work that cuts into their research time. In addition, Salo (2008) notes that other issues involve the effort needed by faculty to self-archive, such as investigating publisher's permission, and ensuring the privacy of their work.

3.3.3   The Influence of Subjective Norms on Faculty Participation

In addition to individual faculty attitudes towards participation in IR, the social influence or subjective norms affect faculty participation in IR. According to the theory of planned behavior, subjective norms are influential factors in the decision making process. The social influence can derive from interpersonal relationships and from peer pressure – such as observation and influence of other people around the person in question – depending on the degree of exposure. In the context of the current research and based on the literature review, the social influence can derive from

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several sources: 'altruism,' academic reward, academic culture, collaboration with others, and discoverability and accessibility of items.

3.3.4 Perceived Control for Participation in OA IR

The theory of planned behavior postulates that perceived control is the perceived capability of the individual that may facilitate or hinder an individual from performing a certain behavior. There are two factors involved in this process. First is self-efficacy, which is defined by Bandura (1997) as an individual's self-confidence in his or her ability to perform a behavior. Second is the controllability, which refers to external conditions that reflect the availability of resources needed to perform a given behavior.

3.3.4.1 Self-Efficacy

The working definition of self-efficacy is the extent to which faculty members perceive confidence in having their work deposited in IR. Again, according to Davis and Connolly (2007), IRs are considered by faculty to be a low-quality publishing venues and risk tainting their work thus they are less likely to deposit their work.

3.3.4.2 Controllability

Controllability refers to the extent that faculty members perceive the external control of participating in an IR. According to Xia and Sun (2007), a majority of academic institutions have a dedicated staff to assist faculty with IR deposits. This type of institutional influence is likely to increase faculty willingness to participate in IR. On the other hand, Crow (2002b) warned that faculty submissions will have to be voluntary or there is a risk of encountering resistance from faculty members who might otherwise prove supportive. Thus, these type of factors can be

considered as external facilitating conditions, which can either encourage or hinder faculty participation in IR.

3.4   Measurement of Intended Behavior

3.4.1   Intention of Participating in IR

According to the theory of planned behavior, intention is the cognitive representation of a person's readiness to perform a given behavior. Fishbein and Ajzen (1975) consider intention to be an immediate determinant of behavior. This study adopted the aforementioned definition of intention to conceptualize the intention of faculty to participate in IR. It is described as an indication of how much effort a faculty member is willing to exert in order to deposit their work in an IR. Furthermore, the theory of planned behavior postulates that intention is the strongest predictor of actual behavior. Therefore, the current research assumes that the intention variable can predict participation of faculty in IR.

3.4.2   Self-Reported vs. Behavioral Intentions

In a review of TPB Sheppard et al. (1988) argued for the need to consider both behavioral intentions and self-predictions when predicting behavior. Warshaw and Davis (1985) noted there are two distinguished ways in which intentions are measured. Some authors describe the difference between measures of behavioral intentions (e.g., 'I intend to perform behavior x') from measures of self-predictions (e.g., 'How likely is it that you will perform behavior x?'). Sheppard et al. (1988) argued that self-predictions should provide better predictions of behavior as they are likely to include a consideration of those factors, which may facilitate or inhibit performance of a behavior, as well as a consideration of the likely choice for other competing behaviors. Furthermore, Bagozzi and Kimmel (1995) has suggested that attitudes may first be translated into

desires (e.g. 'I want to perform behavior x'), which then develop into intentions to act and thereby direct action. Based on this perspective, one might expect that desires would inform intentions, upon which behavioral self-predictions are partly based. However, given that desires do not take into account the facilitating or inhibiting influences on behavior, PBC should be more closely associated with self-predictions than with desires. According to Armitage and Conner (2001), "intentions are held to mediate the relationship between desires and self-predictions, suggesting that effects associated with intentions will fall between the desire and self-prediction findings" (p. 478). According to the same authors, the prediction of self-reported behavior is superior to observed behavior. Therefore, this study used self-prediction as a measure of the dependent variable (i.e., faculty intention to participate in IR).

3.5   Chapter Summary

This chapter provided the theoretical foundations for the present research. It also discussed the rationale for the research domain and theories selected for the current research. The theory of planned behavior was used as a basic framework and the model of factors affecting faculty self-archiving, as well as faculty attitudes toward open access repositories studies were referenced as variables for the framework. From the theory of planned behavior groups of factors were identified – attitude toward participation in IR, social influence participation in IR, and perceived control for participation in IR. The first group was conceptualized as having five major sub-factors: perceived copyright concerns, perceived plagiarism concerns, perceived difficulty with submission, perceived low quality venues, perceived concerns about time. The second has four variables: altruism, academic reward, academic culture, and discoverability and ease of access. The last group has two variables: self-efficacy, and controllability. Intention to participate in IR was identified as a dependent variable. The next section discusses the research methodology and data analysis.

CHAPTER 4

METHODOLOGY AND DATA ANALYSIS APPROACH

This chapter presents the methodological design of a research project characterizing faculty members' perceptions and participation in IR. As stated in the Chapter 1, faculty members are the key stakeholders among all the other stakeholders involved in the scholarly communication process, specifically in successful development of IRs. Therefore, this study administered a survey to faculty members at the UNT for the purpose of identifying their perception of the UNT Scholarly Works repository. As the key stakeholders, faculty are in a unique position to express their views and participation to the UNT Scholarly Works repository. The data collection was an effort to uncover faculty perceptions of the UNT Scholarly Works repository and their intention to participate in it. The group of three factors that affect faculty attitudes and participation in IR, as described in detail in Chapter 2, include social and intrinsic factors that influence faculty participation, faculty individual traits, and faculty perceived concerns regarding the repository.

Data was collected in an attempt to identify any significant relationship between the factors affecting faculty participation in IR and their intent to deposit. Such a relationship underlines a construct referred to in this study as faculty attitudes toward participation in IR. The methods for measuring faculty attitudes towards IRs are defined in the section below. Data collected from this survey allows for a better understanding of faculty needs and concerns regarding IRs. This chapter outlines the research design, provides details related to the survey population and survey instrument, survey distribution, data collection and data analysis procedures.

4.1   Research Design

The mixed method approach has gained popularity in the social and behavioral sciences in the last few decades. When studying a social phenomenon, a mixed method approach can be used

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for collecting and analyzing both quantitative and qualitative data (Creswell, 2003). According to Greene, Caracelli, and Graham (1989) the employment of mixed methods approach can increase the validity of research. Furthermore, the mixed method approach allows for meaningful inferences resulting from the integration and comparison of the results from each approach (Tashakkori & Teddlie, 1998). The mixed method approach has the advantage of combining strengths of the quantitative approach, where one is assessing the magnitude and relative frequency of known phenomena, with the strengths of qualitative approach, which involves identifying and exploring phenomena unmeasured by quantitative methods.

4.1.1   Research Design and its Connection to Research Questions

For the research questions, a mixed methods research design was deemed appropriate for the following reasons. Quantitative approach allowed for examining the relationship between the predictor variables and the faculty intention to deposit their work in the IR. Qualitative approach enabled a more in depth understanding of the faculty perceptions of IRs. The first question was intended to expose factors that affect faculty attitudes towards participation in OA IR within the framework of the TPB. Based on the TPB framework Table 4.1 shows the connection of research variables to Research Question 2, as first stated in Chapter 1.

Table 4.1 *From Research Framework to Research Questions*

Research variables	Research Questions (RQ)
Attitudes towards participation in IR	What are the attitudinal factors that affect faculty attitudes toward participation in IRs?
Social influence on participation in IR	What are the social factors that affect faculty participation in IRs?
Perceived control for participation in IR	What are the individual differences that affect faculty participation IRs?

This question was fundamental to this study and it was modified to incorporate all the influencing factors (e.g., attitudinal, social and individual. Again, the question is the following:

> (2) What are the factors (attitudinal, social, and individual) that affect faculty attitudes towards participation in IRs?

To further explore the influence of factors that affect faculty attitudes towards participation in IRs, this study addressed two additional questions:

> (3) How do these factors affect the likelihood of faculty participating in IRs?

> (4) What is the extent of each factor affecting faculty participation in IR?

This study employed the correlational research method because I was not manipulating what happens to measured variable (s), but rather investigating how certain factors identified by previous research (i.e., faculty attitudes towards IR) can predict or determine how much influence these factors have on the outcome, which is faculty participation in IR. (Field, A., 2009).

This study hypothesized that age, faculty rank and status, academic field, altruism, academic reward, departmental affiliations, right of access and ease of access do make a difference in faculty members perceptions and willingness to participate in UNT Scholarly Works repository. These considerations also include copyright concerns, plagiarism, difficulty with submission, perception of IRs as a low quality publishing venues, and perceived additional time needed as other influencing factors.

The assumed correlational relationship between the predictor variables and outcome variable in this study was as followed. Faculty who score high in factors affecting faculty attitudes towards IRs (perceived barriers) are less likely to deposit than those who score low. The higher the scores in factors affecting faculty attitudes (i.e. perceived barriers) towards IRs the less likely they are to deposit (negative relationship). The relationship hypothesized in the current research is known as non-directional hypothesis, and is described below.

The null value states that there is no difference between the scores in factors affecting faculty attitudes towards IRs and the likelihood they will deposit, and is measured by p-values. P-values answer the question of whether or not the parameter value is statistically significantly different from a null value. In this study, *null value* says that there is no difference among perceptions and practices of faculty members related to deposits in UNT Scholarly Works repository. This is with regard to copyright concerns, plagiarism, difficulty with submission, low quality publishing venues perception, and additional time needed.

The alternative parameter value measured whether the p-value is statistically significantly different from a null value. In this study, the alternative value states that there are differences among perception and practices of faculty members related to participation in UNT Scholarly Works repository with regard to copyright concerns, plagiarism, difficulty with submission, low quality publishing venues, and additional time needed. The identified **outcome (dependent) variable** is faculty participation in IR (e.g., intention to deposit or not deposit).

The p**redictor (independent) variables** are the following: perceived copyright concerns, plagiarism concerns, difficulty with submission, perception of IRs as a low quality venues, additional time needed, altruism, academic reward, academic culture, discoverability and ease of access, self-efficacy and controllability.

4.1.2   Rationale for Current Research Approach

This study employed a mixed methods strategy in order to strengthen the validity of the research because it is focused on faculty perception and their intentions. According to Krathwhol (2009), because we all perceive things differently from each other, the importance of perception in determining behavior has risen due to the findings from the functional magnetic resonance imaging (fMRI). It is already known that sugar pills (i.e., placebos), when perceived as medicine, can often

cure the patient. However, only recently has it been demonstrated that the areas of the brain that react to the medicine are the same areas of the brain that react to placebo. Thus, the brain has the same reaction to placebo as it does to the medicine itself. Therefore, contrary to "positivist" approach which argues that there is a real world out there to be discovered, this particular finding puts perception in the same category as other sensed reality (i.e., sight, sound, touch, smell, etc.) (Krathwhol, 2009). This approach supports more the idea of 'constructivism', which argues that we deal with our perception of reality rather than reality itself. According to the Krathwhol (2009), this "confirms the importance of perception as a determiner of behavior… and that, in turn, suggests that mixed method studies using qualitative methods to tap perception will more likely be profitable than pursuing one method alone" (p.245). Furthermore, most researchers in social sciences are oriented toward seeking generalizable knowledge using any and all techniques possible. The current research was oriented towards generalizable knowledge and used a mixed-method approach that includes two separate components: a self-administered online questionnaire and a semi-structured open-ended questionnaire (i.e., e-mail, telephone, face-to-face, etc.) among a subsample of questionnaire respondents. The subsample was be selected based on the follow up response.

4.1.3   Operationalization of Research Variables

The independent research variables have to be defined into something comprehensible and concrete in order to be measured. Thus, items that construct each variable were developed using existing literature. The source is a number of research articles dealing with the attitudes of faculty and researchers towards open access publishing in general and IRs in particular. These articles were reviewed in order to identify various features of the variables that should be measured. The items were worded in reference to "attitudes towards institutional repositories." The rationale

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behind this approach was twofold. First, a number of studies have employed qualitative techniques to explore faculty attitudes towards OA publishing and IR. Second, these studies were conducted in a variety of settings, with various populations, thus the literature is likely to provide a generalized representation of different domains.

This study investigated the UNT faculty's willingness to participate in UNT Scholarly Works repository, which is influenced by three groups of factors based on Ajzen's (1991) theory of planned behavior: (a) faculty attitudes towards participation in IR, (b) external (i.e., social and technological) influence towards participation and (c) perceived control for participation in IR. The variables identified from previous research to influence the faculty willingness to deposit their work in IR regardless of mediation, was measured. These variables will be extracted from the previous studies related to factors affecting faculty attitudes towards IRs, which includes faculty's perceived concerns over copyright and plagiarism, difficulty with the submission process, and time, as well as perception of IRs as low quality venues. Other studies have revealed social influence toward participation in IR such as influence of altruism, influence of academic reward and academic discipline, influence of discoverability and easy access. Table 4.2 provides a brief definition of the independent variables, and sources.

4.1.4   Instrumentation of Operationalized Variables

The frequency with which faculty members identify specific impeding factors that prevent them from participation in UNT Scholarly Works repository was measured using a quantitative approach. A questionnaire was developed using standard survey methodology based on the previous findings from Kim (2007) and other studies regarding faculty attitudes toward participation in an open access IR. The purpose of the questionnaire was to assess the perceived

barriers by faculty and the intrinsic and extrinsic influences regarding participation in UNT

Scholarly Works repository.

Table 4.2

Operationalized Definitions of Research Variables

Theory of planned behavior	Independent variables	Definitions	Sources
Attitudes towards participation in IR	Perceived copyright concerns	The extent to which faculty perceives requirements to ask permission from polishers, copyright confusion, and frictions among co-authors	Kim (2008)
	Perceived plagiarism issues	Any type of faculty concerns on how their work might be used.	Mahmood et al., (2010); Buckeridge & Watts, 2013)
	Perceived difficulty with submission	Any type faculty expressed difficulty with submission process.	Creaseret al. (2010); Yang and Li (2015)
	Perceived as low quality venues	The extent to which faculty members perceive IR as low quality publishing venues and harmful to their academic careers.	Harnad (2006)
	Perceived additional time needed	The extent to which self-archiving is perceived to require time and effort.	Kim (2008)
Social influence on participation in IR	Altruism	Faculty desire to make their work more easily accessible to others and communicate their research.	(Swan et al., 2005); Kim (2007); Casey (2012)
	Academic reward	Any type of academic promotion and reward that influences faculty participation in IR.	Willinsky, 2006; Shorely and Jubb, 2013
	Academic culture	The extent to which academic culture influences faculty participation in IR.	Davis and Connolly, 2007; Jantz and Wilson (2008); Covey (2009): Cullen and Chawner (2011)
	Discoverability and ease of access	The extent to which the 'impact factor' and ease of access influences faculty participation in IR.	Kling & McKim, (1999); Donovan & Watson, 2011
Perceived control for participation in IR	Self-efficacy	The extent to which faculty perceives confidence in depositing their work.	Ajzen 1991
	Controllability	The extent that faculty member perceives the external control of participating in an IR.	Ajzen 1991

Specific questions within the domain of anticipated barriers were extracted from the previous studies and modified for this study to identify faculty members' attitudes towards participation in UNT Scholarly Works repository. Questions contained stems with ordinal response frames using 5-point Likert scales, with five (5) indicating the highest level of agreement or most favorable response, one (1) indicating the least favorable response, and three (3) indicating a neutral response. Stem plots are used to display quantitative data, generally from small data sets (Bryman, 2008). The questionnaire was adapted from surveys that were used to examine faculty attitudes toward self-archiving. (Yang & Li, 2015; Kim, 2010; Carter, Snyder, & Imre, 2007; Gadd, Oppenheim, & Probets, 2003; Rowlands, Nicholas, & Huntingdon, 2004).

The questionnaire consisted of three parts (see Appendix A for full survey). The first part was intended to collect demographic data such as age, gender, academic field, faculty rank and a number of publications per year. The second part was designed to reveal the overall faculty awareness of Open access, UNT open access policy and UNT Scholarly Works repository. The items presented at the beginning of the survey were regarding faculty awareness of OA and IRs in an attempt to avoid any biases potentially formed form answering other questions first.

The last part of the survey addressed faculty attitudes towards participation in IRs. This part of the questionnaire was comprised of 43 Likert-scale questions regarding faculty perceived barriers and benefits towards participating in an OA repository. A Likert scale was used to allow participants to rate their responses to questions related to the perceptions. Each respondent was asked to rate each item on a 1-to-5 response scale. This was the core of the current study, which stems from the research framework presented in Chapter 3, and was focused into three sections: attitudes toward participation in IR, social influence on participation in IRs, and perceived control for participation in IRs.

Section 1 did solicit the perceived concerns and benefits of respondents towards IRs, specifically the UNT Scholarly Works repository. This section was further divided into 5 predictor variables with a minimum of 3 items each, and gathered data on respondents' concerns towards participation in IR. The first group of four (4) items dealt with faculty perception of copyright concerns (PCC), followed by three (3) items regarding plagiarism issues (PPI), four (4) items dealing with difficulty with submission (PDS), five (5) items regarding faculty perception of IR as low quality venues (PLQV), and four (4) items for the perceived additional time needed (PATN).

Section 2 used four predictor variables to gather data on social influence. The four (4) items measured the influence of altruism (ALT), followed by the influence of the academic reward (AREW) with four (5) items, and academic culture (ACUL) with four (4) items, such as colleagues and peers both within and outside of the institution or academic field. The last variable of this section measured the influence of discoverability and ease of access (D&EA) with five (5) items.

Section 3 gathered data on faculty perceived confidence in having their work deposited in IRs with or without assistance on deposits. The first part of this section is self-efficacy (SE) with three (3) items, followed by controllability (CO) with three (3) items. Table 4.3 shows the grouping of predictor variables into three sections with their questionnaire items.

The last part of the survey contains two open-ended questions that allows participant to describe their concerns and motivations regarding participation in OA repositories.

Table 4.3

Research Variables with Questionnaire Items

Predictor Variables	Item Name	Items in the Questionnaire
ATTITUDE TOWARDS IR		
Perceived copyright concerns (PCC)	PCC1	I need to ask permission from publishers to deposit my work on OA repository.
	PCC2	If I deposit my work on OA repository without permission, I may infringe on copyright.
	PCC3	I need permission from coauthors and/or collaborators to deposit my work on OA repository.
	PCC4	I cannot publish my work if I deposit it on OA repository before publication.
Perceived plagiarism issues (PPI)	PPI1	I am concerned about plagiarism if I deposit my materials on OA repository.
	PPI2	If I deposit my materials on OA repository, readers may plagiarize or fail to cite my work.
	PPI3	If I deposit in OA repository I am concerned that others might alter my work without my permission.
	PPI4	If I deposit in OA repository I am concerned that others might copy my work without my permission.
Perceived difficulty with submission (PDS)	PDS1	I am not familiar with the process of submitting my work in OA repository.
	PDS2	It is difficult to learn how to enter metadata (e.g., title, author, date etc.) with my deposit.
	PDS3	I am not familiar with any tools available for submitting my work to an OA repository.
Perceived as low quality venues (PLQV)	PLQV1	I perceive OA repositories to have low prestige and low quality work.
	PLQV2	I do NOT trust the quality of materials deposited on OA repositories.
	PLQV3	Depositing my work on OA repository will adversely affect my chances of tenure/promotion.
	PLQV4	Depositing my work on OA repository will adversely affect my chances of attaining research grants.
	PLQV5	I perceive OA repositories to have less quality control than traditional publishers.
Perceived additional time needed (PATN)	PATN1	Depositing my work on OA repository is very time consuming.
	PATN2	Additional time and effort is required to make my work available on OA repository.
	PATN3	Depositing my work on OA repository takes time away from my research and writing.
	PATN4	I simply do not have the time to deposit my work in OA repository.
SOCIAL INFLUENCE		
Altruism (ALT)	ALT1	I support the principle of open access (free and unrestricted access to research materials) for all users.

(table continues)

Predictor Variables	Item Name	Items in the Questionnaire
Altruism (ALT) *(cont.)*	ALT2	Depositing my work on OA repository will help others build on my research findings.
	ALT3	Depositing my work on OA repository allows others to access literature that they could not otherwise.
	ALT4	I will continue to deposit my work on OA repository even if I do not see any direct benefits.
Academic Reward (AREW)	AREW1	Depositing my work on OA repository will increase the readership of my work.
	AREW2	Depositing my work on OA repository will increase the potential impact of my work.
	AREW3	My college accepts research work in an OA repository as an alternative to traditional publication for reappointment and/or promotion and/or tenure.
	AREW4	My department accepts research work in an OA repository as an alternative to traditional publication for reappointment and/or promotion and/or tenure.
	AREW5	The decision to deposit on OA repository is influenced by the grant-awarding body.
Academic culture (ACUL)	ACUL1	In my field, it is common for faculty to deposit any scholarly work on an OA repository.
	ACUL2	In my department, it is common for faculty to deposit any scholarly work on OA repositories.
	ACUL3	The decision to deposit in OA repository is influenced by my colleagues.
	ACUL4	The decision to deposit in OA repository is influenced by my institution.
Discoverability and ease of access (D&EA)	D&EA1	Materials deposited on OA repository will be cited more frequently.
	D&EA2	Depositing my research work on OA repository allows for earlier dissemination of my work.
	D&EA3	Materials on OA repository are more easily accessible.
	D&EA4	Materials on an OA repository sites are easier to find through Web search engines.
PERCEIVED CONTROL		
Self-efficacy (SE)	SE1	Whether or not I choose to deposit in OA repository is entirely up to ME.
	SE2	The institutional support is NOT important in deciding whether or not to deposit in an OA repository.
	SE3	I am familiar enough with OA repositories and I DO feel confident about submitting my work.
Controllability (CO)	CO1	Whether or not I choose to deposit in OA repository depends on the help from OTHERS.
	CO2	The institutional support IS important in deciding whether or not to deposit in an OA repository.
	CO3	I am NOT familiar enough with OA repositories DO NOT feel confident about submitting my work.
OUTCOME VARIABLE		
Intention of participating (INTNET)	INTENT	I intend to submit a manuscript to an open access repository within the next 6 to 12 months.

(table continues)

Predictor Variables	Item Name	Items in the Questionnaire
No intention (NOINT)	NOINT	I DO NOT intend to submit a manuscript to an open access repository within the next 6-12 months.

4.2 Setting, Population and Sampling Strategies

4.2.1 Setting

The University of North Texas (UNT) is a public academic institution, founded in 1890, located in Denton (main campus), with satellite campuses in Dallas, and Fort Worth Texas. UNT is a major public research university with number of academic programs within the university's 12 schools and colleges committed to advancing educational excellence. Currently, UNT offers 99 bachelors, 83 masters and 36 doctoral degree programs, and serves approximately 36,000 full and part-time students (University of North Texas, 2015).

The UNT Scholarly Works repository staff organizes workshops, events, and meetings as well as distributes flyers and sends e-mails to faculty regarding opportunities to deposit their scholarly and scientific works. These materials include systematic instructions, as well as user guides on how to submit their work. This type of information is also listed in the UNT Scholarly Works website (http://www.library.unt.edu/scholarly-works/submission).

4.2.2 Population

The target population for this study included all UNT faculty members who teach undergraduate and graduate students at UNT. For this research study UNT faculty are defined as individuals who hold appointments in one of the following ranks: Professor, Associate Professor, Assistant Professor, Lecturer or Instructor. They are categorized into the following statuses: full time tenure (FT-T), tenure-track (FT-TT), and full time nontenure-track (FT-NTT). The definitions of faculty ranks are subject to annual review and can be found under the policies of the University

of North Texas, Chapter 6 of Academic Affairs, Section 15.0 Faculty Review, Tenure and Promotion. See Appendix B, for definitions of faculty ranks.

At the time of survey administration Fall 2016, according to UNT's faculty fact sheet, there were a total of 1,056 of full time faculty members. From that total number of faculty, 649 were tenured, 117 were tenure-track, and 290 were non-tenure-track. The target population for this study did not include any other individuals employed at UNT such as administrators, secretaries, students or volunteers. However, the study did included teaching fellows and teaching assistants. Faculty contact information was obtained from the official website for each college and/or department.

4.2.3   Sample

In contrast to probability sampling, in which a sample is drawn from a population for making inferences about the population, a nonprobability sampling allows a convenience sample to be drawn, using whatever individuals are available (Krathwhol, 2009). For this study, nonprobability sampling was deemed most appropriate because all members of the target population were recruited to increase the sample size and achieve results that are more objective. According to Krathwhol (2009), this approach is known as *census sample* and refers to the entire responding faculty at UNT. Accordingly, a survey of the entire census will be attempted.

4.2.2.1 The Effect of Sample Size

It is generally understood that the use of larger samples in applications of factor analysis tends to provide results such that sample factor loadings are more precise estimates of population loadings and are more stable. However, there is a wide range of answers to the question of how large of a sample is necessary to adequately achieve statistically significant results. Findings and recommendations about this issue are diverse and sometimes contradictory. According to

MacCallum, Widaman, Zhang, and Hong (1999), under some conditions, relatively small samples can be entirely adequate, whereas under other conditions, very large samples may be inadequate. MacCallum et al caution researchers on two type of errors: sampling and model error. Sampling error arises from a lack of exact correspondence between a sample and a population. Model error arises from the lack of fit of the model to the population (MacCallum et al., 1999). The authors provide guidelines that can be used in practice to estimate the necessary sample size in empirical studies. The following guideline was taken into account in the current research; "as N increases, sampling error will be reduced, and sample factor analysis solutions will be more stable and will more accurately recover the true population structure" (MacCallum et al., 1999, p. 90)

Determining the sample size is a crucial part of any scientific study because too small of a sample can lead to insignificant, results while a sample too large might be costly and difficult to manage. Therefore, in this study used the following approach to determine the minimum sample size that would guarantee statistically significant results and an acceptable sampling error size. While there is no single method or rule to determine the adequate sample size different researchers provide different guidelines regarding the number of subjects required for logistic regression analysis. MacCallum et al. (1999) state that the literature on factor analysis includes a range of recommendations regarding the minimum sample size necessary to obtain factor solutions that are adequately stable and that correspond closely to population factors. Same authors claim that a necessary sample size is dependent on several aspects including the level of communality of the variables and the level of over determination of the factors. When the level of commonality is consistently high (greater than .6) it reduces the impact of sample size. Furthermore, they argue that it is not difficult to achieve good recovery of population factors with communalities in the range of .5. However, same authors explain that in this case one must have well-determined factors (not a large number of factors with only a few indicators each) and a sample in the range of 100-

200. In current study, we obtained a well determined and a rather large number of factors (11 factors) from previous research but not a highly desired sample size (138). Therefore, to determine the sample size necessary to be able to detect an effect if an effect does in fact exist in the current research I used power analysis as one of the methods to determining the required sample size.

The G*Power 3 software was be used to calculate a minimum sample size to ensure adequate power and confidence. G*Power 3 is a free statistical power analysis tool available through the Internet and used by researchers to conduct statistical tests (Faul, Erdfelder, Buchner, & Lang, 2009). There are two options of power analysis recommended for entering the expected effect size, also termed statistical power, which is odds ratio and two probabilities (Field, 2009, p. 551). Taking into account the fact that the outcome variable in current study was dichotomous, with *Yes* or *No* response, the two probabilities option was deemed most suitable.

The logistic regression analysis in this study tested whether the predictor variables (factors affecting faculty attitudes towards IR) were a significant predictor of a binary outcome variable (faculty willingness to deposit in IR). In other words, I was attempting to show whether faculty members' decision to deposit was significantly influenced by different factors shown in previous studies to have an effect on faculty attitudes towards IR, such as plagiarism, copyright concerns, and difficulty with submission, etc.

Here is a possible scenario that illustrates the role of logistic regression. $\Pr(Y=1/X=1)$ H1 = What is the probability of depositing ($Y=1$) when a faculty member is concerned about any of the factors influencing their decision (i.e. copyrights) ($X=1$). (Pr) stands for probability. ($Y=1$) represents faculty intent to deposit. ($X=1$) represents faculty is concerned about influencing factors. Based on the previous research we can assume the probability of faculty member to deposit when he or she is concerned about any of the influencing factors is low.

The alternative to the first scenaior is as follows: $Pr(Y=1/X=1)$ H0 = What is the probability of depositing (Y=1) when a faculty member is NOT concerned about copyrights (X=0). Again, based on previous research about half of faculty are not aware of OA repositories, therefore we can assume that the probability of faculty member to deposit when he or she is NOT concerned about any of the influencing factors is around half, 50% (P1=0.5). (P1) = probability under scenario 1.

4.2.2.2 Type I Error Rate is 0.05   Power = 95.

Type I error represents a significance level of 0.05, meaning we have a 5% chance of rejecting the null hypothesis, even if it is true. Power = 95 represents confidence interval (CI), which is commonly used to indicate that under repeated sampling, 95% of confidence intervals would contain the true population parameter.

With all the parameters entered in G*Power 3 software we obtained the following results. There is a 95% chance of correctly rejecting the null hypothesis that main predictor variables (factors affecting faculty attitudes) are associated with the value of the outcome variable (willingness to deposit), with minimum 116 participants.

4.3   Procedures for Recruitment and Data Collection Procedures

4.3.1   Recruitment Procedure

All faculty members at UNT were invited to participate in the survey by way of e-mail using the Qualtrics system, which is an online survey tool that allows researchers to administer and collect survey data (Qualtrics, 2015). In an effort to inform the UNT faculty about the survey, an 'invitation letter' detailing the survey was included in an e-mail one week prior to the authentic survey invitation (see Appendix C for the e-mail invitation). This e-mail informed the faculty members that the survey would be coming and will explained the intent of the survey, emphasized

that participant data would be collected anonymously (thus, their identities would not be known to the investigator). It also explicitly stated that any information obtained during this study that can identify individual participants would be kept strictly confidential (please see Appendix E for informed consent).

The week following this pre-survey e-mail, an e-mail was sent to all UNT faculty members using e-mail addresses obtained from their department websites, asking them to participate in the anonymous, web-based survey while providing a publicly available universal link (see Appendix D for invitation to participate). The link provided in the e-mail invitation lead to the questionnaire; the first page of the survey had the consent form. The consent form did include a description of the research and intent of the survey and emphasized that participant data would be collected anonymously (thus, their identities would not be known to the investigator), and any information obtained during this study that may identify individual participants would be kept strictly confidential. If the respondents indicate their consent by clicking on the appropriate button in Qualtrics, they continued on to the survey. In addition to collecting information on the independent and dependent variables, the survey collected specific demographic information about the respondent as potentially mediating variables, including faculty tenure status, rank, gender and age.

4.3.2 Quantitative Data Collection Procedures

As described previously, this study used a web survey to collect quantitative data for several reasons. First, a web-based survey administration required less time, it's was faster, more convenient and free (Qualtrics is provided by university) as opposed to administrating a survey by mail or telephone. Second, web-based surveys have been used increasingly by majority of researchers (Keesee & Shepard, 2011). Finally, the assumption was that the targeted population in this study had access to and familiarity with the Internet, e-mail, and survey tools. Thus, issues

associated with unfamiliarity with and lack of access to the technology needed to complete the web-based survey would not apply in this context. The current research used a close-ended questionnaire to collect data about faculty attitudes and intention to publish in OA IR. The respondents included those who may or may not have deposited their published works in open access repositories.

Data was collected through anonymous, web-based, self-reported, confidential questionnaire administered through the online tool Qualtrics. In Qualtrics, a universal link can be generated, which allows the collection of de-identified data. In addition, participants were provided with contact information for research personnel in case of questions or concerns. After the survey was closed and the entire data set was collected, the de-identified data from the software was collected and statistical analysis conducted.

4.3.3   Qualitative Data Collection Procedures

Qualitative data was collected in two open-ended questions distributed through Qualtrics. The open-ended question format offered the faculty the opportunity to elaborate more on each of the focus areas. These questions were intended to gather data on two different aspects of faculty members' perception of IRs. The first question was intended to get a better understanding of the motivating factors for faculty to participate in OA IR. The second question offered respondents the opportunity to elaborate on the faculty perceived barriers to participate.

4.4   Data Analysis Procedures

After gathering the survey responses, the data was exported from the Qualtrics survey system and manipulated for use in the statistical software package SPSS version 23.0. Individual

data files were created to represent each respondent, as one record. This record included data obtained from the response to the survey questions.

4.4.1 Quantitative Data Analysis

The research question (or hypotheses) and the type of data researchers collect influences the type of statistical tools researchers used for analyzing the data. The most common statistical tool used to describe the linear relationship between two continuous variables X and Y, is the Pearson product-moment correlation coefficient. This coefficient uses a value between +1 and −1 inclusive, where 1 is total positive correlation, 0 is no correlation, and −1 is total negative correlation (Spices, 2005). The current research contains multiple continuous independent (predictor) variables, and dichotomous outcome variables. In this case, analysis of variance (ANOVA) would be useful in detecting whether a relationship exists between one or more discrete independent variable (e.g., perceived copyright concern, faculty age, rank, and department) and a continuous outcome variable (e.g., faculty willingness to participate). However, the focus of this study was the prediction of faculty willingness to participate in IRs from the set of continuous independent variables. In such scenario, Kline (2011) describes another familiar statistical tool like Ordinary Least Squares (OLS) regression, which is most commonly used to assess the predictive power of a set of continuous predictor variables and a continuous outcome variable. According to Cizek and Fitzgerald (1999), linear regression is appropriate when the predictor variable(s) is reasonably hypothesized to be linear. In other words, a unit change in the value of the predictor variable is always associated with a specified change in the value of the outcome variable, within the range of data.

However, to describe the relationships of variables in the current research by a straight line was not satisfactory. Furthermore, to assume a linear relationship among variables in the current research was conceptually inappropriate, and it may be obviously wrong for the targeted population

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of interest. This study hypothesizes that the likelihood of faculty to participate (deposit their work) in and IR was related to their perception of IRs. The predictor, faculty perception of IRs, was a continuous variable; the outcome (planning to deposit or not) was dichotomous outcome variable. However, it was not reasonable to assume – nor does previous research suggest doing so – that unit changes in faculty perceptions towards IRs would be uniformly associated with equal changes in the probability of participating (depositing their work) into IR. On the contrary, the relationship between the predictor variables and outcome variable would likely be as follows. Faculty at the low end of faculty perception scale would be fairly homogenous in their likelihood to participate in an IR. While, at the certain middle point (neutral) along the faculty perception scale, the probability of participating in an IR could begin to decrease. Then, as the high end of the faculty perception scale is approached, the likelihood of faculty participating in an IR would again become fairly homogenous in their unlikelihood to participate in IR. This type of relationship in the current research is a nonlinear relationship and it is best described by a curvilinear function. Instead of a straight line, the model that would best fit the data deriving from the variables was logistic regression analysis. The characteristics of this model would allow for the representation of the relationship between the faculty perception of IRs and likelihood (probability) of participating in an IR. According to Cizek and Fitzgerald (1999), logistic regression (LR) is one of the principal analytical tools for relationships that (a) do not meet the assumptions of linear regression, (b) are best modeled via the logistic function, and (c) involve one or more continuous predictor variables and a dichotomous outcome variable (p. 2). Because the dependent variable in this study was not continuous (but rather dichotomous), the goal of logistic regression is predicting the likelihood of Y to be equal to 1 (rather than 0), given certain values of X. In other words, if X and Y have a positive linear relationship, the probability that a faculty will have a score of $Y = 1$ increases as the values of X (predictors) will increase. In this case, I was obligated to think about predicting

probabilities rather than the scores of dependent variable (i.e., faculty participation). A perfect relationship would represent a perfectly *S* shaped relationship rather than a straight line, as is the case with OLS regression (Wright, 1995). Therefore, according to Wright, modeling this relationship required a more complex formula to convert back and forth from the logistic equation to the OLS type equation. This formula is known as logistic equation and is stated in terms of the probability of $Y = 1$, which is referred to as π (or some instances as $\acute{p}$).

4.4.1.1 Overview of Logistic Regression

The main goal of this study was to predict a dichotomous outcome variable from multiple predictor variables, which may or may not cause the outcome. The following section describes the use of logistic regression with multiple independent variables. This technique is generally used instead of multiple regression when the outcome variable is dichotomous. According to Kline (2011), the regression equation in LR is a logistic function that approximates a nonlinear relation between a dichotomous outcome and a linear combination of predictors. Kline explains that the estimation method in LR is usually a maximum likelihood(ML) estimation but is applied after transforming the binary outcome into a logit variable (1 for participation, 0 non-participation), "which is typically the natural logarithm… of the odds of target outcome" (Kline, 2011, p. 32). Kline further explains that the **logit (Y)** is the natural logarithm (***In)*** of an odds of **Y**, and odds are ratios of probabilities (**π**) of **Y** happening (i.e., faculty participate in IR) to probabilities (**1-π**) of Y not happening (i.e., faculty do not participate in IR). This is the central mathematical concept that underlies LR. The logit indicates how much more likely it is that a case is a member of the target group instead of a member of the other group, and it equals the probability of the target outcome divided by the probability of the other outcome (Wright, 1995).

The simplest logistic modes as described by Chao-Ying, Kuk, and Ingersoll, (2002) takes this

form:

$$\text{Logit (Y)} = \textit{natural } \log \textit{(odds)} = In(\pi/1\text{-}\pi) = \alpha + \beta X$$

The logistic formula is stated in terms of the probability that Y = 1, which is referred to as

probability (π). The probability that Y is 0 is $1 - \pi$, where π is the probability of the outcome of the

event such as faculty participation in IR, α is the Y intercept, $\boldsymbol{\beta}$ is the regression coefficient, and Xs

is a set of predictors. In this case α and βs are estimated by the maximum likelihood (ML) method.

$$\pi = \text{Probability(Y} = \text{outcome of interest/X} = \textit{x, a specific value of X),}$$

$$\text{Logit (Y)} = In(\pi/1\text{-}\pi) == \alpha + \beta 1X1 + \beta 2X2.$$

According to Chao-Ying et al. (2002) data are entered into the analysis as 0 and 1 coding

for dichotomous outcome variable, continuous values for continuous predictors, and dummy

coding (e.g., 0 or 1) for categorical predictors. Furthermore, Kline (2011) notes that regression

coefficients (β) for each predictor in LR can be converted into "odds ratio" (p. 33). The odds ratio

estimates the difference in the odds of the target outcome for a one-point difference in the

predictor, controlling all other predictors (Kline, 2011, p. 33). According to Kline the odds ratio is

equal to $exp(\beta)$, sometimes written e β. So, if we take the exponent constant (about 2.72) and raise

it to the power of β, we get the odds ratio. The value of the coefficient β determines the direction of

the relationship between X and logit of Y. When β is greater than zero, larger (or smaller) X values

are associated with larger (or smaller) logit of Y. Conversely, if β is less than zero, larger (or

smaller) X values are associated with smaller (or larger) logit of Y.

The null hypothesis underlying the logistic regression model states that all βs equal zero. A

rejection of this null hypothesis implies that at least one β does not equal zero in the population,

which means that the logistic regression equation predicts the probability of the outcome better

than the mean of the dependent variable Y. The interpretation of results is rendered using the odds

ratio for both categorical and continuous predictors. In addition, a chi-square test was used to test whether there was a relationship among the categorical variables.

4.4.1.2 Variable Selection and Entering Predictors into Equation

The criteria for including variables in the model varies from one research problem to the next and from one discipline to another. However, according to Kline (2011) there are two ways of entering our predictors into the equation. *Simultaneous entry* is when you enter all predictors at once, while *sequential* entry is when one enters predictors over a series of steps. The sequential entry is done in two different standards**,** *theoretical* (rational) or *empirical* (statistical). The r*ational* standard corresponds to *hierarchical regression*; this is the case when you give the system a fixed order of entry. For instance, sometimes, demographic variables are entered first, and the variables of interest (constructs) are entered in a second step. On the other hand, a *statistical* standard corresponds with *stepwise* regression. In this case the system selects the order of predictors based on the statistical significance (e.g., the predictor with the most statistical significance is on top). Kline notes that stepwise regression and related methods pose many problems and that they are basically forbidden in some areas of research. Thus, the current research used the hierarchical regression to enter predictors into the system.

4.4.2   Qualitative Data Analysis

The present study analyzed the open-ended questions to gain a better understanding of overall faculty motivating factors and hindering factors using content analysis method. Content analysis is defined as "a technique for examining information, or content, in written or symbolic material..." (Neuman, 1997, p.31). Content analysis was used because it is best utilized for open-ended questionnaire or interviews (North et al., 1963).

4.5   Chapter Summary

The goal of this research was to unveil faculty perception of OA repositories, specifically reasons and influences of why they chose to participate or not participate in OA IR. This chapter discussed the rational for the current research design and its connection to the research questions. It describes in details the data analysis procedure, for both quantitative and qualitative analysis. The next chapter presents data analysis and the answers to the research questions.

CHAPTER 5

DATA ANALYSIS AND RESEARCH FINDINGS

The purpose of this mixed method research study is to investigate faculty perceptions of OA repositories with focus on copyright concerns, plagiarism, difficulty with submission, low-quality prestige, and additional time needed and their willingness to participate on OA repositories. The study also investigated the influence of altruism, academic reward, academic discipline, right of access and ease of access, as well self-confidence and external factors on faculty perceptions and willingness to deposit their work in OA repository.

The first part of this chapter discusses data analysis, which included two main components: the results from quantitative and qualitative analysis. The reporting starts with the demographic data in order to provide the reader with an overview of the participants in the study. This is followed by descriptive statistics and cross tabulation to measure the association between faculty familiarity with the OA declarations, OA policy awareness and intent to deposit with the demographic characteristics such as age, gender, academic discipline, rank and status.

The second part of this chapter presents the results of exploratory factor analysis, specifically principal component analysis (PCA), as means of identifying factors that influence faculty attitudes toward IRs. The second part of this chapter includes the results of a logistic regression analysis with multiple independent variables (factors) that affect faculty attitudes towards participation in IRs and a dependent variable (intent to deposit). In addition, relative importance weight analysis was employed to measure the most influential factors.

The third part of this chapter presents a more in depth understanding of faculty attitudes towards OA IR, through qualitative analysis using content analysis methods.

5.1   Quantitative Data Analysis

A survey was distributed to all faculty members at the University of North Texas during the summer of 2016. The first part of this chapter provides demographic data describing faculty individual characteristics. Tables 5.1 through 5.8 present the respondents characteristics, such as age, gender, college, time with the university, rank, status, number of articles produced per year, familiarity with the open access, and OA policy, contribution to UNT repository and contribution to any repository. It continues with a cross-tabulation analysis (Tables 5.11 through 5.20) that shows whether familiarity with open access, awareness of OA policy and intention to deposit work in IR is affected by demographic data such as age, gender, college, academic rank and status.

5.1.1   Survey Administration

I first sent an email message on June 9, 2016 to all department chairs/heads asking them to distribute the link to the survey instrument and follow up messages (please see Appendix C). Using the Qualtrics survey management software I sent out an e-mail invitation to all potential respondents with the survey link on June 29, 2016 with follow up reminder messages sent on July 11, August 27, and September 23, 2016 (Appendix D). The survey closed on October 12, 2016. Version 23.0 of the statistical software package SPSS was used to analyze the collected data.

5.1.2   Response Rate and Missing Data

Total number of 1158 faculty members were contacted via e-mail to participate in this study. Out of the 1158, a total of 172 surveys were partially completed, 164 completed the demographic data, and 138 were fully completed, for a total completion rate of 80%. Table 5.1 presents the total number of respondents from each college and the percentage of respondents (faculty) from each college. The faculty with the highest response rate were from College of

Information (50%), followed by Others (35%), College of Public Affairs and Community Services (34%). It is worth noting that in the category *Other,* 12 out 18 cases were identified as librarians. The College of Education was the third highest participating college, with 17%, followed by College of Arts and Sciences with 14%, College of Business with 10% and College of Engineering with 9%. The lowest participating rates were from the College of Music and College of Visual Arts and Design, both with 6%. The overall participation rate for the entire faculty was 15%.

Table 5.1

*Percentage of Respondents from Each College (*n=*172)*

Name of College	Total number of faculty contacted	Total number of respondents	Percentage of respondents
College of Arts and Sciences	442	61	14%
College of Business	147	15	10%
College of Education	105	18	17%
College of Engineering	106	10	9%
College of Information	32	16	50%
College of Merchandising,	32	3	9%
College of Music	132	8	6%
College of Public Affairs	58	20	34%
College of Visual Arts and Design	52	3	6%
Librarians/Others	52	18	35%
Total	**1158**	172	15%

Although 172 respondents completed the survey, a total of 34 individuals did not answer every question, resulting in missing values in the data set. It is crucial to any scientific study to carefully consider missing data and choose from various options for handling missing data. Some of the more common approaches include mean substitution or complete cases analysis, also known

as listwise deletion. As described by Graham (2012), mean substitution replaces missing values with the mean for that particular variable, but it is generally not recommended. Graham explains that complete cases analysis is used only in the cases where complete data is available, and removes cases with missing data from the statistical analysis. This method was deemed appropriate in this study since the number of cases with missing data was relatively small. However, listwise deletion did not include the demographic data. Table 5.2 shows the number of responses after listwise deletion for the eleven main predictors (independent) variables: perceived copyright concerns (PCC), plagiarism concerns (PPI), difficulty with submission (PDS), low quality venues (PLQV), additional time needed (PATN), altruism (ALT), academic reward (AREW), academic culture (ACUL), discoverability, and ease of access (DEA), self-efficacy (SE) and controllability (CO). For every predictor (e.g., PCC) there was a response on the Likert scale, for a total number of 138 responses that were used for further analysis.

Table 5.2

Descriptive Statistics of Respondents

Items	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree	N	Mean	Std. Deviation
PCC1	103	16	2	12	5	138	2.38	1.240
PCC2	102	16	2	12	6	138	2.17	1.189
PCC3	102	16	3	12	5	138	2.19	1.247
PCC4	102	16	2	12	6	138	3.12	1.383
PPI1	103	16	2	11	6	138	3.06	1.403
PPI2	102	16	2	12	6	138	3.07	1.389
PPI3	102	16	2	12	6	138	3.22	1.394
PPI4	102	16	2	12	6	138	3.03	1.424
PDS1	102	16	2	12	6	138	2.28	1.450
PDS2	102	16	2	12	6	138	3.25	1.213
PDS3	102	16	2	12	6	138	2.41	1.473
PLQV1	102	16	2	12	6	138	2.90	1.269
PLQV2	102	16	2	12	6	138	3.09	1.267
PLQV3	102	16	2	12	6	138	3.36	1.231
PLQV4	102	16	2	12	6	138	3.51	1.109
PLQV5	101	16	3	12	6	138	3.11	0.960
PATN1	103	16	1	12	6	138	3.22	0.980
PATN2	102	16	2	12	6	138	2.79	0.992
PATN3	102	16	2	12	6	138	3.13	1.086

(table continues)

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Items	Strongly agree	Somewhat agree	Neutral	Somewhat disagree	Strongly disagree	N	Mean	Std. Deviation
PATN4	101	16	4	11	6	138	3.25	1.203
ALT1	60	27	16	19	16	138	2.06	0.987
ALT2	59	27	17	19	16	138	1.91	1.032
ALT3	59	27	18	18	16	138	2.59	1.248
ALT4	59	27	17	19	16	138	2.36	1.074
AREW1	102	16	2	12	6	138	3.66	1.276
AREW2	102	16	2	12	6	138	3.76	1.304
AREW3	102	16	3	11	6	138	3.76	1.304
AREW4	101	16	4	11	6	138	3.26	1.222
AREW5	99	15	7	11	6	138	3.48	1.303
ACUL1	103	16	2	11	6	138	3.26	1.222
ACUL2	101	16	2	11	7	137	3.48	1.303
ACUL3	102	16	3	11	6	138	3.05	1.192
ACUL4	102	16	3	11	6	138	2.98	1.211
DEA1	103	16	2	11	6	138	2.78	1.038
DEA2	102	16	3	11	6	138	2.40	0.986
DEA3	102	16	2	12	6	138	2.28	1.018
DEA4	101	16	3	12	6	138	2.54	1.026
CO1	103	16	2	11	6	138	2.25	1.231
CO2	101	16	4	11	6	138	2.74	1.446
CO3	101	16	4	11	6	138	3.03	1.372
SE1	102	16	3	11	6	138	3.12	1.166
SE2	101	16	4	11	6	138	2.48	1.257
SE3	102	16	3	11	6	138	3.01	1.310

5.1.3 Demographic Characteristics of Respondents

The overall completion rate for demographic data was n=164. Table 5.3 below shows respondents rate by age (n=164) and gender (n=164). Regarding age: the data was evenly distributed. The results show that most of the respondent (75 %) ages ranged from 41 to 70, with the highest response rate for age groups 41 to 50 with 25.4%, 51 to 60 with 27.2 percent and 61 to 70 with 24 percent. There was a fairly good response from age groups 31 to 40 with 16% and over 70, with 5 percent. Table 5.1 shows that male respondents were slightly higher (54.5%) than the female respondents (45.5%).

Table 5.3

*Participants by Age and Gender (*N = *164)*

Respondent characteristics		Percent	Frequency
	Under 30	1.8%	3
	31 to 40	16.3%	27
Please indicate	41 to 50	25.4%	42
your age	51 o 60	27.2%	45
	61 to 70	23.6%	38
	Over 70	5.4%	9
Please indicate	Male	54.5%	89
your gender	Female	45.4%	75

Table 5.4 shows the number of participants by academic field (n=164). From the total

number of population, the largest group of respondents identified themselves as College of Arts

and Sciences (35.7%), followed by College of Public Affairs and Community Service (12.1%),

College of Education (10.9%), Other (10.9), College of Information (9.7%), College of Business

(9%), and College of Engineering (6%). However, this data reflect the respondents' rate in

proportion to the total number of participants. It is worth noting that College of Arts and Sciences

has the largest number of departments and faculty (around 450 faculty).

Table 5.4

*Participants by Academic Field (*N = *164)*

Respondent characteristics	Percent	Frequency
College of Arts and Sciences	35.7%	58
College of Business	9.0%	15
College of Education	10.9%	17
College of Engineering	6.0%	10
College of Information	9.7%	15
College of Merchandising, Hospitality and Tourism	1.8%	3
College of Music	4.8%	8
College of Public Affairs and Community Service	12.1%	20
College of Visual Arts and Design	1.8%	3
Other (please specify)	10.9%	17

Table 5.5 shows the number of participants by academic rank (n=164) and academic status (164). Thirty-three percent of faculty respondents identified themselves as *full professor,* and *other* (i.e., librarian, lecturer, instructor). They were followed by associate professor (23.9%), and assistant professor (9.6%). Regarding academic status, the largest group of faculty respondents identified themselves as tenured faculty (56.7%), followed by non-tenure track (34.1%), and tenure track (9.1%).

Table 5.5*Participants by Academic Rank and Status (*N = *164)*

Respondent characteristics		Percent	Frequency
	Professor (i.e. full, clinical, research)	33.5%	55
Please indicate your academic rank	Associate Professor	23.9%	39
	Assistant Professor	9.6%	16
	Other (i.e. librarian, instructor, lecturer, adjunct)	32.9%	54
Please indicate your academic status	Tenured faculty	56.7%	93
	Tenure track (but not yet tenured)	9.1%	15
	Non-tenure track	34.1%	56

Table 5.6 shows the number of publications per year by the respondents (n=164). Almost half (42%) of the respondents indicated that they had published at least 2-4 articles per year, whereas 34% indicated that they published 0-1 articles per year. Interestingly, 8% of the respondents stated that they had published more than 10 articles per year.

Table 5.6

*Respondents' Number of Publications per Year (*N = *164)*

Respondent characteristics	Percent	Frequency
0-1 per year	34.1%	56
2-4 per year	41.9%	69
5-7 per year	13.1%	21
8-10 per year	2.4%	4
More than 10	8.3%	14

Table 5.7 shows that almost half (47.6%) of the respondents have been with the University of North Texas for 10 or more years, while the other two groups are somewhat evenly split. Twenty-seven percent have been with the university between 5-10 years, and 25% for less than 5 years.

Table 5.7

*Respondents' Time with the University (*N = *164)*

Respondent characteristics	Percent	Frequency
Less than 5 years	25.0%	41
Between 5-10 years	27.4%	45
More than 10 years	47.6%	78

Taking into account that this study was interested in measuring faculty attitudes towards OA IR, it was deemed necessary to first describe the awareness and knowledge of respondents (faculty) regarding OA goals and OA policy. The results Table 5.8 reveal that majority of faculty, 103 out of 164 (62.5%) were not familiar with any of the three open access declarations. However, a slightly lower portion, 85 out 164 (52%) were not aware of the University of North Texas OA policy.

Table 5.8

*Respondents' Familiarity with OA and UNT OA Policy (*N = *164)*

Faculty response		Percent	Frequency
Are you familiarity with any of OA declarations	Yes	37.4%	61
	No	62.6%	103
Are you aware of the UNT OA Policy	Yes	48.2%	79
	No	51.8%	85

In addition to assessing familiarity with OA declarations and awareness of the UNT OA policy it was imperative for this study to explore self-archiving practices of faculty. As described in the first chapter, there are different modes of OA publishing, commonly referred to as self-archiving. The faculty were asked: have you ever contributed to UNT Scholarly works? If yes, how often? Have you ever contributed to any type of repository? If yes, how often?

Table 5.9 presents the frequency of faculty contribution (deposits) to UNT scholarly works repository n = 164 and any to any type of OA repository n=164. The results show that majority of faculty (75%) have never submitted to UNT repository, 12.5% have submitted sometimes, 1.2% half of the time, 7.7% most of the time, and 3.6% always. On the other, a lower rate of faculty (66.2%) have never submitted to any type of repository, 26% did submit sometimes, 1.2% half of the time, 5.3% most of the time, and only 1.2% always.

Table 5.9

Respondents' Participation in any OA Repository and UNT OA Repository (N = 164)

Rate of deposits		Percent	Frequency
How often do you submit to UNT repository	Never	74.70%	123
	Sometimes	12.60%	21
	About half the time	1.20%	2
	Most of the time	7.80%	12
	Always	3.60%	6
How often do you submit to any OA repository	Never	65.80%	109
	Sometimes	26.30%	43
	About half the time	1.20%	2
	Most of the time	5.40%	8
	Always	1.20%	2

To get a better understanding of what faculty considers as on OA access repository, the faculty were asked to describe in what type of repository do they self-archive. The respondents were asked to indicate what type of OA repository they used to disseminate their works? Only 52 out of 164 responded to this question. The results from Table 5.10 reveal that majority of faculty self-archived their work in their personal webpage (with 15 counts) and *researchgate.com* (15

counts), followed by *academia.edu* (10 counts). Six faculty members reported to self-archive in

other IRs, 4 in open access journals, followed by one.

Table 5.10

Types of OA Repository Faculty Self-archive

Type of repository	Frequency
Open journal	4
arXiv.org	1
Other IR	6
Researchgate.com	15
FirShare	1
Personal webpage	15
Academia.edu	10

In summary, the data on age groups were evenly distributed, as was the same with gender, while the largest number of respondents were from College of Arts and Sciences, and more than half of respondents were tenured faculty. The overall results reveal that more than half of the faculty were not familiar with any of the three OA declarations and not were aware of the UNT OA policy. Also, majority had never submitted (contributed) their scholarly work to UNT repository or any type of repository. However, faculty did submit manuscripts to different OA repositories at a higher rate than they did at the UNT repository. And most of faculty self-archived their work in personal webpage or researchgate.com.

5.1.4 Familiarity with OA Declarations and Demographics

Taking in to account that the current research is interested in measuring faculty attitudes towards OA IR, it was deemed necessary to further investigate the awareness and knowledge of respondents (faculty) regarding OA goals and OA policy. This data will show the familiarity with OA in general, institutional OA policy, and intent to deposit based on age, gender, college, rank

and status. At the same time, they will answer the RQ1: How does familiarity with open access (OA) and OA policy affect faculty intent to participate in IR based on age, college, rank and status? This data will assist in depicting a necessary context in which the main analysis is performed, and the interpretation of the results is done.

Previous results revealed that more than half of faculty members had no awareness of OA policy and were not familiar with OA goals. Thus, in this next section a series of cross tabulation was used to show the difference between faculty members' familiarity with OA goals based on age, gender, academic discipline, rank and status. A cross tabulation is a useful technique for measuring the association between two or more categorical variables, as long as each variable does not have too many categories (Lewin, 2005). Chi-square tests of independence were used to test if there were any statistically significant relationships existing among categorical variables.

Table 5.11

*Familiarity with OA by Age and Gender (*n = *138)*

		Familiarity with open access declarations			
		Yes		No	
Age	Under 30	Counts	0	Counts	1
		0%		100%	
	31 to 40	Counts	6	Counts	15
		33.30%		66.60%	
	41 to 50	Counts	15	Counts	24
		39.50%		60.40%	
	51 o 60	Counts	19	Counts	21
		47.73%		52.20%	
	61 to 70	Counts	8	Counts	26
		27.50%		72.50%	
	Over 70	Counts	1	Counts	2
		44.40%		55.50%	
Gender	Male	Counts	25	Counts	50
		35.90%		64.10%	
	Female	Counts	24	Counts	39
		40.30%		59.70%	

The cross-tabulations in Table 5.11 revealed that faculty between ages 61 to 70 were the least familiar with any of the three open access declarations is with 72.5%, followed by age group 31 to 40, with 66.6%, then 41 to 50, with 60.4% and faculty over 70, with 55.5%. However, the Chi-square test shows that there was no statistically significant relationship between faculty age and whether faculty members were aware of OA declarations, χ^2 (2, $N = 138$) = 6.36, $p = .382$, Cramer's $V = .215$). Chi-square test also shows that there were no major differences between sexes in regard to familiarity with any OA declaration χ^2 (2, $N = 138$) = 1.17, $p = .556$, Cramer's V = .092). The female faculty was slightly more familiar with OA (40.3%), than their male colleagues, with 35.9%.

Table 5.12

Familiarity with OA by Academic Discipline (n = 138)

	Familiarity with Open access declarations			
	Yes		No	
College of Arts and Sciences	Counts	20	Counts	38
	35%		65%	
College of Business	Counts	2	Counts	11
	20%		80%	
College of Education	Counts	2	Counts	14
	16.67%		83.30%	
College of Engineering	Counts	2	Counts	6
	30%		70%	
College of Information	Counts	11	Counts	3
	75%		25%	
College of Merchandising, Hospitality and Tourism	Counts	0	Counts	2
	0%		100%	
College of Music	Counts	1	Counts	6
	12.50%		87.50%	
College of Public Affairs and Community Service	Counts	6	Counts	12
	35%		65%	
College of Visual Arts and Design	Counts	0	Counts	2

Table 5.12 shows cross-tabulation between familiarity with any of three OA declarations and academic field. Regarding academic field, the Chi-square test shows that there was a

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statistically significant relationship between respondents' familiarity with OA and the colleges (χ^2 (1, N = 138) = 31.25, *p* = .000, ϕ = .476). The Phi is .476, indicating a strong association between the colleges of the respondents and the familiarity with OA. Furthermore, College of Music was the least familiar (87.5%0) with any of the OA declarations, followed by College of Education (83.4%) and College of Business with 80%. Followed by the College of Visual Arts and Design and College of Merchandising is Hospitality and Tourism with 100%, though it is worth noting that there were only two respondents for each of these two colleges. Colleges with the highest familiarity with OA were College of Information with 75%, and respondents identified as Other (72.2%). Others consisted mainly of librarians (12 cases), Honors College (two cases) and School of Journalism (two cases).

Table 5.13

*Familiarity with OA by Rank and Status (*n = *138)*

		Familiarity with Open access declarations			
			Yes		No
Academic rank	Professor (i.e. full, clinical, research)	Counts 33.90%	15	Counts 66.10%	32
	Associate Professor	Counts 32.50%	10	Counts 67.50%	23
	Assistant Professor	Counts 35.30%	3	Counts 64.70%	8
	Other (i.e. librarian, instructor, lecturer, adjunct)	Counts 45.40%	21	Counts 54.50%	26
Academic Status	Tenured faculty	Counts 34.40%	28	Counts 65.60%	56
	Tenure track (but not yet tenured)	Counts 37.50%	2	Counts 62.50%	6
	Non-tenure track	Counts 42.90%	20	Counts 57.10%	28

The overall data on Table 5.13 shows no major difference of familiarity with OA declarations based on the faculty rank. A Chi-square tests of independence shows that there was no statistically significant difference between rank and awareness of OA, (χ^2 (2, *N* = 138) = 4.078, *p*

= .256, Cramer's V = .171). The faculty members that identified their rank as *Other* have the highest familiarity rate (45%), followed by assistant professor (35%), full professor (34%) and associate professor (32 %). Lastly, Chi-square tests of independence showed no statistically significant difference between faculty status and familiarity with OA, (χ^2 (2, *N* = 138) = 2.092, *p* = .554, Cramer's V = .123). Overall, the non-tenure track faculty showed higher familiarity rates (43%) than tenure track (37%) and tenured faculty (34%). In addition, the data also shows that faculty that have been with the university 5-10 years (43%) are more familiar with open access declarations than faculty that has been over 10 years (39%) with the university, or those less than 5 years (31%).

5.1.5   Awareness of OA Policy and Demographics

The UNT as a public university has adopted an OA policy in February 1, 2012. (https://openaccess.unt.edu/unt-open-access-policy). Since the faculty at the UNT were participants in this study, it was deemed important to assess faculty awareness of the UNT OA policy. In this section, another series of cross tabulation analysis was used to show the difference between demographic data and faculty awareness with the university open access policy. The second cross-tabulation shows the faculty awareness of UNT open access policy by age, sex, college, rank and status. A Chi-square test with awareness of OA was utilized, to determine whether there was any relationship between these categorical variables and awareness of UNT OA policy.

Like the results in the previous section, the results from Table 5.14 shows that a significant number of faculty members were not aware of the UNT open access policy. The chi-square test indicates that there was no statistically significant relationship between age groups and awareness of UNT OA policy, χ^2 (2, *N* = 138) = 11.91, *p* = .452, Cramer's V = .208. The relative difference was as follows: ages 31-40 showed the highest unawareness rate (with 61%), followed by age 51 to

60 and age 61 to 70 (with 52%). The age group with the highest awareness rate was ages 41 to 50 (with 58%). The chi-square test indicates that there was no significant difference between male faculty (48%) and female faculty (47%) regarding awareness of UNT open access policy, χ^2 (2, N = 138) = .287, p = .991, Cramer's V = .032.

Table 5.14

*Awareness of OA policy by Age and Gender (*n $= 138$)

		Awareness of UNT open access policy?			
		Yes		No	
Age	Under 30	Counts	0	Counts	2
		0%		100%	
	31 to 40	Counts	9	Counts	15
		38.50%		61.5%	
	41 to 50	Counts	21	Counts	17
		58.10%		41.9%	
	51 to 60	Counts	20	Counts	22
		47.70%		52.3%	
	61 to 70	Counts	18	Counts	20
		47.50%		52.5%	
	Over 70	Counts	2	Counts	4
		37.50%		62.5%	
Gender	Male	Counts	36	Counts	38
		48.90%		51.1%	
	Female	Counts	30	Counts	34
		47.40%		52.6%	

Table 5.15 shows that in regard to academic discipline, there were stark differences among faculty awareness of OA policy. A Chi-square test shows that there was a statistically significant relationship between the respondents' awareness of UNT OA policy and the college (χ^2 (1, N = 138) = 44.47, p = .000, ϕ = .568). The Phi is .568, indicating a strong association and confirming that there is a great difference between the colleges in regard to awareness of UNT OA policy. The results show that none of the faculty from College of Visual Arts were aware of the UNT OA policy, followed by College of Engineering with the next highest rate (90%) of unawareness, College of Business (87%), and College of Education (75%). On the other hand, all of the

respondents in the category *Others*, which mainly consisted of librarians, were aware of UNT OA

policy, followed by College of Merchandising, Hospitality and Management (with 67%), College

of Information (with 56%), and College of Public Affairs and Community Services (with 55%).

Table 5.15

Awareness of OA Policy by Academic Discipline (n = *138)*

| | Awareness of UNT open access policy | | | |
	Yes		No	
College of Arts and Sciences	Counts 46.70%	24	Counts 53.30%	29
College of Business	Counts 13.30%	1	Counts 86.7%	12
College of Education	Counts 25%	2	Counts 75%	11
College of Engineering	Counts 10%	1	Counts 90%	9
College of Information	Counts 56.30%	8	Counts 43.8%	6
College of Merchandising, Hospitality and Tourism	Counts 100%	1	Counts 0%	0
College of Music	Counts 50%	3	Counts 50%	3
College of Public Affairs and Community Service	Counts 55%	8	Counts 45%	6
College of Visual Arts and Design	Counts 0%	0	Counts 100%	1
Other (please specify)	Counts 100%	16	Counts 0%	0

The results in Table 5.16 reveal a slight difference when it comes to academic rank, 60% of

Full professors were not aware of UNT OA policy, while 60% of *Associate professors* were aware.

Approximately 50% of the faculty rank classified as *other* (i.e., librarians, lecturers, adjunct, etc.)

were aware of UNT OA policy. However, a Chi-square test revealed that there was no statistically

significant relationship between the respondents' awareness of UNT OA policy and their rank, χ^2

(2, *N* = 138) = 7.151, *p* = .276, Cramer's V = .165. Regarding academic status, a Chi-square test of

independence showed that there was no statistically significant association between faculty and

whether the respondents were aware of UNT OA policy, χ^2 (2, $N = 138$) = 43546, $p = .603$, Cramer's V = .128. The results show a slightly higher rate of awareness for *tenured* faculty (49%), followed *by non-tenure track* faculty (48%), and tenure track with (40%).

Table 5.16

*Awareness of OA Policy by Academic Rank (*n = *138)*

		Awareness of UNT open access policy			
		Yes		No	
	Professor (i.e. full, clinical, research)	Counts 40%	19	Counts 60%	30
Academic rank	Associate Professor	Counts 60%	20	Counts 40%	12
	Assistant Professor	Counts 43.80%	4	Counts 56.30%	6
	Other (i.e. librarian, instructor, lecturer, adjunct)	Counts 49.10%	23	Counts 50.9%	24
Academic status	Tenured faculty	Counts 48.90%	41	Counts 51.1%	43
	Tenure track (but not yet tenured)	Counts 40%	2	Counts 60%	5
	Non-tenure track	Counts 48.20%	23	Counts 51.8%	24

5.1.6   Intent to Deposit and Demographics

Prior to conducting a series of factor analysis, another series of cross-tabulations (Tables 5.17 through Table 5.19) were drawn for the dependent variable (intent to deposit) and the demographic data to find out whether the intention to participate in OA IR was affected by demographic factors.

The overall result from Table 5.17 revealed that senior faculty members were more likely to participate in OA IR than younger faculty. However, a Chi-square tests of independence shows that there was a statistically significant association between faculty age and whether the respondents intended to participate in OA IRs: (χ^2 (2, $N = 138$) = 12.71, $p = .048$, Cramer's V = .303). The

faculty with the highest rate of *intent* to participate were in the age group of 51 to 60 (with 69%), followed by 41 to 50 (with 61%), 31 to 40 (with 45%) and 61 to 70 (with 40%). The lowest intent to participate was faculty under the age of 30 (with 0%) and over 70 (with 29%). The same table shows that male faculty members were slightly more likely to deposit with 56 % than their female colleagues with 46 % intent to deposit. However, a Chi-square tests of independence shows that there was no statistically significant association between age and intent to deposit, (χ^2 (2, $N = 138$) = 4.72, $p = .094$, Cramer's V = .185).

Table 5.17

Intent to Deposit by Age and Gender (n = 138)

			Yes		No	
Age	Under 30	Counts	0	Counts	2
		0%		100%	
	31 to 40	Counts	11	Counts	13
		45%		55%	
	41 to 50	Counts	17	Counts	12
		60.90%		39.1%	
	51 o 60	Counts	24	Counts	12
		69%		31%	
	61 to 70	Counts	15	Counts	21
		40%		60%	
	Over 70	Counts	4	Counts	7
		28.60%		71.4%	
Gender	Male	Counts	39	Counts	32
		55.90%		44.10%	
	Female	Counts	31	Counts	36
		46.20%		53.80%	

Table 5.18 reveals that there was a difference between academic disciplines and intent to participate in OA IR. A Chi-square test shows that there was a statistically significant relationship between the respondents' college and whether they intended to participate in OA IRs, (χ^2 (1, $N = 138$) = 32.85, $p = .000$, $\phi = .488$). The Phi is .488, indicating that some colleges were more likely than others to participate in OA IR. The category labeled as *Others*, which consists mainly of librarians showed 100% intent to deposit. College of Information showed the second highest rate of

intent to deposit with 84.6%, followed by College of Visual Arts (with 50%) and College of Arts and Sciences (with 47%). The two colleges that showed the lowest rates of intent to deposit were the College of Business with 21% and College of Engineering with 22%. College of Public Affairs and Community Services showed low rates of intent (35%) and College of Education (with 38%). In addition, it should be noted that participants from the College of Merchandising, Hospitality and Tourism did not answer this question.

Table 5.18

Intent to Deposit by Academic Discipline (n = *138)*

	Yes		No	
College of Arts and Sciences	Counts 47.06%	23	Counts 52.94%	26
College of Business	Counts 21.43%	3	Counts 78.6%	11
College of Education	Counts 38.46%	5	Counts 61.5%	8
College of Engineering	Counts 22.22%	2	Counts 77.7%	7
College of Information	Counts 84.62%	11	Counts 15.4%	2
College of Music	Counts 71.43%	5	Counts 28.5%	2
College of Public Affairs and Community Service	Counts 35.29%	6	Counts 64.71%	11
College of Visual Arts and Design	Counts 50%	1	Counts 50%	1
Other (please specify)	Counts 100%	14	Counts 0%	0

The results from the Table 5.19 did not reveal a major difference between academic rank and intent to deposit. A chi-square tests of independence shows that there was no statistically significant association between faculty rank and intent to deposit, (χ^2 (2, N = 138) = 2.14, p = .544, Cramer's V = .124). While associate professors and *Other* showed the highest rates of intent (with 57%), about half (49%) of the full professors, and only 38% of assistant professors did intend to deposit. In regard to faculty status, a Chi-square tests of independence shows that there was no

statistically significant association between faculty status and intent, (χ^2 (2, N = 138) = 3.81, p = .282, Cramer's V = .279). The non-tenure track faculty scored slightly higher rate of intent (with 59%), followed by tenured faculty (with 51%), and tenured-track faculty (with 42%). The overall results revealed that senior faculty members were more likely to participate in OA IR. However, there was a stark difference between academic field and intent, and no major difference between faculty status and intent.

Table 5.19

*Intent to Deposit by Academic Rank (*n = *138)*

			Yes		No	
Academic rank	Professor (i.e. full, clinical, research)	Counts 49.02%	24		Counts 50.9%	25
	Associate Professor	Counts 56.67%	17		Counts 43.33%	13
	Assistant Professor	Counts 38.46%	5		Counts 61.5%	8
	Other (i.e. librarian, instructor, lecturer, adjunct)	Counts 57.78%	26		Counts 42.2%	19
Academic status	Tenured faculty	Counts 51.28%	40		Counts 48.7%	38
	Tenure track (but not yet tenured)	Counts 41.67%	5		Counts 58.33%	7
	Non-tenure track	Counts 59.57%	28		Counts 40.43%	19

5.1.7   Intent to Deposit and Familiarity with OA

The results from the previous section (Table 5.11 through Table 5.19) revealed major differences between faculty demographics and familiarity with OA goals, as well UNT OA policy. Thus, the last cross-tabulation in this section reveals the influence of OA familiarity and UNT OA policy awareness on intent to participate.

Table 5.20 shows the intent to deposit based on the familiarity with OA and awareness of OA policy. The result from the Chi-square test shows that there was a statistically significant relationship between the respondents' familiarity with OA and whether they intended to participate

in OA IRs (χ^2 (1, N = 138) = 16.58, p = .000, ϕ = .347). The Phi is .347, indicating that faculty

members that were familiar with OA were more likely to deposit (76%) than those that were not

familiar (39%). Similarly, the Chi-square test shows that there was a statistically significant

relationship between the respondents' awareness with UNT OA policy and whether they intended

to participate in OA IRs (χ^2 (1, N = 138) = 8.44, p = .000, Cramer's V = .015), indicating that the

faculty members that were aware of UNT OA policy were more likely to participate (65%), than

those that were not (41%).

Table 5.20

*Intent to Deposit Based on Familiarity with any OA Declarations and UNT OA Policy (*n = *138)*

		Yes	No
Familiarity with any Open access declarations	Yes	Counts 38	Counts 12
		76%	24%
	No	Counts 35	Counts 53
		40%	60%
Awareness with UNT Open access policy	Yes	Counts 42	Counts 23
		64.60%	35.40%
	No	Counts 30	Counts 43
		40%	60%

5.1.8   Summary of Demographic Analysis

This section summarizes the answer to the RQ1: How does familiarity with open access

(OA) and OA policy affect faculty intent to participate in IR based on age, college, rank and status?

In summary, the overall results show that a majority of faculty (62%) were not familiar with any of

the three OA declarations and more than half (52%) were not aware of the UNT OA policy. There

was a significant difference between the demographics and faculty awareness of OA in general and

UNT OA policy, especially based on colleges. In addition, the majority of faculty (64%) did not

know the purpose of the UNT Scholarly Works repository, 75% never contributed to it, and 66%

never contributed to any type of OA repository. Faculty that were familiar with the OA

declarations and/or OA policy scored higher on *Intent* to deposit in IR. Lastly, there was a

significant difference between demographics and the intent to deposit, especially by college.

5.2   Deductive Content Analysis

This study analyzed initially the data from the questionnaire in order to show the reliability

of the measures before addressing the core data analysis. The deductive strategy is a way to

confirm the elicitation of questionnaire items (in Table 4.3).

5.2.1   Reliability of Measures

To avoid the common assumptions regarding reliability of the research data, it is important

to understand that researchers need to report reliability coefficients for their data (Nimon, Zientek,

& Henson, 2012). There are a variety of forms of reliability coefficients, but the most commonly

used are internal consistency estimates because they are readily calculated from a single

administration of the test. According to Henson (2001), about 75% of reported reliability estimates

in the *Directory of Unpublished Experimental Mental Measures* (published by American

Psychological Association [APA]) were internal consistency estimates. Henson notes that internal

consistency estimates relate to item homogeneity, or the degree to which items on a test jointly

measure the same construct. There are several reasons internal consistency estimates are crucial to

a research study. First, the reliability of the scores in any study measurement is vital to

understanding the observed relationships between variables. According to Henson, this is due to

the fact that all classical analysis (e.g. *t* **test**, analysis of variance, regression, etc.) are part of the

same general linear model and are correlational in nature. Second, the magnitude of the effect size

is inherently attenuated by the reliability of the scores (Henson, 2001).

5.2.1.1 Providing Evidence for Reliability

Given that reliability is concerned with score consistency, also known as "true scores", the more measurement error that exists in the scores, the less useful the scores may be for analysis and interpretation. In addition, just as reliability affects the magnitude of observed correlations, it follows that measurement error impacts the statistical significance of the tests. Thus, in the following section, I will address points related to the classical test theory (CTT) underlining internal consistency estimates, with emphasis on the coefficient alpha. The application of reliability is framed by the CTT. This theory conceptualizes observed scores into two independent additive components: a) true scores and (b) error scores. The true scores reflect the construct of interest (e.g., copyright concerns, plagiarism concerns, etc.) while error scores reflect error in the measurement of the construct of interest (e.g, misunderstanding of items, chance responses due to guessing, etc.). The ration between true scores variance and observed score variance is referred to as reliability. For this purpose, I used a close-ended questionnaire to collect data regarding faculty attitudes toward participation in open access IRs. The respondents include those who may or may not have deposited work in IR. After the collection of responses, I used the Cronbach's alpha equation to measure internal consistency and show how closely related the given set of items were.

5.2.1.2 Internal Consistency

The purpose of the questionnaire in this study was to measure the theoretical constructs that derive from the guiding theoretical framework describe in Chapter 3. Therefore, I expected all the items in the questionnaire to tap to their respective underlying construct. In such a case, Grimm and Yarnold (2000) argue that there should be consistency across the items because they are supposed to measure the same thing, within the assigned constructs. This is also known as internal consistency of the test and Cronbach's alpha is a common statistic that reflects the degree to which

the items "hang together" (Grimm & Yarnold, 2000). Cronbach's alpha is a statistical analysis that

is extensively used to estimate the reliability of the scale (Pedhazur & Schmelkin, 1991). This

statistic measures how well a set of questions capture an underlying construct, or internal

consistency. Internal consistency refers to the overall degree to which the items that make up a

scale are intercorrelated (Clark & Watson, 1995). If the value is closer to 1 than 0, the coefficient

alpha implies that the data are more likely to capture the underlying variable. Due to the impact

that internal consistency has on the interpretation of the scale scores and variable relationships,

researchers typically relate estimates of internal consistency to established benchmarks (Nimon,

Zientek, & Henson, 2012). Henson (2001) reviewed such benchmarks and cited 0.80 as a minimum

internal consistency for scores used for general research purposes. Nimon et al. (2012) suggested

minimum reliabilities of 0.6 for early stages of research, but this was increased to an exploratory

standard of 0.7. For others, such as DeVellis (2003), the minimally acceptable level of internal

consistency is 0.6. In addition, Nimon et al. (2012) cautions about the extreme cases where all

items would be perfectly correlated. This could possibly happen due to the redundancy of the items

of measurement. In other words, it is a failure to produce an appropriate breadth of items from the

range of all possible items that could be used to measure the construct. Cronbach (1951)

introduced the coefficient alpha as a measure of internal consistency that could be used with

dichotomously scored items. However, coefficient alpha can also be used with measures using

multiple response categories, such as Likert scales data. Thus, in this study, the Cronbach's

coefficient alpha was initially used to determine if survey items are grouped well together by

themes and also to discover which survey items appear to lessen the coefficient alpha of the overall

group of questions per theme. I initially computed the Cronbach's alpha for each variable to test

the internal consistency of the items. Items with a low item-total correlation coefficient (<0.7) were

deleted. The results demonstrate that the scale shows an acceptable level of internal consistency

reliability and were used to determine which item would be included in the item pool. The items

were presented Table 5.21 shows the internal consistency of all the items presented in Table 4.3.

Table 5.21

Internal Consistency of Variables

Variables	# of items	Cronbach's alpha
Perceived copyright concerns (PCC)	4	0.894
Perceived plagiarism issues (PPI)	4	0.972
Perceived difficulty with submission (PDS)	3	0.913
Perceived as low-quality venues (PLQV)	5	0.962
Perceived additional time needed (PATN)	4	0.951
Altruism (ALT)	4	0.934
Academic reward (AREW)	4	0.914
Academic culture (ACUL)	4	0.9
Discoverability and ease of access (D&EA)	4	0.944
Self-efficacy (SE)	3	0.815
Controllability (CO)	3	0.833

5.2.2   Validity of Measures

In the scale development, process constructing good measures is crucial. Clark and Watson

(1995) argue that construct validity involves three important steps. The first step is to articulate a

set of theoretical concepts and their interrelations. Second, one should develop ways to measure the

hypothetical constructs proposed by the theory. And the third step is to empirically test the

hypothesized relations among constructs and their observable manifestations. The first step I

completed in the theoretical framework in Chapter 3. The second step was completed by

conceptualizing the constructs from previous studies. The review of previous research served as a

means to clarify the nature and the range of content of the target constructs and helped to identify

major issues related to faculty attitudes towards IR, and, more importantly, a thorough literature

review indicated the need for a measurement scale. To complete the third step, I needed to find a

considerable amount of evidence that an instrument would measure what it is designed to measure.

The measurement terminology of the amount of evidence is *validity*. The validity of research is

dependent on whether a measurement scale is valid. The construct of the research problems is reflected in the measurement scale. The validity of measurement scale is discussed in the next sections.

5.2.3   Creation of Item Pool

An item pool was created drawing from previous studies that have investigated faculty attitudes toward self-archiving in general. During the selection of initial items I followed two simple rules recommended by Clark and Watson (1995), (1) included items that are broader and more comprehensive than theoretical view of the target construct and (2) include content that ultimately would be tangential or even unrelated to the core construct.

In addition, during item writing I followed a few basic principles also recommended by Clark and Watson in order to write 'good items'. I used simple and straightforward language that was appropriate for the reading level of the scale's target population, and avoided complex items that would assess more than one characteristic.

In the initial phase of scale development, I used Cronbach alpha to analyze item-total correlations and eliminated items that did not strongly correlate with the underlying constructs. However, Clark and Watson (1995) argue that to a considerable extent, internal consistency is always had at the expense of the breadth of the construct. In other words, simply retaining five or 10 top items may not yield the scale that best represents the target constructs. Therefore, before conducting structural analyses I identified and eliminated items that highly skewed and unbalanced distribution because, according to Clark and Watson, they can produce highly unstable correlation results. Also, items which most of the respondents responded to similarly were removed as they conveyed little information and were deemed redundant.

5.2.4   Providing Evidence for Validity

The current study is mainly concerned with two types of validity evidence: convergent and discriminant evidence, which are considered subcategories or subtypes of construct. In research methodology authors use the terms *latent variables* or *factors* to describe the unobserved variables, also known as constructs. Krathwhol (2009) explains that "convergent evidence comes from the fact that already accepted measures of the construct correlate highly with it and that measures expected to be only weakly related to it show only low correlation or, if inversely related, have negative correlation" (p. 410). According to Brown (2015), the result of factor analysis can provide a compelling evidence of the convergent and discriminant validity of theoretical constructs. Factor analysis is commonly used in psychometric evaluations and multiple-item testing instruments (e.g., questionnaires).

The next important step performed was structural analysis that determined which items were to be eliminated from or retained in the item pool. One of the often-used statistical techniques of choosing an efficient set of items that yields precise assessment across the entire range of the continuum is factor analysis (Clark & Watson, 1995). Using factor analysis, we can measure construct validity by extracting factors based on correlation among items and thus determine whether the items in the questionnaire measure what they are designed to measure. However, in order to ensure that the scale is measuring only the target construct as precisely as possible it is necessary to show homogeneity or unidimensionality and not only internal consistency (Clark & Watson, 1995). Internal consistency is necessary but not sufficient condition for homogeneity. Homogeneity indicates whether the scale items assess a single underlying construct. Kieffer (1999) highly recommends factor analysis to establish homogeneity of a scale. The factor analytical techniques have been utilized in social and behavioral research in evaluation of the construct validity of measures. There are two types of factor analytical techniques; exploratory (EFA) and

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confirmatory factor analysis (CFA). According to Kieffer (1999) the main purpose of EFA is theory generation and mathematically re-expressing the relationship between a set of variables. The goal of the analytical techniques in this study is in examining how well the current adopted (utilized) instrument resembles the factors (constructs) of the previous research.

5.2.5   Construct Validity

A construct is a theoretical concept commonly used in behavioral and social sciences. For instance, in this study, the perceived copyright concern is a construct manifested by various clusters of concerns that are reported by faculty members (i.e., I need to ask permission from publisher to post my work on OA IR). Construct validation is essential to studies in behavioral and social sciences and factor analysis is an indispensable analytical tool for construct validation (Brown, 2015). Brown argues that factor analysis can provide compelling evidence for convergent and discriminant validity of theoretical constructs. Furthermore, Brown explains that convergent validity is indicated by evidence that different indicators of theoretically similar or overlapping constructs are strongly interrelated. For example, items in the questionnaire asking about faculty concerns with copyright should load on the same factor. Discriminant validity is indicated by results showing that indicators of theoretically distinct constructs are not highly correlated. In this study, the different (factors) perceived faculty concerns regarding participation in OA IR are not so highly correlated with each other as to indicate that this broader construct of overall faculty concerns has been incorrectly separated into more factors than necessary.

Kline (2011) explains that theoretical constructs are not directly observable but can only be inferred or measured indirectly through observed variables also called indicators. Kline argues that it is unrealistic to expect any single indicator to adequately measure a hypothetical construct. Therefore, according to Kline using multiple indicators when measuring a construct is necessary

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for the following reasons. First, scores across a set of measures tend to be more reliable and valid than scores of any individual measure. Second, multiple indicators may each assess a somewhat different facet of the construct, which enhances score validity (p. 71). To determine factor loadings initially I used a minimum of three (3) and a maximum of five (5) indicators per factor (latent variable). The constructs or factors are thought to cause and summarize responses to observed variables, thus the theory development and score validity evaluations are both closely related to factor analysis. In other words, factor analysis can simultaneously test measurement integrity and guide further theory refinement. The current study is guided by an established theory in social psychology, the theory of planned behavior, and incorporates a model from field of library and information science, a model of factors affecting faculty self-archiving. Therefore, it is primarily concerned with identification of the factor structure for a set of variables derived from the above-mentioned theory. More specifically, by assessing the correlation among items in the questionnaire I can examine the convergent and discriminant validity of the factors affecting faculty attitudes towards OA IR. In other words, when items are developed factor analysis is used to measure expected constructs in order to find those factors that best reproduce the variables under the maximum likelihood condition. The next section presents the construct and discriminant validity of the model.

5.2.5.1 Initial Findings of Convergent Validity

Campbell and Fiske (1959) describe convergent validity as the degree of confidence we have that a trait is well measured by its indicators while discriminant validity is the degree to which measures of different traits are unrelated. According to this criterion, the *convergent validity* of the measurement model can be assessed by the Average Variance Extracted (AVE) and Composite Reliability (CR). AVE measured the level of variance captured by a construct versus level variance

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due to measurement error; values above 0.7 are considered good, whereas, the level of 0.5 is

acceptable. CR is a less skewed estimate of reliability than Cronbach's Alpha, with the acceptable

value of 0.7 and above on the measure of internal consistency. See Table 5.22.

Table 5.22

Measures of Convergent Validity

Variables	Estimate	CR	AVE	Item Reliability
PLQV5 <--- PLQV	0.806	0.961	0.91	0.65
PLQV4 <--- PLQV	0.988			0.976
PLQV3 <--- PLQV	0.942			0.888
PLQV2 <--- PLQV	0.917			0.841
PLQV1 <--- PLQV	0.896			0.803
PATN4 <--- PATN	0.921	0.961	0.927	0.848
PATN3 <--- PATN	0.936			0.876
PATN2 <--- PATN	0.902			0.814
PATN1 <--- PATN	0.948			0.898
PCC4 <--- PCC	0.903	0.891	0.932	0.815
PCC3 <--- PCC	0.785			0.617
PCC2 <--- PCC	0.798			0.637
PCC1 <--- PCC	0.79			0.624
PPI4 <--- PPI	0.949	0.976	0.955	0.901
PPI3 <--- PPI	0.976			0.954
PPI2 <--- PPI	0.96			0.922
PPI1 <--- PPI	0.933			0.87
PDS3 <--- PDS	0.83	0.92	0.887	0.69
PDS2 <--- PDS	1.011			1.023
PDS1 <--- PDS	0.819			0.671
ALT4 <--- ALT	0.914	0.945	0.901	0.835
ALT3 <--- ALT	0.897			0.804
ALT2 <--- ALT	0.948			0.899
ALT1 <--- ALT	0.844			0.713
AREW5 <--- AREW	0.868	0.9	0.685	0.753
AREW4 <--- AREW	0.895			0.802
AREW3 <--- AREW	0.898			0.807
AREW2 <--- AREW	0.827			0.684
AREW1 <--- AREW	0.806			0.65
ACUL4 <--- ACUL	0.848	0.92	0.861	0.72
ACUL3 <--- ACUL	0.879			0.773
ACUL2 <--- ACUL	0.864			0.747
ACUL1 <--- ACUL	0.851			0.723
DEA4 <--- DEA	0.907	0.953	0.913	0.822
DEA3 <--- DEA	0.868			0.754
DEA2 <--- DEA	0.933			0.871
DEA1 <--- DEA	0.944			0.891
SE3 <--- SE	0.712	0.855	0.812	0.507

(table continues)

Variables	Estimate	CR	AVE	Item Reliability
SE2 <--- SE	0.852			0.726
SE1 <--- SE	0.872			0.76
CO3 <--- CO	0.797	0.859	0.818	0.636
CO2 <--- CO	0.786			0.618
CO1 <--- CO	0.871			0.759

Note. PLQV = Perceived Low-Quality Venues; PATN = Perceived Additional Time Needed; PCC = Perceived Copyright Concerns; PPI = Perceived Plagiarism Issues; PDS = Perceived Difficulty with Submission; ALT = Altruism; AREW = Academic Reward; ACUL = Academic Culture; DEA = Discoverability and Ease of Access; SE = Self Efficacy; and CO = Controllability.

To show convergent validity, I used three recommended measures (see Table 5.22). The interpretation of the measures are as explained below.

Structure coefficients estimate (SCE), also referred to as estimates, measure correlation between an indicator and a factor. In this study, an indicator is specified to measure just one factor, thus standardized loadings are referred to as structure coefficients. According to Kline (2005), structure coefficient estimates should be minimum .5 or higher, and ideally .7 or higher. In the Table 4.5 under the *Estimate* row, also known as standardized factor loadings for indicators (i.e., PCC1, PCC2), is specified to measure one specific factor (i.e., copyright) and not the others (i.e., plagiarism, etc.). For example, the PCC1, PCC2, PCC3 and PCC4 is specified to measure the copyright concerns (PCC) but not the plagiarism concerns (PPI), and they all show .79 or higher loadings. All the indicators in this study show SCE of .79 or higher.

Construct reliability (CR) – this indicates the internal consistency among items. This means the items (i.e., PCC1, PCC2) are all consistently representing the construct (i.e., copyright concern). The rule of thumb for CR estimate is that .7 or higher suggests good reliability. All the items in this study meet the criteria set forth by Kline (2005). The lowest CR value in the Table 5.22 was 8.5.

Average variance extracted (AVE) estimates of .5 or greater suggest adequate convergent validity (Kline, 2005). AVE is obtained from the sum of item reliability divided by the number of

items on the construct. All the items in this study show an adequate convergent validity. The lowest AVE value was 6.8.

In addition to these measures the table includes *item reliability* that is a less biased measure of internal consistency than the Cronbach's alpha. All the items in this study showed adequate item reliability with the lowest value .61. Majority of the items in Table 4.5 showed an item reliability of .7 or higher.

In summary, all the criterion suggested by to Kline (2005) for convergent validity were fulfilled in this study. The current research obtained an SCE of .7 or higher for every item, indicating that the structure coefficient estimates were very good. Also, a .819 or higher CR was achieved on all items, indicating great internal reliability. All the values of convergent validity (AVE) were .8 or higher, except for AREW (.68), indicating more than adequate convergent validity. In addition, the item reliability test showed that all constructs had satisfactory reliability values.

5.2.5.2 Initial Findings of Discriminant Validity

Discriminant validity measures the extent to which a construct is truly distinct from other constructs. According to Fornell and Larcker (1981) discriminant validity is assessed by comparing the average variance extracted (AVE) estimates for each factor with the squared inter-construct correlations (SIC) associated with that factor. All the variance extracted (AVE) estimates should be larger than the corresponding SIC estimates to achieve discriminant validity. In other words, this shows that indicators have more in common with the construct they are associated with than they do with other constructs. This CFA model of the table below demonstrates discriminant validity.

The results from Table 5.23 show the correlations between the measure of each construct and other measures with which are theoretically associated. Results show that AVE values (in

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bold) are larger than all the SCI estimates for all eleven factors, indicating that discriminant

validity has been achieved.

Table 5.23

Measures of Discriminant Validity of Constructs

PLQV	PATN	PCC	PPI	PDS	ALT	AREW	ACUL	DEA	SE	CO
0.909										
0.836	**0.96**									
0.872	0.833	**0.891**								
0.82	0.745	0.833	**0.976**							
0.777	0.852	0.743	0.692	**0.919**						
0.503	0.56	0.514	0.441	0.463	**0.945**					
0.708	0.779	0.731	0.691	0.665	0.848	**0.951**				
0.697	0.803	0.715	0.658	0.648	0.812	0.947	**0.919**			
0.623	0.675	0.642	0.631	0.528	0.888	0.909	0.84	**0.952**		
0.707	0.688	0.657	0.671	0.566	0.857	0.909	0.86	0.873	**0.854**	
0.845	0.907	0.841	0.752	0.892	0.659	0.829	0.853	0.763	0.655	**0.859**

Note. The values in bold represent extracted (AVE) estimates

5.2.6   Assessing the Fitness of the Model

The results from a well-fitting structural model should predict values close to the observed

data values. To address the relationship between the eleven independent (predictor) variables with

the outcome variable (INTENT) initially a confirmatory factor analysis (CFA) analysis was used to

evaluate the contribution of the factors to the overall fit of the structural model. The core of this

analysis was to assess whether the data is suitable for conducting regression analysis. Thus, this

study utilized CFA to determine how well the model fits the data. This enabled us to determine the

criteria for factor loading as recommended by Kline (2005). Four statistics were used in Ordinary

Least Squares (OLS) regression to evaluate model fit: Chi-square-degrees of freedom ratio, the

Bentler Comparative Fit Index (CFI; Bentler), the Goodness of fit index (GFI), and Root Mean

Square Error of Approximation (RMSEA)

5.2.7   Initial Findings from the CFA Model

The estimation of parameters was initially based on the maximum likelihood (ML) method. However, according to Byrne, (2010) before using the ML estimation it is necessary to make sure that the sample size is large, the distribution of the observed variables multivariate normal, the hypothesized model is valid, and the scale of the observed variables is continuous. This study was unable to meet those criteria. To correct this issue, the unweighted least squares (ULS) estimation method was implemented since according to Kline (2005), this estimation method does not assume a covariance matrix that is a positive definite.

The results from the ULS estimation method showed that the model is over identified, because the number of measured parameters is less than the number of data points (i.e., variances and covariances of the observed variables) as explained by Byrne (2010). According to the same author this situation results in positive degrees of freedom that allow for rejection of the model, therefore rendering it of scientific use. One thing to keep in mind is that in current research there is no hypothesis that one of the factors causes the other. Instead, they are simply assumed to covary.

5.2.7.1 Goodness-of-Fit Results

There are several models that a researcher can conduct to determine which model best fits the data. A range of goodness-of-fit statistics exists for SEM. Maruyama (1998) discusses a few indices and the guidelines for using them.

Prior to the testing of the research hypotheses I examined whether CFA was warranted as potential suitable analysis. After using different goodness-of-fit indicators (see Table 5.24) to assess a model such as chi-square-degrees of freedom ratio, the Bentler comparative fit index (CFI; Bentler), the goodness of fit index (GFI), and the root mean square error of approximation

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(RMSEA), the results showed a poor model fit. The initial model exhibited poor fit as indicated by high X^2 (2019.87, df = 805), low CFI (.73), GFI (.61) and high RMSEA (.10) (Kline 2011).

Table 5.24

Measures of Goodness of Fit

Model	X	df	cfi	RMSEA	90%RMSEA	TLI	GFI	CMIN
Baseline	2019.88	805	0.707	0.105	[.099, .111]	0.671	0.61	2.509
1st run	1816.65	764	0.736	0.1	[.094, .106]	0.702	0.632	2.378
2nd run	1745.65	724	0.741	0.102	[.095, .108]	0.707	0.637	2.411
3rd run	**1608.38**	685	**0.755**	**0.099**	[.093, .105]	0.721	0.653	2.348

Note. 1st run after elimination of ACUL1, 2nd run after elimination of AREW5, 3rd run after elimination of CO3.

I started out with chi-square-degrees of freedom ratio, which is the likelihood ratio test statistic. This measurement ensures the null hypothesis that the variance-covariance matrix estimated from the model doesn't differ from the observed one (i.e., that all residuals are zero). This test is sensitive to sample size and detects even minor deviations when the sample size is large. Some researchers may also use chi-square to df. ratio – a smaller ratio indicates a better fit. CMIN/DF – a value below 2 is preferred but between 2 and 5 is considered acceptable. The model in this study exceeded that value.

The Bentler' comparative fit index (CFI; Bentler), which is an incremental fit index, is 0.755, which was under the recommended guidelines (>0.90). However, for a model of this complexity with 43 observed variables and sample size of 138, it is difficult to meet at the criteria set by the guideline.

The goodness of fit index (GFI, AGFI) measures the amount of variance and covariance explained by the model when compared with null model. And the adjusted index AGFI is similar, but it adjusts for the number of degrees of freedom in the specified model (i.e., it accounts for

parsimony). Both indices range from 0 to 1, with values close to 1 being indicative of good fit. Although theoretically, it is possible for them to be negative as well when the model is worse than no model at all (Maruyama, 1998). I obtained a value of .653 indicating a satisfactory fit.

Another important goodness-of-fit index is Root Mean Square Error of Approximation (RMSEA) that shows how well the model would fit the population covariance matrix. Values less than .05 indicate good fit, and .08-.10 indicates mediocre fit, and greater than .10 indicates poor fit. After the third run the RMSEA for the current research was 0.099. This value indicated a poor fit and represented a reasonable error of approximation in the population for a model with 11 measured variables and a sample size of 138. This also is called a Badness-Of-Fit index. The 90% confidence interval for the RMSEA is between a LO of .093 and a HI of 0.105, indicating a poor fit. Thus, even after elimination of ACUL1, AREW5, and CO3 the data did not fit the model, thus confirmatory factor analysis was deemed not the best fit for this research.

5.2.8   Rationale for the Use of Exploratory Factor Analysis

Henson and Roberts (2006) noted that conceptualizations of factor analysis include both exploratory and confirmatory factor analysis. The fundamental difference between the two methods as explained by Keiffer (1999) is that EFA is an exploratory method used to *generate* theory, whereas the CFA is generally used to *test* a theory. Kieffer notes that CFA has demonstrated the usefulness as a tool in providing support that allows researchers to directly test the theoretical expectations generated by previous research. Initially, I followed closely the recommendations by Henson and Roberts (2006) when prior theory existed regarding the structure of the data. Theoretically, CFA may be the preferred analytical method for the current study given its ability to falsify theoretical expectations. However, results from the CFA showed poor model fit. The results are likely due to the fairly small sample size (138) in the current study. Byrne (2010) cautions that

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a large sample size is the first condition to be met to achieve meaningful results using CFA method. On the other hand, MacCallum et al. (1999) argues that when using common factor analysis, the necessary sample size is dependent on several aspects of any given study, including the level of communality of the variables and of overdetermination of factors. They argue that as communalities increase the quality of factor analysis solutions will improve, and the influence of sample size on quality solution will decline. In other words, when commonalties are high the sample size has little impact on quality of solutions. Their results show that the recovery of population factor was always good to excellent when communalities were high. In addition, authors Henson and Roberts (2006) explain that when employing the factor analysis method, the sample size depends in large part on the features of the obtained data. They reaffirmed previous claims that when communalities are high (greater than .60) and each factor is defined by several items sample size can be relatively small. In this study these criteria were met, the average communalities are .60 or higher (see Table 5.9), and each factor is defined by three or more indicators. Henson and Roberts (2006) also noted that in addition to being deemed more appropriate during instrument development factor analysis can also be used in confirmatory ways. According to Tabachnick and Fidell (2007), factor analysis is often used to assess the convergent and discriminant validity of the constructs. The primary concern at this initial stage was to simply find the factors that best reproduce the variables under the maximum likelihood conditions rather than testing specific hypothesis regarding the nature of the factors. The first step in data analysis for this study was establishing construct validity, thus an exploratory factor analysis (EFA) method was deemed a suitable analysis.

5.3   Factors Analysis and Results

5.3.1   Factor Extraction and Interpretation

One of the purposes of factor analysis is "to determine what theoretical constructs underlie a given data set and the extent to which these constructs represent the original variables" (Henson & Roberts, 2006 p. 396). According to Kieffer (1999), factor analytic techniques have been utilized in social sciences for the purpose of developing theories and evaluating construct validity of measures (i.e., scores). Kieffer advised that an EFA approach is less than optimal when the number of factors to extract was set based on a priori theory. However, Henson and Roberts noted that theory often drives item development, and these items are often subsequently assessed with EFA to help refine the assessment. The goal at this stage was to address the RQ 2: What are the factors (attitudinal, social, and individual) that influence (affect) faculty attitudes towards participation in OA IR? At the same time, I needed to assess the convergent and discriminant validity of a set of factors (constructs) that affect faculty attitudes towards OA IR that derive from the literature review and a priori theory and cannot be directly measured. According to Field (2009), this is done by reducing the correlation between each pair of variables (known as R-matrix) down to its underlying construct and looking at how variables seem to cluster together in a meaningful way, also known as factor loadings. Field explains that data reduction is achieved by looking for items that correlate highly with a group of variables, but do not correlated highly with other variables outside that group. This way I can extract factors and look at the correlation between variables as well as the factors. Therefore, factor analysis was deemed suitable at this stage and was utilized to establish convergent and discriminate validity of factors (constructs) affecting faculty attitudes towards OA IR. The two most commonly used factor analysis techniques are the principal component analysis and principal axis factoring. The next section discusses the difference between the two methods.

5.3.2   Principal Component Analysis (PCA) vs Principal Axis Factoring (PAF)

The most common ways to extract factors are the principal components analysis (PCA) and principal axis factoring (PAF) and researchers must consider which method to use. The difference and application of the PCA versus PAF has been passionately debated among the experts in the field of statistics. There are relative advantages and disadvantages for both extraction methods. Henson and Roberts (2006) explain the difference is negligible and that both methods are used for the purpose of factor extraction, which is to remove any variance common to sets of variables from the original matrix association. Furthermore, the same authors explain that PCA is simply intended to summarize many variables into fewer components and the latent constructs (i.e., factors) are not the focus of analysis. According to Kieffer (1999), PCA uses the total variance of each variable in examining the shared variances between variables. Kieffer explains that the calculation using this method is done by placing values of unity 1.0 on the main diagonal of the correlation matrix and leaving the bivariate correlation coefficients on the off-diagonals. Snook and Gorsuch (1989) state that "as the number of variables decreases, the ratio of diagonal to off-diagonal elements also decrease, and therefore the value of the communality has an increasing effect on the analysis" (p. 149). On the other hand, the main focus of PAF is latent variables, specifically on common variances among the items. According to Kieffer (1999), in PAF an estimate of the reliability of each variable is placed on the main diagonal of the correlation rather than a value of unity 1.0. Proponents of PAF argue that placing a value of unity on the main diagonal would introduce error variances into the factor extraction procedure. Kieffer notes that as the number of factored variables increases, and the factored variable becomes more reliable, the difference associated with utilizing PCA versus other extraction methods becomes more negligible. In this study, the number of factored variables was relatively high (43) thus, the PCA was deemed suitable method for this study. The study was primarily interested in identifying the underling constructs from the data

collected and assessing the extent to which these constructs represent the original variables derived from a priori theory. Taking into consideration that PCA analysis yields results similar to PAF as the number of factored entities increases according to Kieffer and since PCA requires no further manipulation of the data array, PCA was chosen to extract the latent constructs and address RQ2: What are the factors (attitudinal, social, and individual) that affect faculty attitudes towards participation in IRs?

5.3.3   Factor Retention

The purpose of factor retention is to determine the number of factors to retain from the matrix associations. Henson and Roberts (2006) argue the main goal of factor analysis is to explain the most variances of the observed variables while retaining the fewest possible factors. Researchers can use a number of rules to determine the correct number of factors to retain, including the eigenvalue > 1 rule; (EV > 1; Kaiser, 1960), screen test (Cattell, 1966), minimum average partial correlation (Velicer, 1976), Bartlett's chi- square test (Bartlett, 1950, 1951). The most frequently used method is the EV > 1 rule. However, according to O'Connor (2000), EV method tends to overestimate, and sometimes under-estimate, the number of factors, while screen test is rather subjective in nature and has a low reliability. According to Henson and Roberts (2006) the Bartlett's chi- square test tends to be inconsistent. They suggest using different criteria and reasoned reflection because the factor retention decision directly effects the factor analysis results. O'Connor argues that there is an increasing consensus among statisticians that two less known procedures, parallel analysis (Horn 1965), and Velicer's minimum average test (MAP) are superior to other procedures and typically yield optimum solutions regarding the number of factors to retain. Velicer's (1976) MAP test "involves a complete principal components analysis followed by the examination of a series of matrices of partial correlations" (p. 397). Researchers can utilize MAP

for both PCA and PAF. O'Connor notes that MAP method has been used with PCA and PAF to yield similar results. Many have found the MAP method to be accurate under many conditions. Keiffer (1999) argues that the difference between PCA and other extraction methods becomes negligible "(a) as the number of factored variables increases and (b) as the factored variables become more reliable" (p. 12). In this study, the number of factors to retain was 11, and was initially determined based on the a priori theory. Following the accurate procedure described by Velicer and Jackson (1990), I used EV and Velicer's MAP to confirm the number of factors to extracted, determined by *a priori theory*. All three criteria indicated the extraction of eleven factors.

5.3.4 Factor Loadings and Matrix Associations

According to Field (2009) factor loadings tell us about the relative contribution that a variable makes to a factor. Furthermore, the contribution of a variable on a given factor (latent variable) is indicated by factor pattern coefficients and factor structure coefficients, which is usually referred to as factor loadings. Field (2009) describes factor loadings in two ways. First as the correlations between a variable and a given factor, also known as *correlation coefficients*, and are usually described in a *structure matrix*. Second, factor loadings are defined in terms of *regression coefficients* (β), which measure each variable on each factor, and are described in *pattern matrix*. In addition, Field noted that factor loadings in a given analysis can be both correlation coefficients and regression coefficients. The matrix of associations (e.g., correlation, variance/covariance) describes the mathematical relationship between the variables. The assumption about the relationship derives from the *a priori* theory.

The criteria for determining the minimum factor loadings necessary to include an item are described by Field as follows: variables with loadings > 0.3 would be significant, > 0.4 more

important, and >= 0.5 very significant. This study would accept items with loadings >=0.4, although most of the loadings are .5 or higher.

5.3.5 Rotation Techniques

Interpretation of factor analysis is conducted mainly using two rotation techniques: orthogonal and oblique. The rotation strategies are selected by researchers to facilitate interpretation of their factor results. The *orthogonal* is used when underlying factors are assumed to be independent. In this case the values of factor loading are the same for correlation coefficients and the regression coefficients. Henson and Roberts (2006) explain that when factors are orthogonally rotated, they remain uncorrelated, and the factor structure matrix will exactly match the factor pattern matrix. In case there are theoretical grounds ensuring that the factors do not correlate with each other than the researcher can choose this option. However, Field (2009) cautions that regardless of theoretical grounds using orthogonal rotation for any data involving humans (i.e., psychological constructs) is not a realistic approach. However, in cases when the underlying factors are assumed to be correlated or related, an oblique rotation is used and the values of correlation coefficients will differ from the corresponding regression coefficients (Field, 2009). In other words, when an oblique rotation is used, the factors are allowed to correlate with each other. In this case, the factor structure matrix will not equal the factor pattern matrix. According to Field there are situations in which values in the pattern matrix are suppressed because of the relationship between factors. Thus, both, the correlation coefficients and the regression coefficients have to be reported. However, for this study I was primarily interested in measuring the contribution of each variable on each factor. Thus, the focus of interpretation was on the pattern matrix, as it shows how much each variable accounts for while structure matrix shows how much each variable could have accounted for if every other factor remained statistic. Following recommendations by Field, I conducted an EFA using PCA factor extraction method and oblique

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oblimin rotation technique. I then evaluated each item based on extraction factor loadings (.4) or higher. Table 5.25 shows the pattern matrix for all 43 items. The items with coefficients greater than |.40| are in bold and were retained for the corresponding factor: perceived copyright concerns (PCC), plagiarism concerns (PPI), difficulty with submission (PDS), low quality venues (PLQV), additional time needed (PATN), altruism (ALT), academic reward (AREW), academic culture (ACUL), discoverability, and ease of access (DEA), self-efficacy (SE) and controllability (CO).

According to Kieffer (1999) the rows of the factor pattern and structure matrices are composed of the variables in the study and the columns of the matrices are composed of the latent constructs, or factors. Stevens (1996) explains that factor pattern matrix is comprised of a series of beta weights (β) that indicate the relative importance of a given variable to the extracted factors with the influence of the other variables removed. Following these suggested rules of interpretation an eleven-factor model emerged in the PCA, with four items on factor one, two, three, five and nine. On factor four and ten, there was only two items with significant loading, and three items on factor six. There was a total of five items on factor seven and eight.

Overall, most items showed simple structure and had adequate communality values (see Table 5.25). However, the initial factor analysis run shows two unpredicted loading in the attribution of items to factor. First, the split of items from a single factor (AREW) into two factors, AREW1 and AREW2 loaded in factor 11 and AREW3 and AREW4 loaded on factor 5. Second, the items measuring the influence of academic culture loaded with two distinct factors. The items with values ACUL3 and ACUL 4 loaded on factor four, and items with values ACUL1 and ACUL2 were found on factor five. In addition, two items hypothesized by theoretical framework to represent self-efficacy (SE) merged into factor seven with three items that pertained to content related to perceived difficulty with submission (PDS). There were six items that loaded on factor eleven.

Table 5.25

Initial Factor Analysis Results of the Main Survey

Items	1	2	3	4	5	6	7	8	9	10	11
PCC1	0.023	-0.004	-0.057	-0.12	-0.035	0.072	-0.062	-0.003	**-0.898**	0.058	0.05
PCC2	0.006	0.019	0.002	-0.087	-0.04	-0.003	0.054	-0.057	**-0.917**	0.012	0.023
PCC3	-0.116	0.12	0.076	0.094	0.019	-0.057	0.055	0.015	**-0.642**	-0.125	-0.076
PCC4	-0.081	0.281	0.006	0.258	-0.083	-0.1	-0.083	0.155	**-0.406**	-0.092	0.011
PPI1	0.176	**0.799**	0.039	-0.076	-0.049	0.017	0.011	0.133	-0.068	-0.052	0.032
PPI2	0.082	**0.946**	-0.01	0.012	0.094	-0.027	0.04	0.009	-0.032	0.001	0.01
PPI3	0.002	**0.913**	0.006	0.007	-0.045	0.029	0.044	0.025	-0.062	0.082	-0.031
PPI4	0.044	**0.948**	0.018	0.017	0.063	-0.006	0.083	0.013	-0.043	0.008	-0.037
PDS1	0.017	-0.063	0.215	-0.065	-0.077	0.102	**-0.741**	-0.029	-0.137	0.082	-0.107
PDS2	-0.247	0.17	0.174	0.156	0.144	-0.058	**-0.577**	-0.044	0.008	-0.064	-0.327
PDS3	-0.152	-0.019	0.262	0.05	0.081	0.111	**-0.733**	0.054	-0.053	-0.026	-0.132
PLQV1	-0.051	0.124	-0.007	0.123	-0.126	0.117	-0.174	**0.563**	-0.123	-0.243	-0.155
PLQV2	0.094	0.193	0.041	0.039	-0.139	0.231	-0.18	**0.557**	0.021	-0.249	-0.041
PLQV3	-0.048	0.052	0.039	-0.054	-0.051	-0.073	0.017	**0.843**	-0.064	0.017	0.069
PLQV4	0.009	0.119	0.027	-0.074	0.1	-0.047	-0.009	**0.891**	-0.018	0.101	-0.02
PLQV5	0.031	0.032	-0.123	0.088	-0.304	-0.125	-0.086	<u>**0.427**</u>	-0.035	**-0.488**	-0.063
PATN1	0.011	0.099	**0.747**	0.09	-0.068	-0.038	-0.277	-0.006	-0.012	-0.076	0.06
PATN2	-0.091	0.039	**0.86**	-0.06	-0.113	-0.111	0.007	-0.212	0.069	-0.128	-0.003
PATN3	0.181	-0.06	**0.807**	-0.058	-0.028	0.046	-0.053	0.172	-0.147	0.128	0.084
PATN4	0.133	0.02	**0.616**	-0.097	0.07	0.087	-0.064	0.207	-0.066	0.146	-0.087
ALT1	**-0.732**	-0.135	-0.082	-0.103	0.019	-0.051	-0.148	-0.088	0.087	0.088	0.049
ALT2	**-0.809**	-0.084	-0.046	-0.049	0.043	0.068	0.032	0.041	-0.05	-0.014	0.141
ALT3	**-0.829**	-0.104	-0.031	-0.049	-0.054	-0.001	0.024	0.073	-0.093	-0.024	0.118
ALT4	**-0.543**	-0.09	-0.077	0.006	0.238	0.084	0.278	0.023	0.063	0.117	0.126
AREW1	-0.031	-0.074	-0.178	0.095	0.134	0.002	-0.077	-0.122	-0.015	-0.059	**0.722**
AREW2	-0.268	-0.069	0.007	0.025	0.156	0.046	0.006	-0.015	-0.1	-0.043	**0.684**
AREW3	0.034	0.055	-0.052	-0.059	**0.9**	0.032	-0.082	0.089	0.049	0.042	0.092
AREW4	0.008	0.022	-0.092	-0.018	**0.935**	0.028	-0.124	0.08	0.023	0.005	0.012
AREW5	0.114	0.03	0.031	-0.179	0.104	-0.02	-0.132	-0.096	-0.214	-0.225	0.163
ACUL1	-0.043	-0.079	0.051	0.07	**0.528**	0.047	0.078	-0.266	0.038	-0.249	0.138
ACUL2	-0.08	0	0.02	-0.071	**0.624**	-0.072	0.253	-0.206	0.031	-0.062	-0.034

(table continues)

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Items	1	2	3	4	5	6	7	8	9	10	11
ACUL3	-0.079	0.072	0.063	**-0.912**	0.048	0.023	0	0.071	-0.055	-0.019	-0.079
ACUL4	-0.059	-0.051	0.025	**-0.85**	0.034	-0.182	0.01	0.042	-0.06	-0.097	-0.061
DEA1	-0.025	0.004	-0.078	-0.003	0.033	0.034	-0.049	-0.178	0.001	-0.048	**0.781**
DEA2	-0.364	0.267	0.148	-0.076	0.053	-0.05	0.013	-0.128	0.157	-0.21	**0.5**
DEA3	-0.279	0.033	0.059	0.081	0.029	-0.036	0.192	0.205	0.049	0.126	**0.664**
DEA4	-0.041	-0.031	0.142	0.019	0.031	0.048	0.22	0.158	0.036	0.057	**0.78**
SE1	-0.171	0.25	-0.228	-0.156	-0.189	**0.558**	-0.195	-0.126	0.136	0.031	0.111
CO3	-0.041	0.002	-0.074	0.155	0.138	**0.802**	-0.139	0.003	-0.03	0.034	0.114
SE3	-0.249	-0.06	0.029	0.004	0.102	0.242	**0.583**	-0.137	0.033	-0.095	0.118
CO1	-0.103	-0.088	0.039	-0.018	0.092	0.377	0.315	0.152	0.037	**-0.528**	-0.253
CO2	0.117	-0.084	0.106	0.127	0.026	**0.816**	0.217	0.004	-0.013	-0.047	-0.075
SE2	-0.213	0.084	0.019	0.009	0.071	0.163	**0.792**	-0.187	-0.041	0.174	-0.079

All four items measuring the influence of discoverability and ease of access (DEA1 through DEA4) were found to load together with the two items measuring the influence academic reward (AREW1 and AREW2).

On a theoretical level, the dependence between factors does not cause concern. In fact, I expected a fairly strong relationship between perceived difficulty with submission (PDS) and self-efficacy (SE). Generally, the more individuals are concerned about the process of submitting their work the less confident they feel about the submission process. The AREW1 item pertained content regarding the influence of increased readership and AREW2 pertained to content regarding the influence of the impact factor. Discoverability and ease of access (DEA) is a prerequisite to concepts of readership and impact factor and is closely related to accessibility and wider dissemination of scholarly work. Therefore, these two items, AREW1 and AREW2, were included in factor 10 and the name of the factor was modified to discoverability access and readership (DAR). Lastly, the influence of academic culture in a broader sense was then split into two factors that were more specific. After careful consideration of the questionnaire it was deemed more suitable to divide this construct into two different factors. Factor five contained items ACUL3 and ACUL4 that pertained to content regarding the influence by colleagues. Thus, this factor remained with the name ACUL. Factor eleven contained items ACUL1 and ACUL2 that pertained to content regarding the influence of the incentives to deposit from the academic field and was more reflective of the label 'academic reward', thus remained with the variable name AREW. See Table 5.26 for summary of the factor names after modification.

After the initial run, I eliminated item AREW5 due to low factor loadings (.296) or lower on all eleven factors and low communality value (.19). I also eliminated item PLQV5 on account of cross-loading on factor 8 (.427) and factor 10 (.488). After each item was removed the MAP was reassessed. The removal of items did not alter the number of factor to retain. After the necessary

modifications, a subsequent PCA was conducted with the factors fixed to eleven and direct oblim

rotation technique. The significant improvement in the results can be seen in Table 5.27.

Table 5.26

Factor Names after Modification

Factor number	Factor name	Note
1	ALT	Altruism
2	PPI	Perceived plagiarism issues
3	PDSE	Same factor name from the merge of two variables. PDS variable (PDS1 through PDS3) plus SE3 and CO3.
4	ACUL	Name remained academic culture despite the split of 2 items indicating the influence from colleagues.
5	AREW	Academic reward
6	PLQV	Perceived low-quality venues
7	PATN	Perceived additional time needed
8	PCC	Perceived copyright concerns
9	SE	Self-efficacy
10	DAR	New factor name discoverability, access, and readership from the merger of two variables. (DEA1 through DEA4) plus the readership variables (AREW1 through AREW2).
11	CO	Controllability

In the second run, all of the items for each factor had significant loadings of (.04) or higher

(see Table 5.27) and showed overall satisfactory communality extraction (h^2), above .60 (see Table

5.28). Also, all the factors retained met the criteria set forth by Keiffer (1999): 1) each variable had

one zero loading, 2) each factor had a set of linearity independent variables whose factor loadings

were zero; 3) for every pair of factors, there was several variables whose loadings were zero for

one factor but not the other and 4), for every pair of factors, there was only a small number of

variables with nonzero loadings on both (i.e., SE3, CO3). Furthermore, Kieffer explains that after

a factor solution is rotated, the first factor may not account for the largest portion of the variance

and thus may not have the largest variance-accounted-for value. Since the variance has been

redistributed throughout the factors, any of the factors could account for the largest proportion of

the total variance.

Table 5.27

Factor Analysis Results after Modification of Factors

Items	1	2	3	4	5	6	7	8	9	10	11	h2
PCC1	0.077	-0.008	0.022	-0.105	-0.102	-0.094	-0.032	**0.882**	0.029	0.029	-0.039	0.818
PCC2	0.013	0.029	-0.071	-0.099	-0.012	0.007	0.049	**0.870**	-0.057	0.013	0.029	0.780
PCC3	-0.117	0.225	0.130	0.084	0.095	0.140	0.063	**0.441**	-0.297	-0.015	-0.266	0.474
PCC4	-0.123	0.219	-0.022	0.327	-0.038	0.266	0.060	**0.411**	0.080	-0.138	0.359	0.570
PPI1	0.205	**0.753**	-0.004	-0.040	-0.118	-0.004	0.047	0.110	0.136	0.033	0.054	0.661
PPI2	0.086	**0.942**	0.014	0.006	0.089	0.031	-0.027	-0.001	-0.047	0.048	-0.012	0.910
PPI3	0.009	**0.895**	-0.033	-0.001	-0.027	0.077	0.009	0.013	0.031	-0.002	0.048	0.813
PPI4	0.052	**0.940**	-0.040	0.014	0.075	0.052	0.012	0.007	-0.026	0.007	-0.019	0.898
PDSE1	0.010	-0.004	**0.774**	-0.085	-0.063	0.009	0.200	0.034	0.053	-0.043	-0.103	0.667
PDSE2	-0.165	0.124	**0.634**	0.150	0.178	-0.039	0.066	-0.068	0.023	-0.265	0.180	0.612
PDSE3	-0.054	-0.029	**0.854**	0.052	0.040	-0.032	0.125	-0.034	0.085	-0.033	-0.030	0.764
PLQV1	-0.033	0.110	0.191	0.116	-0.078	**0.590**	-0.018	0.140	0.192	-0.194	0.004	0.512
PLQV2	0.108	0.181	0.196	0.021	-0.089	**0.544**	0.010	0.046	0.326	-0.074	-0.034	0.502
PLQV3	-0.046	0.033	-0.016	-0.041	-0.073	**0.887**	0.037	-0.007	-0.090	0.073	-0.004	0.812
PLQV4	0.015	0.079	-0.033	-0.067	0.056	**0.908**	0.043	-0.052	-0.038	-0.015	0.021	0.846
PATN1	0.000	0.091	0.238	0.140	-0.124	-0.092	**0.723**	0.004	-0.038	0.009	-0.038	0.635
PATN2	-0.129	0.052	-0.016	-0.064	-0.038	-0.159	**0.873**	-0.036	-0.102	-0.019	-0.045	0.826
PATN3	0.183	-0.067	0.005	-0.067	0.014	0.232	**0.832**	0.085	0.003	0.088	-0.008	0.804
PATN4	0.116	-0.089	0.035	-0.047	0.112	0.251	**0.642**	0.006	0.100	-0.115	0.258	0.602
ATL1	**-0.760**	-0.141	0.058	-0.065	0.006	-0.063	0.002	-0.098	-0.014	0.069	0.015	0.624
ALT2	**-0.773**	-0.123	-0.019	-0.001	0.021	0.045	-0.091	0.010	0.062	0.176	-0.018	0.660
ALT3	**-0.752**	-0.163	-0.043	-0.065	-0.051	0.023	-0.023	0.067	0.062	0.207	0.031	0.655
ALT4	**-0.475**	-0.120	-0.312	0.034	0.223	0.061	-0.079	-0.164	0.016	0.164	0.014	0.452
DAR5	-0.118	-0.057	0.007	0.053	0.175	-0.092	-0.050	0.188	0.108	**0.729**	-0.018	0.640
DAR6	-0.228	-0.103	-0.006	0.044	0.141	-0.043	0.005	0.172	0.096	**0.703**	-0.008	0.619
AREW3	0.030	0.045	0.058	-0.066	**0.848**	0.060	-0.047	-0.079	-0.008	0.119	-0.022	0.757

(table continues)

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Items	1	2	3	4	5	6	7	8	9	10	11	h2
AREW4	0.050	0.046	0.110	-0.054	**0.911**	0.072	-0.055	-0.026	-0.029	0.043	-0.134	0.879
AREW1	-0.052	-0.083	-0.123	0.092	**0.582**	-0.311	0.071	0.029	0.122	0.030	0.082	0.497
AREW2	-0.061	-0.017	-0.265	-0.099	**0.670**	-0.163	0.023	-0.024	0.004	-0.069	0.206	0.608
ACUL1	-0.081	0.084	-0.017	**-0.907**	0.058	0.075	0.079	0.040	0.098	-0.089	0.001	0.870
ACUL2	0.008	-0.056	0.050	**-0.871**	0.056	0.005	-0.026	0.141	-0.079	-0.036	0.088	0.804
DAR1	-0.001	0.002	-0.020	0.012	0.090	-0.153	-0.035	0.095	0.132	**0.742**	0.190	0.647
DAR2	-0.302	0.286	0.062	-0.057	0.069	-0.170	0.067	-0.133	-0.029	**0.536**	0.047	0.526
DAR3	-0.121	0.001	-0.128	0.082	-0.065	0.154	-0.031	-0.067	-0.082	**0.784**	0.032	0.694
DAR4	0.017	0.075	-0.062	-0.003	-0.006	0.069	-0.010	-0.181	-0.044	**0.829**	0.003	0.737
SE1	-0.329	0.266	-0.006	-0.108	-0.106	-0.072	-0.087	-0.080	**0.633**	-0.042	-0.031	0.625
SE2	0.051	-0.077	0.101	0.110	0.153	0.086	-0.080	-0.030	**0.791**	0.155	-0.018	0.718
SE3	-0.224	-0.005	**-0.706**	-0.009	0.220	0.022	0.093	-0.031	0.224	-0.026	-0.121	0.673
CO1	0.050	0.040	0.090	-0.090	-0.038	-0.021	0.059	-0.065	-0.034	0.179	**0.798**	0.699
CO2	-0.260	0.080	0.178	-0.223	0.028	0.064	-0.042	0.069	-0.497	0.009	**0.484**	0.648
CO3	0.024	-0.059	**0.804**	-0.121	0.026	0.197	0.025	0.044	0.046	0.030	0.086	0.718

Note. The Items with Coefficients greater than |.40| are italicized and were retained for the factor. h^2 = communality extraction for each item.

Kieffer cautions that, after the rotation is conducted, eigenvalues are no longer termed as such; rather, after rotation, the variance-accounted-for statistic for the factors (columns of the factor pattern/structure matrix) is termed "trace."Following Kieffer's recommendations the trace was obtained by multiplying a given factor pattern coefficient by the corresponding factor structure coefficient and then summing down the columns. Kieffer explains that when the factor solution is rotated communality coefficients (h^2) are also computed differently. Each pattern coefficient is multiplied by its corresponding structure coefficient and then summed across the rows. The Table 5.28 shows the values for total variance accounted for each factor (by % of variance and trace), and shows satisfactory communality values for each factor.

Table 5.28

Percentage of Variance for Each Factor

Factor number	Factor name	N of items	% of variance	Trace	h2
1	ALT	4	24.824	3.092	.601
2	PPI	4	10.984	3.886	.824
3	PDSE	3	8.557	3.749	.681
4	ACUL	2	6.216	2.025	.837
5	AREW	4	5.661	2.906	.685
6	PLQV	4	4.636	3.006	.668
7	PATN	4	3.965	2.788	.716
8	PCC	4	3.754	0.298	.677
9	SE	2	3.131	1.684	.672
10	DAR	6	2.508	4.110	.607
11	CO	2	2.358	1.264	.688

The summary of results in Table 5.28 provides the answer to the RQ2. What are the factors (attitudinal, social, and individual) that affect faculty attitudes towards participation in IRs? In summary, the eleven factors together explained about 76.5% of variance (see Table 5.28). Factor 1 (altruism) accounted for 24.8% of the variance, which were attributed to the four highest loadings for this factor. Factor 2 (perceived plagiarism issues) accounted for 11% of the variance that included four items with the highest loadings on this factor. Factor 3 (perceived difficulty with

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submission process) accounted for 8.5% of the variance that included three items with the highest loadings. Factor 4 accounted for 6.2% of the variance. Two items that loaded the highest on this factor pertained to the influence by colleagues. Factor 5 explained 5.6% of the variance. Four items loaded the highest on this factor indicating the influence of academic reward. Factor 6 explained about 4.6% of the variance. Four items loaded the highest on this factor, indicating the perception of IRs as low-quality publishing venues. Factor 7 accounted for about 3.9%; four items loaded on this factor, indicating the perception of additional time needed. Factor 8 accounted for 3.7% of the variance. Four items loaded on this factor indicating perceived copyright concerns. Factor 9 explained about 3.1% of the variance. Two items loaded on this factor indicating the influence of self-efficacy. Factor 10 accounted for about 2.5% of the variance. Six items had significant loadings on this factor, four items indicated discoverability and ease of access, and two items with lower loadings indicated academic reward. The name of this factor was changed to discoverability, access and readership (DAR) because the highest loadings of the four items on this factor reflect the influence of discoverability and ease of access. Factor 11 accounted for about 2.4% of the variance. Only two items loaded on this factor, indicating the influence of controllability.

The goal of PCA is to confirm the category of outcome for individual factors and to simplify the model by reducing the number of factors (predictors). This is while maintaining the relationship between the outcome and the set of predictors that affect faculty attitudes towards participation in OA IR. However, these factors do not necessarily reflect the likelihood of faculty participating in OA IR. Once the reduced sets of predictors were found, the logistic regression was used to predict the outcome for new cases on a probabilistic basis.

5.3.6   Logistic Regression Analysis and Results

The factor analysis in the previous section identified what factors affected the faculty attitudes towards OA IR and how much each factor accounted for in the total explained variance to the likelihood of faculty participating in OA IRs. Once the factors affecting faculty attitudes (predictors) were identified, the logistic regression was employed to closely investigate the relationship between the factors (predictors) and the outcome variable, as well as find out which factors predicted the outcome. This is addressed the RQ 3: How do these factors affect the likelihood of faculty to participate in IR? In addition, logistic regression was utilized to investigate how the previously identified factors affect the outcome (increase or decrease the probability) by examining the relationships between the factors extracted from the PCA and the intention to deposit. The independent variables were identified by the extracted factors that explained the changes in the dependent variable – intent to participate. Once the factors (components) were identified individual scores were created and incorporated into factor information as a part of predictive analysis – factor scores. According to Di Stefano, Zhu and Mindrila (2009), there are two primary categories of computing factors scores; refined and non-refined methods. The non-refined methods are easier to use and are thought to be more stable across samples than refined categories. There are advantages and disadvantages to both categories, and different methods in each category. Di Stefano et al. argue that the factor score method is a multivariate procedure that takes into account the correlation between the factors and correlation between factors and observed variables, as well as correlation among oblique factors. Thus, this method maximizes validity, and the results can be easily obtained. Following the recommendations by Field (2009), in the final PCA run the factor scores were saved using the regression method. As with any other analysis there are issues that can arise with logistic regression, and will be addressed in the following section (i.e., internal reliability, normality, etc.).

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Internal Reliability Assessment for Subscales

Prior to running a regression analysis, the internal reliability coefficients were re-assessed for the 11 hypothesized subscales of the factors affecting faculty attitudes towards OA IR. Table 5.29 shows that all the subscales had adequate internal reliability coefficients, with Cronbach's α = .628 or higher.

Table 5.29

Reliability of Items for Each Factor

Name of variable	Cronbach's Alpha	N of items
Altruism (ALT)	0.878	4
Perceived Plagiarism Issues (PPI)	0.943	4
Perceived Difficulty with Submission (PDSE)	0.849	5
Influence by Academic Culture (ACUL)	0.863	2
Influence by Academic Reward (AREW)	0.835	4
Perceived Low Quality Venues (PLQV)	0.876	4
Perceived Additional Time Needed (PATN)	0.841	4
Perceived Copyright Concerns (PCC)	0.731	4
Self-efficacy	0.789	2
Discoverability, Access and Readership (DAR)	0.906	6
Controllability (CO)	0.628	2

5.3.6.1 Assessment of Normality

The assessment of normality is usually presented by statistical or graphical methods. According to Tabachnick and Fidell, (2007), the two components of normality are skewness and kurtosis. While skewness is used to measure the symmetry of the distribution, kurtosis has to do with the 'peakedness' of a distribution (distribution is too peaked or too flat). Kurtosis values above zero indicate a distribution that is too peaked, while kurtosis values below zero indicate a distribution that is too flat (Tabachnick & Fidell, 2017, p.441). According to Glasnapp and Poggio (1985), a value between +/- 3 is acceptable for skewness and kurtosis statistic.

Table 5.30

Normality Assessment for Each Factor

Name of Variable	Factor #	Kurtosis	Skewness
Altruism (ALT)	1	2.64	-.525
Perceived Plagiarism Issues (PPI)	2	-1.026	0.051
Perceived Difficulty with Submission (PDSSE)	3	0.993	-0.589
Influence of Academic Culture (ACUL)	4	-0.604	-0.394
Influence by Academic Reward (AREW)	5	-0.256	0.171
Perceived Low Quality Venues (PLQV)	6	0.492	0.066
Perceived Additional Time Needed (PATN)	7	-0.516	0.05
Perceived Copyright Concerns (PCC)	8	-0.15	0.1
Self-efficacy	9	0.266	0.719
Discoverability Access and Readership DAR	10	0.353	-0.3
Controllability (CO)	11	-0.581	-0.024

A visual screening of the data set indicated no missing variables and the ranges of each variable were within the minimum and maximum of acceptable values. The test of normality (see Table 5.30) in this study revealed that only the factor of Altruism had relatively high value of kurtosis. Tabachnick and Fidell, (2007), noted that in a large sample, a variable with statistically significant skewness often does not deviate enough from normality to make a substantive difference in the analysis. Also, according to them "underestimates of variance associated with positive kurtosis disappear with sample of 100 or more cases" (p. 80). In addition, they explain that one or more cases may be very poorly predicted by the solution, however only if there are enough cases like this the model has poor fit (p. 443). In the current study, there was 138 cases and only one case (e.g., ALT) of high kurtosis, but the data were essentially normally distributed.

5.3.6.2 Assessment of Linearity, Independence of Error and Multicollinearity

For the research to be able to generalize the result of a study using the regression model, a set of underlying assumptions have to be met. According to Field (2009) to test whether the

regression model does generalize it is necessary to look at the linearity, independence of error, and multicollinearity.

5.3.6.3 Linearity in the Logit

The assumption of linearity in logistic regression means that there is a linear relationship between any continuous predictor and the logit of the outcome variable (Field, 2009, p. 273). Field argues that we can test this assumption by looking at whether the interaction term between the predictor and its log transformation is significant. To test this assumption, according to Tabachnick and Fidell (2007), "terms are added to the logistic regression model which are composed of the interactions between each predictor and its natural logarithm" (p. 443). However, the transformation of predictors to its natural logarithms was not possible. DiStefano, Zhu and Mindrila (2009) note that "independent variables in the regression equation are the standardized observed values of the items in the estimated factors" (p. 4). This means that under this method the computed factor scores are standardized to a mean of zero and standard deviation of 1. Thus, the natural log transformation (LN) of predictors was not feasible due to the factor scores being standardized (mean of 0, SD of 1).

5.3.6.4 Independence of Errors

Logistic regression assumes that responses of different cases are independent of each other. In other words, it is assumed that each response comes from a different, unrelated case. Field (2009) explains that for logistic regression analysis the researcher needs to make sure that the data are not related. For example, the same participants should not be measured two different times. This study did not violate the independence of error assumption since the data was collected at one point in time with all the faculty at University of North Texas.

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5.3.6.5 Absence of Multicollinearity

According to Field (2009) if multicollinearity between predictors is high it makes it difficult to assess the individual importance of a predictor. In other words, if the predictors are highly correlated and each account for similar variance in the outcome, it is difficult the tell which variable is more important. Field explains that one of the methods to test multicollinearity is variance inflation factor (VIF), and tolerance in which indicates whether a predictor has a strong relationship with other predictors. Field noted that VIF values greater than 10 and/or tolerance values less than 0.1 are a cause for concern. Following these guidelines, I found that none of the predictor is this study were a cause for concern. All the factor scores in current study have low multicollinearity or overlap of variance accounted for (shared variance) in the predictors, VIF values were between 1.035 and 1.269 (See Table 5.31), while all the tolerance values fell between .788 and .966. These values show that in the current study the correlations between factors was low, thus minimizing the risk of multicollinearity.

Table 5.31

Collinearity Statistics

	ALT	PPI	PATN	PDS	ACUL	CO	AREW	PLQV	PCC	DAR	SE
Tolerance	0.822	0.824	0.862	0.863	0.901	0.929	0.966	0.788	0.82	0.79	0.851
VIF	1.217	1.213	1.16	1.159	1.11	1.076	1.035	1.269	1.22	1.266	1.175

Overall, the analysis of normality, independence of error and multicollinearity did not find serious violations on any of the assumptions for logistic regression. The only hint of violation was the linearity in the logit. However, Tabachnick and Fidell (2007) point out that there are no assumptions about the linear relationships among predictors themselves. Therefore, the model was run as originally proposed with eleven factors.

5.3.6.6 Influence of Demographic Data

Prior to assessing whether the demographic data have a significant effect in the faculty intention to deposit in IRs, we needed to transform the data using dummy variable coding. All the independent variables were categorical, such as age group or faculty rank. To run regression analysis, the categorical data need to be transformed into dichotomous ones. Using recommendations by Tabachnick and Fidel (2007), data was transformed so that it represented groups of categories using only zeros and ones. For example, if the subject belongs to that specific category, it is represented with the value of "1", while value of "0" signifies that the subject does not belong to that group.

Two demographic factors gender and rank were not included in the transformation. Gender was deemed insignificant for practical importance. Faculty rank posed multicollinearity issues, as it correlated highly with faculty status. Thus, following recommendations by Tabachnick and Fidel (2007), the redundant variable (faculty rank) was removed from the model to eliminate multicollinearity. Only the faculty status was included in the model since the focus of previous research (disused in Chapter 2) was mainly on faculty status. In addition, several colleges were removed from the logistic regression analysis due to low response rate.

5.3.6.7 Odds Ratio in Logistic Regression

Odds ratio, also referred to as logit estimates are the main coefficients reported in the logistic regression outcome. An odds ratio can be described as a measure of association between predictor variable and an outcome. The odds ratio represents the odds that an outcome will occur given a predictor (factor), compared to the odds of the outcome occurring in the absence of that predictor (Szumilas, 2010). In the logistic regression analysis, the regression coefficient (B) is the estimated increase in the long odds of the outcome per unit increase in the value of the predictor.

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Odds ratios are used to compare the relative odds of the occurrence of the outcome of interest (e.g., faculty intent to participate), given exposure to variable of interest (e.g., perceived copyright or plagiarism concerns). In addition, the odds ratio can also be used to compare the magnitude of each factor for the expected outcome. The odds ratio was interpreted following suggestions by Tabachnick and Fidel (2007), who state "the farther the odds ratio from 1, the more influential the predictor" (p. 469). In other words, a change in one unit on the part of a predictor multiplies the odds of event occurring (eβ). Tabachnick and Fidell explain that odds ratios greater than 1 reflect the increase in odds of an outcome of 1 (response category) with a one-unit increase in the predictor (p. 462). They provide the following example, if the odds ratio is 1.5 for the outcome labeled as 1 (intent to deposit), it means that with one-unit increase in the predictor the outcome is 1.5 times as likely to increase. In other words, a 50% increase in the likelihood of the intent to deposit. On the other hand, odds ratios less than 1 reflect a decrease in odds of that outcome with a one-unit change. In addition, an odds ratio of 0.8 indicated that an outcome labeled as 1 is 0.8 as likely to occur with one-unit increase in the predictor (p. 462). In other words, a 20% decrease in odds of intent to deposit. The statistically significant predictors (not exceeding p<.05) that change the odds of the outcome the most will signify the degree of influence.

5.3.6.8 Effect Size

Before measuring the degree of this relationship, it is imperative to assess how reliable is the influence of independent variables on the dependent variable through statistical significance test, or effect size. The effect size is designed to measure the magnitude of the effect, change, or difference of predictor variables on the outcome. Within the General Linear Model, all effect sizes are r2 based effects, as such, when the r-effect size is squared, the result is a variance accounted for indicator (Nimon, Zientek, & Thompson, 2015). R-statistic is a partial correlation between the

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outcome variable and each of the predictor variables and it can vary between -1 and 1. According to Field (2009), a positive value indicated that as the predictor variable increases, so does the likelihood of the event occurring. While a negative value indicates that as the predictor variable increases, the likelihood of the outcome occurring decreases. If the variable has a small value of R then it indicates a low contribution to the model.

However, in LR there are two measures analogues to R^2 designed to assess the effect size of a model. The two recommended measures by Tabachnick and Fidell (2007) are the Cox and Snell R and Nagelkerke R square, which were used to measure the strength of the association of the model. These statistics are based on log-likelihood and take into account the sample size. In addition to effect size, one of the recommended tests for model significance by Tabachnick and Fidell (2007) is the Omnibus test. According to them, if the significance is less than .05, then the model is significant. In the current study, the omnibus value was $p < .05$, indicating the model was significant.

5.3.6.9 Logistic Regression Procedure

Following the results from the previous PCA analysis, I conducted a series of binary logistic regression analyses. The main purpose of the regression analysis is to investigate the relationship between multiple independent variables and a dependent variable. The binary logistic regression was utilized to predict the extent of the likelihood of faculty intent to participate in OA IR, as a dependent variable was affected by the eleven main factors and three demographic factors as predictor variables.

A direct logistic regression analysis was performed on faculty intent as outcome and 11 main factors, as well as three demographic factors. Analysis was performed using SPSS Binary Logistic. By default, SPSS logistic regression is run into two steps. The first step, called block 1,

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includes demographic predictors and block 2 included all the variables. There were no missing

values on the continuous predictors. A total of 138 cases were included in the analysis. Logistic

regression as explained by Tabachnick and Fidell (2007) estimates the odds of an event occurring

by calculating changes in the log odds of the dependent variable.

A binary logistic regression using the block method was conducted to predict faculty intent

to participate in IRs (YES vs. NO). The first block included all demographic predictors only,

college, age and status. Block 2 included demographic predictors plus the main factors: perceived

copyright concerns (PCC), plagiarism concerns (PPI), difficulty with submission (PDS), low

quality venues (PLQV), additional time needed (PATN), altruism (ALT), academic reward

(AREW), academic culture (ACUL), discoverability, access and readership (DAR), self-efficacy

(SE) and controllability (CO).

5.3.6.10   Results of Demographic Data

The first Block of regression analysis results reveal whether the demographic factors had

significant effects on the dependent variable. The first block of regression analysis was conducted

to test whether faculty age, college and status had an effect on faculty intention to deposit in OA

IR. In Block 1, Table 5.32, shows the Goodness-of-Fit data (comparing observed with expected

frequencies). The results showed a good fit for all the demographic predictors, and explained

70.4% of the variance (R^2) in the change in the dependent variable (intention to participate in OA

IR).

Observed indicates the number of 0's and 1's that are watched in the dependent variable.

Predicted are the anticipated values of the dependent variable based on the logistic regression

model, including demographic data alone. The Table 5.32 shows how many cases are correctly

predicted (42 cases are observed to be 0 and are correctly predicted to be 0; 53 cases are observed

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to be 1 and are correctly predicted to be 1), and how many cases are not correctly predicted (22

cases are observed to be 0 but are predicted to be 1; 17 cases are observed to be 1 but are predicted

to be 0). *Overall Percentage* – This gives the overall percent of cases that are correctly predicted

by the model (in this case, the model including demographic data).

Table 5.32

Goodness-of-fit Results for Demographic Data

Observed		Predicted		Percentage Correct
		INTENT		
		No	Yes	
INTENT	No	42	22	65.6
	Yes	18	53	74.6
Overall Percentage				70.4

The results revealed that Block 1 (p<.01), obtained from the Omnibus test (see Appendix

F), was statistically significant. Demographic predictors were age (31 to 40, 41 to 50, 51 to 60, 61

to 70), status (tenure and tenure track), and colleges (Arts & Sciences, Education, Engineering,

Information, Public Affairs). Block 1 showed a good model fit based on three demographic

predictors alone: X^2 (11) = 24.41, p = .01, Nagelkerke R^2 = .242. The *Nagelkerke R Square* is a

pseudo R- squares. It is worth pointing out that in logistic regression, *R -squared* is not a

standardized Beta weight, instead, there is an *Exp(B),* instead of a t-statistic, there is a *Wald* value

(analogous to a *t-statistic*) and instead of an *R -squared*, there is a *Nagelkerke R*. Logistic

regression does not have an equivalent to the R-squared that is found in OLS regression. Thus, this

statistic does not mean what R-squared means in OLS regression (the proportion of variance

explained by the predictors). I suggest interpreting this statistic with great caution. Table 5.33

shows that an in examination of individual demographic predictors alone only one age group (51 to

60) was shown to have a significant influence of p<.05. Age group 51 to 60 was a significant

predictor of faculty intent to participate in OA IR (odds ratio 6.05, p<.05), indicating that faculty

between ages 51 and 60 were almost six times more likely to participate in OA IR compared to

other age groups. Block 1 also revealed that faculty from College of Information were more likely

to participate in OA IR (odds ratio 5.33, p <.05), compared to other colleges. The remaining factor

(faculty status) for Block1 was not statistically significant.

Table 5.33

Regression Analysis Results for Demographic Variables

Demographic predictors		B	S.E.	Wald	df	Sig.	Odds Ratio
Academic field	Education	-0.776	0.651	1.422	1	0.233	0.46
	Engineering	-1.366	0.876	2.431	1	0.119	0.255
	Information	1.675	0.825	4.127	1	0.042	5.339*
	Arts &Science	0.317	0.917	0.119	1	0.73	1.373
	Public Affairs	-0.626	0.615	1.037	1	0.309	0.535
Age groups	31 to 40	0.715	0.91	0.617	1	0.432	2.044
	41 to 50	1.096	0.831	1.738	1	0.187	2.991
	51 to 60	1.801	0.84	4.594	1	0.032	6.057*
	61 to 70	0.412	0.826	0.249	1	0.618	1.51
Academic status	Tenure	-0.37	0.457	0.653	1	0.419	0.691
	Tenure-track	-0.259	0.763	0.115	1	0.734	0.772

Note. **B** – This is the coefficient for the constant (also called the "intercept") in the null model. **S.E.** – This is the standard error around the coefficient for the constant. **Wald** – is the Wald chi-square test that tests the null hypothesis that the constant equals 0. **df** – This is the degrees of freedom for the Wald chi-square test. **Sig**. *$p < .05$, **$p < .01$, ***$p < .001$

5.3.6.11   Logistic Regression Results of All Variables

Following the conclusion from the previous analysis on demographic data, I conducted the

second series of regression analysis. The purpose of the second analysis was to assess the full

model, 11 major influencing factors and the demographic factors. The results from Table 5.34

shows how much the variables accounted for the whole model.

Table 5.34 shows the *predicted, observed* values and the *overall percentage* of model

prediction. *Predicted* – These are the predicted values of the dependent variable based on the full

logistic regression model. This Table 5.34 shows how many cases are correctly predicted (55 cases

are observed to be 0 and are correctly predicted to be 0; 59 cases are observed to be 1 and are

correctly predicted to be 1), and how many cases are not correctly predicted (9 cases are observed

to be 0 but are predicted to be 1; 12 cases are observed to be 1 but are predicted to be 0). *Overall*

Percentage – This gives the overall percent of cases that are correctly predicted by the model (in

this case, the full model that we specified). As you can see, this percentage has increased from

70.4 for the null model to 84.4 for the full model.

Table 5.34

Goodness-of-fit Results for All the Variables

		Predicted		
Observed		INTENT		Percentage Correct
		No	Yes	
INTENT	No	55	9	85.9
	Yes	12	59	83.1
Overall Percentage				84.4

A test of the full model on Block 2 with all predictors (main plus demographic) against a

constant-only model was statistically significant, X2 (11) = 76.88, p < .001, Nagelkerke R2 = .716.

Overall factors were significant with the value of p<0.05. With all the predictors in the model

(main and demographic) the model showed a very good fit, they explained 84.4% of the variance

(R^2) in the change in the dependent variable (see Appendix F).

Table 5.35 shows logistic regression results including regression coefficients (B), Wald

statistics, odds ratios, and significance values (for 95% confidence intervals) for odds ratios for

each of the 11 main predictors and 3 demographic predictors.

The results in Table 5.35, from the Block 2 analysis reveal that the demographic predictors

were no longer significant when entered together with the 11 main predictors into the binary

logistic regression analysis as predictor variables. Only four out of the fourteen predictor variables were statistically significant (p<.05) in influencing the intention of faculty to participate in IR. Examination of individual predictors revealed that difficulty with submission was a significant predictor of faculty intent to participate in OA IRs (Odds ratio .150, p =.001), indicating that the odds of faculty that perceive the submission process as difficult decreased by a factor of .150 for each unit increase in perceived difficulty. Another significant predictor of faculty intent was the perception of IRs as low-quality publishing venues with odds ratio .335, p <.01. This factor also showed a negative association with the outcome variable, indicating that the faculty intent to participate decreased by a factor .335 for a unit increase in faculty perception of IR as a low-quality publishing venues. On the other hand, other significant factors that reflected an increase in the likelihood of faculty intent to participate was discoverability, access and readership. For a unit increase in this predictor the odds ratio of faculty intent to participate was increased by 2.82, p<.05. The altruism predictor also proved significant with the odds ratio of .399, p < .05, indicating that for a unit increase in altruism, there was a decrease in likelihood of faculty intent to participate. In other words, faculty did score high in response to altruism but they scored low on intent to deposit. This shows a discrepancy between faculty support of OA in theory and in practice. The remaining predictors were not statistically significant. They exceeded the p < .05.

Table 5.35

Regression Analysis Results for All the Variables

	Predictors	B	S.E.	Wald	df	Sig.	Exp(B)
Academic field	Education	-0.087	0.957	0.008	1	0.927	0.916
	Engineering	-1.335	1.287	1.076	1	0.3	0.263
	Information	1.223	1.38	0.786	1	0.375	3.399
	Arts & Science	0.614	1.576	0.152	1	0.697	1.849
	Public Affairs	-0.611	0.913	0.448	1	0.503	0.543
Age groups	31 to 40	-0.182	1.581	0.013	1	0.908	0.833
	41 to 50	0.511	1.224	0.174	1	0.676	1.667
	51 to 60	1.854	1.135	2.669	1	0.102	6.382
	61 to 70	0.004	1.091	0	1	0.997	1.004

(table continues)

	Predictors	B	S.E.	Wald	df	Sig.	Exp(B)
Academic status	Tenure	0.164	0.91	0.033	1	0.857	1.179
	Non tenure	-0.18	1.434	0.016	1	0.9	0.835
	ALT	-0.919	0.384	5.729	1	0.017	0.399*
	DAR	1.038	0.453	5.248	1	0.022	2.824*
	PDSE	-1.898	0.573	10.971	1	0.001	0.150***
	COLE	0.321	0.35	0.841	1	0.359	1.378
Main predictor variables	AREW	0.262	0.393	0.445	1	0.505	1.3
	PATN	0.519	0.378	1.882	1	0.17	1.68
	PLQV	-1.095	0.429	6.523	1	0.011	0.335**
	PCC	0.488	0.365	1.789	1	0.181	1.63
	SE	0.108	0.347	0.098	1	0.755	1.115
	PPI	0.193	0.344	0.314	1	0.575	1.213
	CO	-0.192	0.419	0.21	1	0.647	0.825

Note. Wald and *Sig.* – These columns provide the Wald chi-square value and 2-tailed p-value used in testing the null hypothesis that the coefficient (parameter) is 0. *$p < .05$, **$p < .01$, ***$p < .001$. Exp(B) – these are the odds ratios for the predictors.

5.3.6.12   Summary of Logistic Regression Results

In summary, we can address RQ 3: How do these factors affect the likelihood of faculty to participate in IR? The data from logistic regression analyses revealed that only four out 14 factors (predictors) showed to significantly affect the likelihood of faculty to participate in IR. The perceived difficulty with submission and the perception of IRs as a low quality publishing venues decreased faculty likelihood of participating IR. While discoverability, access and readership reflected an increase in the likelihood of faculty intent to participate. Altruism also proved to be a significant factor in likelihood of faculty intent to participate.

However, this is not to say that other factors do not have influence in faculty attitude towards participation in OA IR, as shown in previous studies. Wasserstein and Lazar (2016) noted that small p-values do not necessarily reflect a large effect nor do large *p*-values imply a lack of an effect, they simply answer the question of whether the parameter value is statistically significantly different from a null value. At the same time, there are potential issues regarding the generalizability of the findings in current LR analysis. Thompson (2006) cautions that simply saying the results are significant could cause misinterpretations that the results are of practical

importance (p. 148). The goal of this study was also to provide practical importance of the factors (predictor variables) influencing faculty attitudes towards IR that would prove useful to OA repository managers and staff. Thus, when striving to evaluate the relative importance of predictors it becomes curial to use an accurate tool for identifying predictor importance. This tool is logistic relative weights analysis and is addressed in the following section.

5.3.7   Relative Importance Weight (RIW) Analysis and Results

Logistic regression is primarily used to analyze the variability of a dependent variable or outcome using information provided by independent or predictor variable. As explained in previous section logistic regression estimates the odds of an event occurring by calculating changes in the log odds (or standardized regression of β weight) of the dependent variable (Tabachnick and Fidell, 2007). Although, logistic regression served as a useful method in determine the likelihood of faculty intent to participate in IR based on a set of predictors (factors influencing faculty participation), the LR lacks the ability to explain the relative importance of predictors.

At the current stage in the study I want to address RQ 4: What is the extent of each factor affecting faculty participation in IR? Kraha et al. (2012) argue that Beta (β) weights are not a direct measure of the relationship between predictors and outcome, they simply reflect how much credit is being given to predictors in the regression equation in a particular context. They argue that the β weights are theoretically dependent on upon having a perfectly specified model, since adding or moving predictor variables will inevitably change β values. Thus, the problem is that the true model is very rarely, if ever, known. In other words, the sole interpretations of β weights are troublesome because β weights are heavily affected by the variances and covariances (multicollinieartiy) of the predictors (Kraha et al., 2012). Thus, this sensitivity to covariance relationship can result in very sample specific β weights which can dramatically change with slight

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changes in covariance relationship in future samples, thereby decreasing generalizability of the results. In addition, Tonidandel and LeBreton (2011) noted that when predictors are correlated, the metrics they rely upon typically are flawed indicators of variable importance.

Fortunately, researchers have developed a successful procedure for estimating relative importance of predictor variables. Johnson (2000) proposed a new statistic called relative importance weights (RIW), that solves the problem of correlated predictors. According to Tonidandel and LeBreton (2010), there are three different meanings of the term *relative importance*. This study was concerned with the contribution that each predictor makes to the total predicted criterion variance, when the predictor is considered by itself and in combination with other predictors. In this case, according to Tonidandel and LeBreton (2010), "a meaningful index of importance incorporates both a predictor's direct effect and its joint effect with other variables" (p. 768). Within the context of linear regression, the term relative importance refers to the proportionate contribution each predictor variable makes to the total predicted criterion variance taking into account a variable's contribution by itself and in combination with other predictor variables (Tonidandel & LeBreton, 2010). Relative weight analysis has been used across a variety of domains in the organizational sciences literature. For instance, Lopina, Rogelberg, and Howell (2012), used relative weight analysis to examine the relative importance of individual difference variables for predicting turnover. In a similar fashion, Major, Morganson, and Bolen, (2013) used relative weight analysis to understand how men and women differ in terms of the most important predictors of organizational commitment. Essentially, the relative weight measures the proportionate contribution each predictor makes to R^2 (i.e., the relative importance) after correcting for the effects of the inter-correlations among predictors.

5.3.7.1 Procedure for Using Relative Importance Weight (RIW) Analysis

The RIW statistical tool has not been integrated yet into most popular statistical packages (e.g., SPSS, SAS). Fortunately, Tonidandel, and LeBreton (2015) provided an interactive website that performs all the calculations using the free, open-source R statistical package as its backbone (http://relativeimportance.davidson.edu/). They provided a website to generate the R code necessary to conduct the various RIWs. This RIW webpage allowed me to examine the relative importance of multiple predictors as a standard logistic regression model. Using the previously obtained data, I sought to examine the relative importance of the factors influencing faculty participation in OA IR. To perform these analysis, as instructed by Tonidandel, and LeBreton (2015), I completed the following procedure: (1) downloaded the R code and ran it locally, (2) I specified the dataset that would be read by the R code and generate the subsequent steps, (3) I specified the first relative weight analysis. I entered "INTENT" as the criterion variable and entered the names of variables affecting faculty attitudes towards OA IR (i.e., ALT, PCC, PDS) as predictor variables. Next, (4) I retained the default bootstrapping option (k=10,000 replications; alpha=0.05), and lastly, (5) after making the selection I clicked submit and received the results.

Interpretation of RIW Analysis

A relative weight analysis was conducted using RWA-Web based software (Tonidandel & LeBreton, 2014); results from this analysis are summarized in Table 5.36. Confidence intervals for the individual relative weights (Johnson, 2000) and all corresponding significance tests were based on bootstrapping with 10,000 replications, an approach recommended by Tonidandel et al. (2015).

Table 5.36 contains the abbreviated output for the faculty intent to participate in OA IR. This Table contains a summary of the relative importance weights for each of the factors affecting faculty attitudes toward IR. The column labeled ''Raw.RelWeight'' provides estimates of variable importance using the metric of relative effect sizes (LeBreton et al., 2007). Specifically, these

weights represent an additive decomposition of the total model R^2 and can be interpreted as the

proportion of variance in faculty members' INTENT that is appropriately attributed to each factor

influencing faculty participation in IR. The values listed under the ''Rescaled.RelWeight (RS-

RW)'' column were obtained by dividing each raw relative weight by the model R^2. These rescaled

weights provide estimates of relative importance using the metric of percentage of predicted

variance attributed to each variable Tonidandel, and LeBreton (2015). In all cases, 95 % CIs were

used (corresponding to a significance testing alpha level of 0.05). Briefly, these results indicate that

a weighted linear combination of our 11 predictor variables explained roughly half of the variance

in the faculty INTENT criterion (R2 = 0.51).

Table 5.36

Relative Weight Analysis Results

Predictors	B	S.E.	Wald	Exp(B)	95% C.I. for EXP(B)		RW	RS-RW
					Lower	Upper		
ALT	-.91	.38	5.72	.39**	.188	.847	.0613	11.94
DAR	1.03	.45	5.24	2.82*	1.162	6.864	.0931	18.12
PDSE	-1.89	.57	10.97	.15***	.049	.461	.1857	36.13
ACUL	.32	.35	.84	1.37	.694	2.735	.0084	1.64
AREW	.26	.39	.44	1.31	.602	2.808	.0328	6.37
PATN	.51	.37	1.88	1.68	.801	3.523	.0337	6.55
PLQV	-1.09	.42	6.52	.33**	.145	.775	.0755	14.68
PCC	.48	.36	1.78	1.63	.797	3.334	.0036	0
SE	.10	.34	.09	1.11	.564	2.202	.0041	0
PPI	.19	.34	.31	1.21	.618	2.381	.0147	2.85
CO	-.19	.41	.21	.82	.363	1.877	.0012	0

Note. Predictors included ALT, DEA, PDSE, ACUL, AREW, PATN, PLQV, PCC, SE, PPI, CO, Criterion = faculty intent (R^2 = .5139), Exp(B) odds ratio weight, RW raw relative weight (within rounding error raw weights will sum to R^2), CI-L lower bound of confidence interval used to test the statistical significance of raw weight, CI-U upper bound of confidence interval used to test the statistical significance of raw weight, RS-RW relative weight rescaled as a percentage of predicted variance in the criterion variable attributed to each predictor (within rounding error rescaled weights sum to 100 %)

Tonidandel and LeBreton (2011) explain that it is important for researchers to be clear as to

whether they are reporting raw weights based on the metric of relative effect sizes or rescaled

weights based on the metric of percentage (or proportion) of predicted or explained variance in the

criterion that should be attributed to each predictor. For the sake of clarity and ease of

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interpretation, I will report the metric of percentage (or proportion) of predicted or explained variances, in the following section.

5.3.7.2 Results from RIW Analysis

After examination of the relative weights it was revealed that four variables explained a statistically significant amount of variance in faculty intent to participate in OA IR. Tonidandel and LeBreton (2011) noted that typically, 95% CI in logistic regression are around the Exp(B) of 1, which is non-significant in the odds ratio. Thus, the predictor that falls around the value 1 in Exp(B), is not significant based on the CI test of significance

Based on this criterion only four predictors were found to be significant at 95 % CI, for the tests of significance, as they did not fall in the range of one. In LR analysis an Exp(B) of 1 is non-significant. The results from the relative weight analysis show that the majority of the explained/predicted variance in faculty intent to participate in OA IR is attributed to perceived difficulty with the submission process (36% of model R^2), the influence of discoverability, access and readership (18% of model R^2), perception of IR as low-quality publishing venues (15% of model R^2), and the influence of altruism (12% of model R^2). In other words, the results reveal that the most significant predictor of faculty intent to participate in OA IR was the perceived difficulty by faculty with the submission process. The second most significant influential predictor was the discoverability and access of items in OA IR and perception that it will increase their readership. The third most significant was faculty perception of OA IR as low-quality publishing venues, which rather deters them from participating. And, lastly the notion of altruism as interpreted by individual faculty proved to be a significant predictor of faculty intent to participate in OA IR.

5.3.7.3 Summary of RIW Results

Based on the results, I conclude that relative importance weight results do not differ from what was obtained from the logistic regression analysis. Specifically, in the previous analysis the same factors (i.e., PDS, DAR, PLQV, ALT) provided a statistically significant incremental effect in the prediction of faculty intent to participate, holding constant all the remaining predictor variables. Although there was no lack of concordance in the significance of the odds ratio coefficients and the relative weights, as noted by Tonidandel et al. (2010), these two-statistical analysis are addressing different research questions. Furthermore, they noted that odds ratio (ExpB) is focused on incremental prediction even when predictors are correlated and thus, variables that yield a significant bivariate relationship may not yield a significant incremental relationship. On the other hand, RIW analysis is focused on explaining which predictors are explaining non-trivial variance in our outcome – even in the presence of additional, correlated predictors. Thus, these results work in a supplementary fashion and suggest that both of these variables are explaining non-trivial variance in faculty *Intent* (Tonidandel & LeBreton 2011), but the correlations they share with one another (and the other predictor variables) results in them explaining little unique, incremental variance.

5.4   Qualitative Data Analysis

In addition to quantitative analysis, the next section explores faculty perceived motivation factors and barriers towards participation in IRs through an open-ended questionnaire. The qualitative analysis allowed me to understand faculty members' views on IRs and examine the support of the findings from quantitative analysis. Out of 172 respondents (partially completed), 72 (39%) respondents chose to further elaborate on motivating factors to participate in IR.

In addition, another (34%) respondents chose to further comment on the factors that deter them from participating in IRs.

5.4.1 Coding

The process of coding qualitative data is an important part of developing and refining interpretations of data collected such as interviews, open-ended questions, and so forth. As recommended by Lofland and Lofland (1995), the open-ended questions were downloaded into a Word document and the content was organized into categories for different themes. The two major themes derived from the literature review, theoretical framework and quantitative data analysis that were divided into two main categories: the motivating factors and faculty concerns regarding participation in OA IR. The motivating and hindering factors were then synthesized into different 'coding themes". Coding is the process of organizing and sorting your qualitative data (Lofland & Lofland, 1995). The analysis was started with pre-set codes (factors affecting faculty self-archiving) that derived from the conceptual framework, and quantitative data analysis (e.g., copyright concerns, plagiarism concerns, difficulty with submission, etc.). In addition to pre-set codes the *emergent codes* were created as well. These are themes that emerged from the faculty comments regarding their motivation and concerns about OA IRs. According to Taylor and Bogdan (1998), the "emergent codes" are those ideas, concepts, actions, relationships, meanings, and so on that come up in the data and are different than the pre-set codes (e.g., preservation, lack of peer review, etc.). At the same time, every participant was assigned a unique identification (ID) number. The identification numbers were divided into two categories. Participants that commented on the reasons that motivates them to deposit their work to an IR were assigned 'MO' before their ranking number. While participants that commented on their overall concerns (hindering factors) about submitting to an IR were assigned 'HN' in front of their ranking number. Table 5.37 is an example

of the comments, the coding and the assigned participant ID. To view the complete comments of all the participants in the qualitative analyses, please see Appendix G.

Table 5.37

Example of Coding and Assigned IDs

Comments on concerns regarding participation in IR	Code	Assigned participant #
Some of the items I tried to submit in the past were tied up under the agreements with the original publisher.	Copyright	HN001
Perhaps lack of recognition/prestige from colleagues more focused on traditional (print) form of publications.	Perception of IRs as low quality venues	HN002
Comments on motivating factors		
As a form of scholarship in the 21st century it is an attractive and timely idea.	Support for OA	M002
To receive more citations	Access and readership	M003
Most are full of "SSRN" fake literature and research. Much of which has bad grammar along with poor research. Don't want my hard earned work published along side this trash.	Low quality venues	M004
Wides access to my work	Dissemination	M005

5.4.2   Motivating Factors to Participate in OA IR

To gain a more in-depth understanding about the factors that influence faculty members to participate in OA IR, the respondents were asked to describe any reasons that motivates them to deposit their work in an OA IR. After careful examination of the respondents' comments, the following themes emerged from their response. The most prevalent themes commented by faculty were: access and readership, the support for open access and its goals, academic reward and culture, discoverability of items, providing access for their work that in turn will increase their readership (i.e., visibility), and preservation of their work. The level of influence by all these factors will be elaborated in the following sections. The motivating factors are summarized in Figure 5.1.
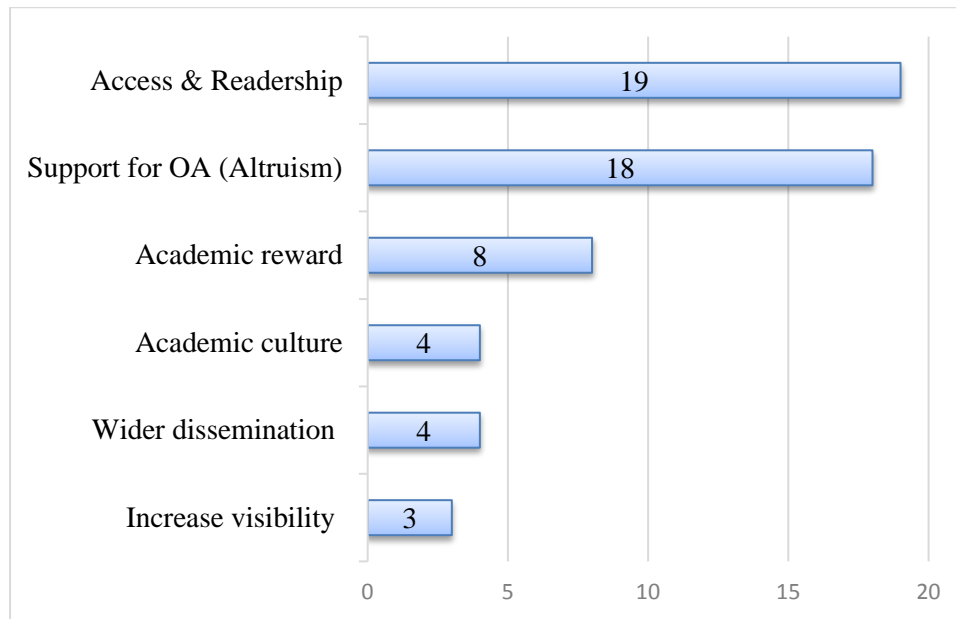
Figure 5.1. Factors that motivate faculty to participate in IR.

5.4.2.1 Open Access Supporters

The OA proponent argue that OA is a new form of scholarly communication that stems from the notion of scientific knowledge is a public good, with the emphasis on the sharing of scholarly works. A good portion of faculty (n= 19) expressed their support for OA, and their views align with the OA goals. The following comments from respondents illustrate this point, "research support by publicly-funded grants, or conducted during the course of work at a public institution, should be freely available to the public" (MO074) and "open access for scholars everywhere" (MO044). These statements made by faculty members do align with the core principles of Budapest OA initiative, which is to "making the research publicly available to everyone—free of charge and without most copyright and licensing restrictions—will accelerate scientific research efforts and allow authors to reach a larger number of readers" (http://www.budapestopenaccessinitiative.org/).

However, the qualitative analysis revealed several different notions by OA supporters. For instance, one respondent stated" belief in scholarly dissemination; belief in free access to

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information" (MO025). Some of the respondents expressed clear support for OA and its goals. One respondent stated:

> I believe in open access, open science in order to further the growth of science. And, the publishers have too strong a hold on the publication of scientific and scholarly information, data, etc., which allows some to access the knowledge but blocks many who deserve the access. We need to lessen their hold (MO037).

Others expressed rather *altruistic* behavior, which aligned with the OA goals. The concept of *altruism* in this study is described as faculty members' motivation to deposit for the benefit of others and the extent to which this attitude is aligned with the principals of the OA. Swan and Brown (2005) found that one of the major reasons that faculty and researchers choose to publish their work is to communicate their research to colleagues. Here is what one respondent in this study stated:

> It is an unconscionable state of affairs that the results of intellectual labor (often paid for by taxpayers) is confined behind fortresses of paywalls that only major institutions can afford to pay -- and pay a lot! This system must change. Freedom of information was a promise of the internet, but it seems that information worth accessing is still information that is prohibitively costly - how can students in poor nations possibly hope to compete on the international stage if they're laboring away with decades old textbooks (a situation I saw recently at a Pakistani university) (MO010).

Based on the respondent's statement about OA publishing one can conclude that OA is seen as a tool to help reduce information inequality. The unequal access to scientific knowledge is a prevalent issue among different institutions, especially in the developing countries. Another respondent shared the belief of knowledge as a public good, the importance of providing access of his/her work to others, and contributing to the research knowledge. "Publications that derive from research that was supported with public funds should be freely available to the public" (MO011). In addition, another respondent expressed the willingness of sharing his/her work with others. "I highly value OA, and value sharing my knowledge with others" (MO040).

On the other hand, similar to previous findings by Primary Research Group (2009), some respondents expressed awareness of OA and its goals but felt like it is more important to cooperate

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with commercial publishers. Here is one statement that illustrates this point. "I'm old school, and while the principle of open access sounds fine, I do not believe it holds the same value in any sense as peer-reviewed publications in scholarly journals and books that have been vetted by publishers/reviewers for publication" (MO038). While supporting the principles of OA, the respondent expressed concern regarding the lack of peer review process in OA publishing. Another respondent perceived the OA publishing as a supplementary to traditional publishing. "At the moment, I would only consider depositing work to an OA if I am unable or unwilling to publish it with a peer-reviewed journal or academic press" (MO014).

Overall, it appears that a portion of faculty (19 out 138 respondents) expressed a positive attitude towards OA publishing. While some expressed clear support for OA and its goals, others strongly believed in sharing their knowledge and that publicly funded research should be available to all. Furthermore, some faculty view OA publishing as way to contribute to the advancement of science while others see it as supplementary form to traditional publishing.

5.4.2.2 Discoverability, Access and Readership (DAR)

Results from the quantitative part on the current research indicated that easy discoverability, providing access of their items, as well as wider dissemination or increased readership was a statistically significant factor that affected faculty attitudes towards participation in OA IR (Expβ, 2.824). The findings from the open-ended questionnaire supported these findings from quantitative analysis. In fact, the highest number of comments (n=23) were about DAR. This factor incorporated three somewhat distinct themes, discoverability (easy to find) of items, providing wider *access* and increased *readership* (impact factor). Increasing their readership or citation proved to be a motivating factor for faculty to participate in OA repository. For instance, in answering the question of what motivates them to participate in OA repository one respondent

simply stated, "to receive more citation" (MO003), while two others stated, "more citations" (MO067 & MO068). In response to the same question another respondent stated, "the hope that it might be read" (MO016) indicating the readership as a reason he/she is willing to deposit.

Providing wider access to their work appeared to be another popular theme among the reasons faculty choose to participate in IR, one respondent stated, "I like to access other's work freely; so I figure that I should return the favor" (MO054). For another respondent, it was important to provide "easier access to buy others to my published materials that otherwise requires a subscription to access" (MO62). A few other respondents expressed their interested in providing "wider access to my work" (MO005), "wider dissemination options" (MO020). Another respondent stated" POTENTIAL of more broad-based dissemination (e.g., number, type of reader)" (MO027). The same belief about works submitted in OA repository was shared by another faculty, who stated "the work is more widely disseminated, read, and cited" (MO028).

In support of discoverability of items in OA IR one respondent stated, "a lot more people can find and use my work if openly published" (MO039). While another one shared similar view, "easier to search and find manuscripts that are relevant to the work you are doing" (MO065). As the DAR factor was explained in the *factor extraction* section of this study the concept of academic reward, readership and impact factor are intertwined and dependent on the accessibility and wider dissemination of scholarly work. This intertwined relation and the influence of this factor on faculty motivation to participate in OA IR is best described by the following response:

> My department expects us to deposit our materials and requires that we do so within ~2 months of publication/presentation. I believe in open access goals. I can see usage statistics for items I deposit, so I know that users are finding and reading materials that I author/co-author (even if they aren't always being cited in a trackable way). Putting materials in the IR makes them findable via the Web and immediately readable… Placing materials in an IR may be the best, fastest, or only way to make conference-related materials that we author available to users. (MO023).

The overall findings from qualitative analysis not only supported the findings from the quantitative analysis, but also provided a more in-depth understanding of how much faculty value discoverability, access and increased readership to their scholarly works. In addition, qualitative analysis also helped deconstruct this DAR factor which is composed of three rather different constructs.

5.4.2.3 Academic Reward (AREW)

The quantitative analysis in the current research found that academic reward was not a statistically significant (exceeded the $p < 0.05$) factor that affects faculty attitudes toward participation in OA IR. However, a number of faculty (n= 8) commented on academic reward as an influencing factor. ARW was perceived as both a motivation and hindering factor. One respondent best describes the influence of this factor in the following statement: "Funding bodies look to see what progress has been made on previous grants and databases or data collections, which are not published in traditional journals must be made available in the form of working papers or corpora" (MO051). Another respondent stated, "The only time I would use a repository is if the funding agency required the data to be open access" (MO036). The respondent acknowledges the importance of the academic reward, but at the same time voices his/her concern that publishing in OA repository will affect him/her negatively. Similar to findings by Casey (2012), some respondents (untenured faculty) expressed the importance of academic reward and their concern regarding tenure. One faculty stated, "As a junior scholar, it is too risky to submit to an OA institutional repository without first getting it published in a peer-reviewed venue appropriate for my tenure requirements" (HN011). Another respondent shared a similar view: "The work will not 'count' if it isn't published by a mainstream publisher" (HN015). In response to the open-ended question regarding the concerns of participating in OA IR, one respondent replied: "My only

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concern is that OA repositories cannot be an alternative for traditional publications for the purposes of tenure and promotion for faculty or librarians at UNT, as the requirements stand now for many departments (and for academia in general)" (HN018).   These statements reveal that among untenured faculty academic reward is an important factor. For some, publishing in reputable journals is important for their academic career, as one respondent states: "Uni, dept., etc. require 'high impact publications' for promotion and tenure; many/most 'high impact journals' require preclusive copyright agreements" (HN021). Despite the fact that the quantitative analysis found academic reward as a non-significant factor, the qualitative analysis showed that academic reward is important factor for a some faculty members in deciding to participate in OA IR.

5.4.2.4 Academic Culture (ACUL)

Academic culture, or the influence by colleagues in the field, also did not show to be statistically significant predictor of faculty participation in IR; it exceeded the $p < 0.05$ value. However, a few respondents (n= 4) voiced their concern over the influence of colleagues and/or department. For instance, one respondent stated: "My discipline privileges traditional publishing methods. I am not knowledgeable of the impact that OA would have on both my career and for my work" (MO035). While this respondent expresses the influence of department towards traditional publishing and lack of familiarity with OA, another respondent expressed a direct influence from the department to deposit in OA. "My department requires that all papers and presentations given at conferences be deposited to our IR" (MO024). Another respondent expressed a similar perspective: "A researcher's research reputation nowadays is often judged on the basis of bibliometrics (numbers of citations, impact factors of journals). Open access repositories and journals in my field do not help in this regard, and in many cases may be viewed negatively" (MO036). In summary, although quantitative analysis showed that ACUL was not a significant

factor, these statements expose the influence of academic culture (academic discipline and colleagues) as a social factor influencing their decisions to participate in OA IR.

5.4.2.5 Preservation

In addition to initial or pre-set codes of motivating factors that influence faculty members' attitudes toward participation in OA IR, the qualitative data revealed "emergent codes" as well. A few faculty expressed that the preservation of their work is an important motivating factor. In response to the question of, "what motivates you to deposit your work in OA IR," one respondent replied, "to preserve my scholarly work" (MO050). Another respondent stated that "preservation and the institutional mandate compels me to archive in the institutional repository" (MO026). From the abovementioned statements, one can conclude that the long-term preservation of scholarly material was also deemed an important influential factor for faculty participation in OA IR.

5.4.3 Concerns Regarding Participation in OA IR

To gain a better understanding of the hindering factors that impede faculty participation in OA IR, the respondents were asked to describe their overall concerns about submitting their work to an OA IR. Based on the a priori theory, quantitative analysis and their response the following themes emerged. The most prevalent theme was the unfamiliarity with OA goals and its benefits. At the same time, similar to previous findings (see Chapter 2), the qualitative analysis revealed that the faculty's most common concerns were: unfamiliarity with OA, copyright concerns, plagiarism issues, the perception of IRs as low-quality publishing venues due to the lack of the peer review process, difficulty with the submission process, and additional time needed. These factors are discussed separately in the following sections. The factor that deter faculty from participating in IR are summarized in Figure 5.2.
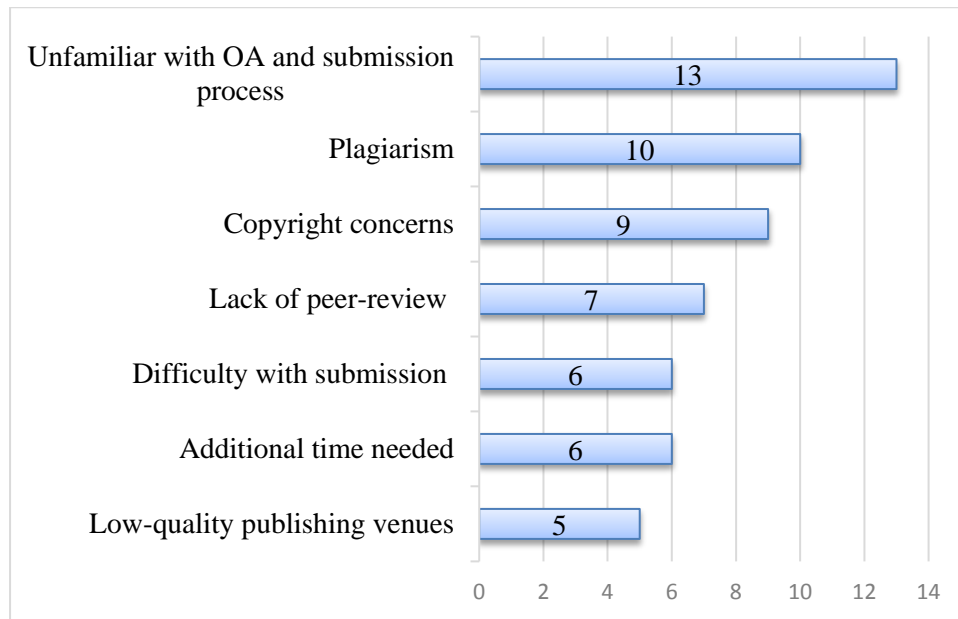
Figure 5.2. Factors that hinder faculty from participating in IR.

5.4.3.1 Unfamiliarity with OA IR and Submission Process

The results from the quantitative analysis showed that more that majority (62%) of faculty

were not aware of the OA declarations and were not familiar with OA principles. This view is also

reflected in the open-ended questionnaire. Qualitative analysis reveals that a major issue expressed

by a good portion of participants (n=13) was lack of familiarity or understanding of OA and its

principles, as well as the process of submitting their work. A few respondents voiced their concerns

by simply stating the following, "not familiar" (MO058)," no real concerns…simply not familiar"

(HN049), "do not know enough about it" (MO018) and "don't really know exactly what is meant

by that term" (HN032). In addition, the other portion of respondents expressed the unfamiliarity

with the submission process. In other words, they were not familiar with the process of submitting

their work or how they could potentially benefit from it. For instance, one respondent stated, "I am

not familiar with the reasons to deposit my work to an open access repository" (MO012). While

other respondents expressed more concerns with the lack of awareness with the submission process

itself, they stated the following: "lack of familiarity with the process" (MO055). Another

respondent stated, "I don't understand the process and advantages/disadvantages" (HN055). The

other simply said: "I honestly do not know much about it" (HN058). In summary, faculty still

remain largely unfamiliar with OA and unaware of the submission process. In addition to lack of

familiarity, faculty also expressed a lack of understanding of OA and its purpose. One respondent

stated:

> I'm concerned that OA institutional repositories imposes a scientific model upon all fields,
> regardless of the negligible benefits to those fields (Literary studies, history, and other
> humanities fields). Furthermore, OA will erode support for academic journals in the
> humanities, which are already suffering because public support has been increasingly in
> short supply and library subscriptions to bundled scientific journals takes away from
> allocations for humanities journal subscriptions. I see OA as another way to devalue
> humanistic research and impose a corporate model (free and fast) on faculty. Wish I could
> be more sanguine. I'll need someone to make the case for why OA would preserve careful
> peer review and how and in what ways it benefits fields that are being squeezed out by
> emphasis on STEM and its highly-subsidized publication models (HN005).

The statement shows that the respondent had an overall negative attitude toward

participation in OA repositories. The main issues expressed by the respondent appears to be the

unfamiliarity with OA principles that can often lead faculty to a misunderstanding of OA

principles. Some faculty seem to believe that OA repositories are an unworthy alternative to

traditional publishing (i.e., OA will erode support for academic journals).

5.4.3.2 Plagiarism Issues

Although results from quantitative analysis proved the faculty perceived plagiarism issues

as non-significant factor (exceeded $p<.05$), the qualitative analysis revealed that a number of

faculty (n=10) were concerned about plagiarism issues. When asked to describe their overall

concerns about submitting to an OA institutional repository, most of respondents expressed their

concerns of work not being cited, or their work is misused in some other manner. Here are a few

responses that illustrate this concern. One respondent stated the concern of "plagiarism, not having

work cited, alteration or misrepresentation of my work" (HN046). Another respondent noted "the

issue of plagiarism and not getting properly cited" (HN022). The next respondent expressed similar

concerns regarding plagiarism and influence by colleagues: "Afraid of being plagiarized. Also,

this doesn't seem supported as research by my colleagues" (HN029). Improper citation seems to be

the concern of the next respondent. "Other researchers may use my results without citing me"

(HN003). While the next respondent seem to be concerned about the "abuse of my results by

unscrupulous others" (HN007). In addition, a few faculty were more direct about the plagiarism

concern, suggesting the following: "I feel it is an opportunity for others to 'steal' my work"

(HN033) and another stated: "There have been instances where I have found entire pages of my

work plagiarized into other articles that came from my OA publications" (HN034). Like previous

findings (Lercher, 2008, Singeh et al., 2013) the statements by faculty reveal that fear of plagiarism

is the cause of their reluctance to deposit their work into IR.

5.4.3.3 Copyright Concerns

Based on the LR analysis, perceived copyright concerns were not a statistically significant

factor (p= 0.18) that affected faculty attitudes towards participation in OA IR. However, the

qualitative part of this study revealed that a number (n= 9) of faculty expressed concerns regarding

copyright issues. Some of the respondents expressed their concerns about the right to deposit

already published work. One respondent stated that "some of the items I tried to submit in the past

were tied up under the agreements with the original publisher" (HN001). Another respondent had a

similar response: "I am concerned about my rights to deposit already published work" (HN006).

Here is another statement, as an indicator that faculty are reluctant to deposit in OA since they do

not know if the publishers hold the right to their work: "Possible conflicts with the policies of

scholarly publishers" (HN023). In addition, another respondent voiced his/her concern regarding

restrictions imposed by publishers: "Theft of ideas or data, plagiarism, limitations on subsequent

ability to publish. Restrictions on depositing already published work" (HN026). Despite the results of LR analysis showing PCC to be a non-significant factor, these statements support the previous finding (Kim, 2010) that copyright issues remain a hindering factor that likely deters faculty from participation in OA IR.

5.4.3.4 Perceived Difficulty with the Submission Process

The quantitative analysis showed that the lack of understanding or lack of knowledge of the process on how to submit their work was the most significant factor (odds ratio .150, p =.001) that affected faculty attitudes towards participation in OA IR. These findings were supported by the open-ended questionnaire. In addition to the abovementioned unfamiliarity with OA in general, the submission process more specifically was also a perceived barrier for a number of faculty (n=6). Here are some of the faculty responses that will best illustrate their concerns over the difficulty with submission process.

One respondent stated: "I need training and time to deposit my works" (HN013). Another respondent elaborated more, "I don't understand the process, I don't understand copyright considerations, and I don't see a huge benefit. In the cost-benefit analysis, I don't see enough benefit to motivate me to take the initiative to pursue the matter" (MO029). In addition to making clear the difficulty with submission, the statement from the MO029 respondent also reveals that these factors (constructs) are interrelated with one another and sometimes overlap. In support of quantitative analysis, these statements reveal that like previous findings (Connolly, 2007, Creaser et al., 2010, Yang & Li, 2015) lack of knowledge on how to deposit material into an IR is an influential factor.

5.4.3.5 Perceived Additional Time Needed

The PATN factor was proved to be a non-significant factor (exceeded p<.05) in logistic regression analysis. However, some respondents (n=7) did raise this concern as a deterring factor. One respondent stated, "I do not have time to publish in peer review journals and OA" (HN012). Other respondents voiced their concern by simply stating the following: "I need training and time to deposit my works" (HN013); "time, finding the time to do it" (MO052); "time needed" (HN050); "time commitment" (HN037); "time-consuming, possibly conflicts with the policies of scholarly publisher" (HN023); "I have been lazy about taking the time to submit" (HN057). Although PATN proved to be a non-significant factor in LR analysis, based on these statements, one can conclude that like previous studies (Gibbson, 2005; Covey, 2009; Abrizah & Karim, 2013) lack of time and additional effort needed is an important hindering factor that is likely to deter faculty from participating in OA IR.

5.4.3.6 Low Quality Publishing Venues

The qualitative analysis supports the quantitative findings regarding faculty perception of OA IR as low-quality publishing venues as a significant factor (β .335, p=.01). Also, the previous research found a number of faculty perceived OA IR as low quality publishing venues; described by different notions such as "low quality", "weaker", "easy to publish in", "probably not scholarly", "less prestige", and "less quality control than traditional journal" (Laughtin-Dunker, 2014). Similar to previous findings the current research found that faculty have an unfavorable view towards publications in OA IR. In addition, similar to findings by Laughtin-Dunker, faculty used a range of notions to describe their perception of IR as low-quality publishing venues. For instance, one respondent was not sure of how publishing in IR would affect his/her work. They said: "My concerns are how materials that are submitted to an OA repository are considered by my

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profession. Would they have less value than works submitted to other publications?" (HN010). Another respondent stated more clearly his/her belief that publishing in IR might have "less prestige or weight in evaluations of my scholarly productivity" (HN017). The respondents' statement reveal that similar to previous findings (Westrienen & Lynch, 2005) – faculty are afraid that publishing in OA IR could affect their scholarly reputation. A similar response recorded was from the following participant: "Some view OA repositories as a place where you can buy a publication due to the poor quality of articles within the journals. As with all things, the OA journal needs to be reviewed for quality and a place to publish scholarly work" (HN43). Similar to findings by Harley et al (2006), there is a prevailing perception by faculty that print publications are more likely to undergo stringent peer review than online publications. Thus, in faculty views this makes OA repositories a platform for low quality scholarly works which can affect their academic careers negatively. Among these different notions used by faculty to describe their perception of OA repositories as a low quality publishing venues, the concern regarding the lack of peer review was the most prevalent thus it will be discussed as an emergent theme separately in the next section.

5.4.3.7 Lack of Peer Review

In addition to initial code of viewing IRs as low quality publishing venues, the perception of the lack of peer review process for OA publications emerged as a separate issue that concerns a number (n= 7) of faculty. In response to the question of "what are your concerns regarding participation in OA IR," one of the respondents simply stated, "lack of peer review" (HN024). Another respondent expressed the importance of peer review, saying that "peer-reviewed publication is the hallmark of academic success" (HN056). Another respondent appeared to be more adamant on the matter of a peer-review process and chose to elaborate more:

> It seems to me that putting one's work out there in a non-peer-reviewed format is a complete waste of time. If you're good enough, you publish in a peer-reviewed journal, or

you publish your book with a peer-reviewed press. Only exception to this is if you're so good, you've made full professor, you reputation is such that anything you write has credibility, you don't need the status of peer-review publication for your career advancement or raises, so you have the luxury of putting your work out there in whatever format you damn well please. Other than that--open access is stupid (HN025).

These statements expressed by faculty members show that the perception of faculty regarding the lack of peer-review process for the works deposit in OA IR could be one of the main reasons why faculty view OA IR as low-quality publishing venues. This view of IR by faculty supports the quantitative findings that showed PLQV as a significant influencing factor.

5.5   Summary of Qualitative Data Analysis

The goal of the qualitative analysis was to supplement the quantitative analysis and provide a more in depth understanding of faculty motivation and concerns regarding their participation in OA IR. The results revealed that while a majority of faculty support the principles of OA, a good portion of faculty do not understand what OA are and are still unclear about the purpose of OA, as well as remain unware of the submission process. In addition, some faculty believe in sharing knowledge and providing access to their work through OA IR will increase visibility and readership, providing wider dissemination to their work, and encourage collaboration. On the other hand, faculty have myriad of concerns surrounding OA publishing reflected in the fact that more than half of faculty are reluctant to participate in OA publishing. This is best illustrated by the following response: "I don't understand the process, I don't understand copyright considerations, and I don't see a huge benefit. In the cost- benefit analysis, I don't see enough benefit to motivate me to take the initiative to pursue the matter" (MO029). The factors that hinder faculty from participating in OA publishing range from plagiarism concerns (n=10), copyright concerns (n=9), lack of peer review process (n=7), and difficulty or unfamiliarity with the submission process (n=

6). A few faculty also expressed their lack of time to submit works in OA repositories, as well the perception that it might have a negative impact on their academic career.

5.6   Chapter Summary

Through a secure online based survey, data was collected from faculty (n=138) at a public university in North Texas. All faculty were asked to participate via e-mail. Prior to the main analysis, the study conducted a descriptive analysis and reported the demographic characteristics of the participating faculty and their familiarity with OA.

The demographic data of the respondents were evenly distributed, with the majority being between ages 31 to 70; there was no major difference between sexes found. The highest number of the respondents were from the College of Arts and Sciences (37%), followed by College of Public Affairs and Community Services (12%), College of Education (11%), Libraries (11%) and College of Information (10%). Most of the respondents were tenured faculty (57%), followed by non-tenure track (34%) and tenure-track faculty (10%). While most of the faculty (62.5%) were not familiar with any of the OA declarations, about 52% were not aware of university OA policy. The results from descriptive analysis ensured that demographic variables possess variations allowing for meaningful statistical analysis.

Before conducting logistic regression analysis, the PCA was utilized to extract the number of factors from the data. Eleven factors emerged that represented the underlining constructs of the collected data. The study used EV and Velicer's MAP to confirm the number of factors extracted from PCA. The criteria indicated the extraction of eleven factors. These factors included perceived copyright concerns (PCC), plagiarism concerns (PPI), difficulty with submission (PDS), low quality venues (PLQV), additional time needed (PATN), altruism (ALT), academic

reward (AREW), academic culture (ACUL), discoverability, access and readership (DAR), self-efficacy (SE) and controllability (CO).

To ensure the quality of data, the study assessed the reliability of variables and normality of distribution. The reliability results from Cronbach's alphas proved satisfactory for an exploratory factory analysis study. The measure of normality showed that the kurtosis of the data was normally distributed (neither significantly peaked nor flat), while the distribution was neither positively nor negatively skewed. In addition, the assessment of linearity independence of error and multicollinearity was conducted. Overall, the analyses of normality, independence of error and multicollinearity did not find serious violations on any of the assumptions for logistic regression.

A logistic regression analysis was utilized to explore the degree of relationship between the set of factors and intention to deposit in OA IR. The overall results revealed the following significant predictors of faculty intent to participate in OA IRs: PDS (Odds ratio .150, p =.001), PLQV (Odds ratio.335, p < .05), DAR (Odds ratio 2.82, p<.05), and ALT (Odds ratio .399, p < .05). The remaining predictors were not statistically significant. They exceeded the p < .05.

Finally, to understand the relative importance of these factors, the current study employed relative importance weight (RIW) analysis. The examination of the relative weights confirmed the findings from the LR analysis that the same factors (PDS, DAR, PLQV, ALT) provided a statistically significant incremental effect in the prediction of faculty intent to participate. In addition, the RIW revealed that the most influential factor was PDS (36%), followed by DAR (18%), PLQV (15%), and ALT(12%).

CHAPTER 6

DISCUSSION AND CONCLUSION

6.1   Summary of Findings

It is the advances in the information communications technology (ICT) and the

culture of different academic fields that continues to push changes in attitude towards the open

access scholarly publishing, in particular OA IRs. Despite the increase popularity of OA IR, they

still remain thinly populated and faculty have been reluctant to embrace OA IR for myriad of

reasons (factors). Ajzen's theory of planned behavior (TPB), proved to be satisfactory framework,

and was utilized in this study to examine (1) the overall factors (attitudinal, social, and individual)

that influence (affect) faculty attitudes towards participation OA IR, (2) the effects of these factors

on the likelihood of faculty participating in OA IR, and (3) the extent (relative importance) that

each factor affects faculty participation in IR.

To address these questions, the study first identified the factors affecting faculty attitudes

towards OA publishing through literature review and then incorporated these factors in the

theoretical framework of TPB, designed to investigate attitudes. This chapter summarizes and

discusses all the significant influencing factors. It discusses the significance of the study to the

already existing body of knowledge regarding scholarly publishing, and the theoretical and

practical implications of the study. Lastly, this Chapter discusses the limitations of the study and

the possible directions for future research.

6.1.1   Influencing Factors and Their Validity

Many factors that are believed to influence faculty participation in OA repositories were

identified from previous studies. The identification of factors was described in the literature

review. From the review, eleven factors that influenced faculty members' intention to participate in

an IR were identified and operationalized. The items extracted from literature review were modified and the final set of items were then used in the main survey questionnaire.

The number of factors retained was 11, and was initially determined based on the literature review and a priori theory: five attitudinal, four social (subjective norm) and two individual factors. The factor analysis was conducted to extract factors based on the correlations among the data. The EV and Velicer's MAP was utilized to confirm the number of factors to extract. I employed techniques recommended by Henson and Roberts (2006) to determine what theoretical constructs underlie a given data set and the extent to which these constructs represent the original (latent) variables. An EFA was conducted using principal component analysis method and oblique direct oblimin rotation. Most items showed simple structure and had adequate communality values. To ensure the reliability of data in the current research, the internal reliability coefficients were assessed for the 11 hypothesized subscales of the factors affecting faculty attitudes towards participation in OA IRs. All of the subscales had adequate internal reliability coefficients. To determine whether each factor has significant predicting power on faculty intent to deposit, logistic regression (LR) was utilized. The LR analysis revealed that four out of eleven factors proved to be statistically significant. Difficulty with the submission process, discoverability access and readership, altruism, and faculty perception of IRs as low quality publishing venues. In addition, the relative importance weight (RIW) analysis was utilized to measure the proportionate contribution each factor (predictor) makes to outcome (faculty intent to participate).

To further ensure the reliability of the findings, an open-ended questionnaire was used. Faculty were asked to elaborate about the hindering and motivating factors that affect their attitude towards participation in OA IR. Guided by the TPB, the results of all the influencing factors from both quantitative and qualitative analysis are summarized in the following sections.

This study was concerned with faculty *intention* to deposit their work in an OR IR. This chapter discusses the findings from quantitative and qualitative analysis within the framework of the TPB. Based on the framework of the TPB, *intention* is determined by three factors: attitude towards behavior (a favorable or unfavorable to deposit), subjective norm (perceived social pressure to deposit), and perceived behavioral control (self-efficacy in relation to deposits). The findings are discussed in this Chapter within these three domains that influence faculty intent to participate in IRs.

6.1.2   Attitudes towards OA IR

The quantitative analysis found two out of five attitudinal factors to be statistically significant (p<0.05) factors that affected faculty attitudes towards participation in OA IR. The study found a negative influence of the perceived difficulty with submission process (also referred to as technical barriers). This confirms the previous findings that lack of knowledge (learning curve) on how to deposit, the unawareness of the tools to deposit their work was a significant hindering factor that deterred faculty from participation in IR (Davis & Connolly, 2007; Creaser et al., 2010; Yang & Li, 2015). The findings from the logistic regression suggest that the higher the score in faculty PDS process, the less likely it is for faculty to deposit their work in IR. These findings were consistent with the results from qualitative analysis. In the open-ended questionnaire, faculty expressed their lack of familiarity with the submission process and the need for training. In addition, the qualitative analysis revealed that faculty expressed the *unfamiliarity* and *difficulty* with the submission process.

The perception of IRs as low-quality publishing venues was another attitudinal factor that had a (statistically significant) negative influence on faculty attitudes towards participation in IRs. The logistic regression analysis revealed that the higher the score on perception of IR as low

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quality publishing venues, the less likely faculty were to participate in IR. Similar to the findings

from previous studies (Westrienen & Lynch, 2005; Harnad, 2006), faculty were still concerned that

publishing in IR will have a negative impact on their academic career. This attitude of faculty

towards IRs was best illustrated in their responses to the open-ended questionnaire. In addition to

expressing their concerns that publishing in IR was considered to have less value, the most

prevalent faculty concern was the lack of the peer-review process. The emergence of this theme

from qualitative analysis implies that respondents mainly perceived IRs as low quality publishing

venues due to the lack of peer-review process to publish in IR.

The results from the quantitative analysis revealed that the influence of the other attitudinal

factors (PCC, PPI, and PATN) on the intention to deposit were not statistically significant

(exceeded $p > 0.05$). However, this is not to say that these factors do not have influence in faculty

attitude towards participation in OA IR. The results from the qualitative analysis reveal that faculty

do have concerns regarding plagiarism (n=10), copyright (n=9), and additional timed needed (n=7).

Previous studies have shown that copyright concerns and fear of plagiarism are perceived as major

barriers for participation in OA repositories (Casey, 2012; Creaser et al., 2010; Kim, 2010). The

qualitative analysis in the current study found support for the negative influence of copyright

concerns and plagiarism.

6.1.3   Subjective Norm (Social Pressure)

The social (contextual) factors in the current research were defined within the framework of

TPB. According to TPB, the subjective norms (social influence) refers to an individual's

perceptions of general social pressure to perform or not perform a behavior (i.e., to participate or

not in IRs). Previous scholarly communication literature found four distinct factors proven to

influence faculty attitudes towards participation in OA IRs (i.e., ALT, AREW, ACUL, DAR),

which were incorporated into the broader concept of subjective norms. The results from the quantitative analysis showed that *altruism* was a statistically significant factor that affected faculty intent to participate in OA IRs (β=.399, p<0.05). However, the logistic regression results show a negative correlation between faculty altruistic intentions (i.e., support for OA) and intent to deposit. In other words, faculty did score high in response to *altruism* but they scored low on intent to deposit. These results support the other findings by Morries and Thorn (2009), which showed that faculty tended to agree with the principles of OA in theory, but they were not as willing to participate in OA repositories. In addition, Rowley et al. (2017) also found that scholars generally view the publication in open access journals favorably, although they are reluctant to fully commit to OA journals. A possible explanation for the rather contradictory findings is best described in the responses to the open-ended questionnaire. While some of the respondents expressed a clear support for OA and its principles, they at the same time expressed a myriad of concerns regarding participation in OA repositories. In other words, faculty might support the OA due to the social influence (i.e. department, peer-pressure etc.). However, they were not willing to deposit their work most likely because of the current academic evaluation system in place, which does not place a value in OA IRs. This is an indication that while academic institutions with content recruitment and OA policy have made some strides, more is needed to gain faculty interest in participating in OA IRs.

Another important (social) factor was the discoverability of items, easy access to information, and increased readership (β=2.82, p<.05). For a standard deviation increase in this factor, there as was a 2.82 standard deviation increase in faculty intent to participate in IR. This is a factor that incorporates several reasons that faculty find it appealing to participate in IR. One explanation is that the easy access to information and another is providing wider access to their work, which in turn can increase their readership. A possible explanation for the overwhelming

support of DAR factor is that easy access to scholarly works was desirable for majority of faculty, as well as the desire to increase their readership (impact factor) as it will affect tenure promotion.

The findings from LR analysis revealed that academic reward and academic culture did not have a direct effect on faculty members' intent to participate in OA IR (exceeded the $p<0.05$). However, these factors were mentioned as influencing factors in the open-ended questionnaire. A possible explanation for the lack of support in the LR analysis is that these factors seem to cluster together with other factors. The influence of increased readership is closely associated with the tenure process (e.g., academic reward). Also, the influence of academic culture is closely related to the differences in perceptions of IR by academic discipline/department, along with the peer-pressure from colleagues. In the qualitative part of the study, faculty expressed the influence of the academic field and department, and of colleagues on their decision to participate in OR IR.

6.1.4 Perceived Behavioral Control

With regard to faculty perceived control for participation in OA IR, the LR analysis showed that both controllability and self-efficacy were not statistically significant (exceeded $p<0.05$). Controllability refers to the extent that faculty members perceive the external control (help from others) important for participating in an IR, while self-efficacy refers to confidence that faculty members have in their ability to participate in OA IRs. However, the findings in the study suggest that there are individual differences in the way faculty feel confident or need help from others, as well how they view OA IRs. This also in kind impacts their intent to participate in IR. These differences as found in previous studies (Yang & Li, 2015; Cullen & Chawner, 2011; Kim, 2010) are important and will be discussed in the next section.

6.1.5   The Influence of Individual Differences on Faculty Intent

The demographic data (i.e. age, college, rank, status) shows a difference between faculty familiarity with OA, and awareness of university OA policy and intent to deposit. In addition, the results from the quantitative analysis show that there was no significant difference and that demographic data alone did not have a direct effect on faculty intention to deposit in OA IRs. The exception to this was faculty between ages 51 and 60 and the faculty from the College of Information, which were more likely to participate in OA IR compared to other groups. This is likely because the faculty from this age group and faculty from College of Information tend to be more informed about the OA issues and practices.

Although the LR analysis did not show any significant influence of faculty demographics on intent to deposit, the cross-tabulation analysis did reveal significant differences between age, sex, college, rank and status and intent to deposit.   With regard to the individual differences, the cross-tabulation analysis shows that majority of faculty (62%) were not familiar with any of the three OA declarations; and more than half (52%) were not aware of the university OA policy. At the same time, a majority of faculty (64%) did not know the purpose of UNT Scholarly Works repository; 75% have never contributed to UNT repository; and 66% have never contributed to any type of OA repository. The Chi-square analysis shows that there was a significant difference between age groups, colleges, academic ranks and status, as well as faculty awareness of OA in general and university OA policy. Subsequently, there was a significant difference between age groups, colleges, academic ranks and status and their intent to deposit – especially by college. The age group 51 to 60 and over indicated that they were the most willing to participate in OA IR (71%). These findings are rather contradictory to Kim's (2010) findings, which suggest that younger faculty members (age 35-45) tend to self-archive at a greater percentage than their older colleagues do. Also, similar to previous findings (Casey, 2012; Schonfeld & Houseright, 2010;

Jantz & Wilson, 2008; Allen, 2005), this study found a difference between colleges (academic discipline), and intent to participate in OR IR. Libraries were most likely to participate (100%), followed by College of Information (85%), when compared to other colleges. Unlike the findings from Kim's (2010) but rather similar to findings by Yang and Li (2015), the current study found that there was a difference in faculty status and intent to participate in OA IR. Non-tenure track faculty were more likely to participate in OA IR (60%) than tenured faculty (51%). In addition, the tenure track faculty were the least likely to participate in OA IR (42%).

6.1.6   Relative Importance of the Influencing Factors

The final focus of the quantitative part of this study was to examine the relative importance of the influencing factors and compare their contribution towards the intention to participate in OA IR. The assessment of the each factor was conducted using relative weight analysis (Tonidandel & LeBreton, 2010). The eleven variables were extracted from the principal component analysis. Because the factors correlated with each other, the RIW analysis made it possible to compare the relative influence of each factor on faculty intent to participate. Table 6.1 shows the rank order of the contribution of influencing factors.

Table 6.1

Relative Importance of Factors

Factor Name	Relative Importance
Perceived difficulty with the submission process (PDS)	(36% of model R^2)
Discoverability, access and readership (DAR)	(18% of model R^2)
Perceived as low quality venues (PLQV)	(15% of model R^2)
Altruism (ALT)	(12% of model R^2)

The most significant influencing factor of scholars' intent to participate in OA repository was the perceived difficulty with the submission process. The most frequently commented was the lack of familiarity on how to submit.

6.2   The Implications of the Study

This study extends the vision shared by OA proponents of utilizing the advancement of information and communication technologies (ICT) in transforming scholarly communication. Two decades after the OA declarations, the perception of scholars regarding scholarly communication, specifically OA scholarly publishing, remains rather unchanged. This study is an attempt to gain a better understanding of why this is the case. Many believe that library and information professionals need to take a more active role in the scholarly publishing process. Proponents of OA have been advocating for a more proactive approach by all the stakeholders involved in the process in order to break the hold by commercial firms over academic publishing. Thus, by engaging in research that enables us to understand faculty, we, as the major stakeholders in scholarly publishing, will continue the revolution in scholarly communications originally started by the visionaries of OA. The result from this study can be considered as a thought experiment, which can be described as one-step that could possibly reset the current system of scholarly publishing and put information professionals in the forefront.

6.2.1   Theoretical Implications

This was the first study to address faculty attitudes towards OA publishing, specifically faculty participation in OA IR as a new way of scholarly dissemination. Unlike previous studies that focused on external factors (social or technological context), the goal of the current research was to investigate the overall factors – including the psychology of the reluctance – affecting

faculty participation in IRs, as well as examine the extent to which these factors influenced

faculties' willingness to participate in IRs. Drawing upon the theory of planned behavior (TPB),

the current research focused on measuring all the different dimensions that may influence faculty

attitudes towards OA IR, beyond the socio-technical.

In addition, this study also developed an exploratory measurement scale to measure factors

that affect faculty attitudes towards participation in OA IRs. The process of developing the scale

included deliberate steps derived from the literature review and the application of the TPB. This

study provides the validity of the scale through the confirmation of relatively distinct factors,

which emerged from the principal component analysis.

Lastly, this study presents the appropriateness of the complementary use of a research

model and a theoretical framework. As suggested by Creswell (2003) and Tashakkori and Teddlie

(1998), the current study incorporates the model of factors affecting faculty self-archiving and

findings from previous studies within the framework of the theory of planned behavior. These

multiple viewpoints guided the entire research process, including the development of the

questionnaire. Considering that most experts in the field view information science as

interdisciplinary, the current study contributes to this type of research trend.

6.2.2 Practical Implications

The findings from this study provide practical value to all those involved in scholarly

communication, especially in open access publishing. As stated at the research overview section,

the solution to low faculty participation in OA IRs is a complicated task that requires a

multifaceted approach. Thus, academic institutions that already have or plan to establish an OA

repository may utilize these results as a guideline that enable them to better understand the faculty

needs and concerns regarding participation in OA IRs. Based on the findings, in the next section, I
will provide guidelines for librarians, IR managers and developers who are involved in IR.

In addition, the current study measured the relative importance of each factor that may
serve as a practical guideline in evaluating and promoting OA IR. The results from the important
factors identified in the present study offer empirical evidence regarding faculty attitudes – such as
concerns and motivations – toward OA IR. They can be useful to librarians and IR staff in their
outreach efforts. More specifically, the results suggest that faculty member's attitudinal factors,
such as perceived difficulty with submission, and perception of IR as a low quality publishing
venues, were a stronger indicator of the faculty intent to participate in IR than that of social or
contextual factors (i.e., altruism, and discoverability, access and readership).

6.3   Recommendations

The goal of this study was to aid librarians, IR managers and developers in understanding
faculty needs and attitudes towards OA IR. Current research offers several recommendations to all
those involved in developing and maintaining an OA IR.

1.   The results from the quantitative part of the study shows that more than half (62%) of
faculty are not familiar with any of the OA declarations. At the same time, the results reveal that
faculty that are familiar with OA declarations are twice (76%) more likely to participate in IR than
faculty that are not aware of OA (39%). Thus, IR staff/librarians should develop clear and
engaging outreach programs that will bridge the gap between faculty perception of OA publishing
and the goal of OA as articulated by its proponents. Faculty members in this study showed a lack
of understanding of OA principles and almost half of participants were not aware of university OA
policy. Thus, well-developed outreach programs are likely to increase faculty familiarity with the
OA principles and the OA polices, thus likely to prove beneficial to the success of OA IR.

2.   The results reveal that there is a significant difference between faculty age, college, rank and status along with their intent to deposit their work in IR. A thorough needs assessment is necessary for a successful OA IR. Despite the different forms of outreach effort by UNT Scholarly works repository staff, the current study reveals that faculty have a variety of reasons for their reluctance to participate to IRs. The qualitative analysis in the current study revealed that faculty concerns regarding participation in OA IR varied depending on the individual characteristics, such as age, academic culture, and academic status. Thus, to better understand each faculty members' views on OA and their needs, it is crucial that IR staff conducts a needs assessment at the institutional level. This will allow for better understanding of faculty needs and concerns of each academic department, age group and faculty academic rank and/or status.

3.   The findings from both qualitative and quantitative results show that faculty are unfamiliar and/or had difficulty with the submission process. Although, IR staff at the UNT offers faculty the option to submit their work via e-mail, bring their flash-drive, and even submit work through department mail, results show that there is still confusion regarding the submission process. Therefore, librarians and/or IR staff who are responsible for developing and implementing IRs should develop targeted outreach programs to reduce the confusion regarding the submission process. Using a variety of methods to show the faculty different ways in which they can submit their work has potential to recruit a larger number of faculty to deposit their work.

4.   One of the significant factors that affects faculty attitudes towards participation in IR is the perception of IRs as low-quality publishing venues. Faculty in the study have shown they perceive OA IRs as publishing venues and in some cases, as a substitute to traditional peer-review publishing. Therefore, it is important for librarians and IR staff to work closely and collaborate with faculty members to promote the benefits of IRs. By working closely with faculty members, IR staff can explain that the purpose of OA IRs is to supplement traditional publishing, not replace it.

In addition, articulating the benefits of depositing their work in IR for them and their potential readers can lead to positive conjecture regarding IRs. For instance, depositing their unpublished and/or supplementary work into IR would provide more accessibility and visibility to their work. At the same time, these resources could benefits others and help build upon their work.

5. The quantitative analysis showed that the factor of altruism proved statistically significant, as most of the faculty tended to agree in theory with the OA principles. However, this factor was negatively correlated with the intent to deposit. This shows that faculty members tend to support OA in theory but they are not willing to participate in OA IR. The qualitative data analysis provides some insight into this phenomenon. The open-ended questionnaire shows that a number of faculty members still do not see and/or understand the benefits of participating in IRs. Thus, providing a platform for debate over the gap between faculty support for OA in theory and in practice is likely to result in better support for OA in practice as well.

6.4   Limitations of the Study

This study makes several assumptions and as with all research studies, has its limitations. First, the focus of this study was limited to faculty members who volunteered to participate in the study. Thus, since the invitation to participate in the survey was sent to all faculty at UNT via Qualtrics, and only a small portion (13 %) decided to participate, I can assume that faculty who chose to not participate in the survey are more likely unaware of OA goals and its purpose, or the meaning of open access; or are not interested. In turn, this can lead to the potential biases that in the general population outside of the sample of faculty views on OA IR are even less favorable than the research suggests. The initial research plan was to conduct a preliminary survey to identify participants that are aware and those that are not aware of open access and understand the meaning of OA. However, taking into account the fact that OA is a movement and a concept

that is still progressing thorough different outreach efforts and that more faculty are becoming aware of it, it was considered vital that all faculty are included in current research. To account for faculty that were unaware of the OA goals a brief definition of OA IR was provided at the beginning of the survey.

Second, while some faculty members are frequently engaged in research activity and produce work that could be classified as scholarly, others are not. All faculty members have potential to engage in academic research and produce scholarly work. Therefore, in this research study, I decided to focus on all faculty that are working within an institution of higher education. Also, this study does include only those individuals that are classified as faculty by University of North Texas policy and does not include students or other individuals working within the institution.

Third, the OA repository is an international phenomenon with a variety of open access philosophies and practices, but this study focused on the current attitudes and perceptions toward OA within United States; within a large public university in Texas. Thus, the results may not be generalizable to different populations.

Fourth, as previous and current research shows, over half of the faculty are not familiar with open access meaning and its goals. According to Pomerantz, J and Peek (2016), the term open access continues to be used in new ways which leads to more "phraseological neologisms". In other word, considering that the term *open* means different things to different people and it continuously is evolving, it leads to greater faculty confusion regarding the meaning of OA. In addition, for many faculty, OA publishing is rather synonymous with open access journals that require authors to go through the peer review process. However, this research focuses on faculty willingness to deposit their scholarly work in OA IR, which includes research articles, books, conference presentations and proceedings. Other types of scholarly work are also in OA IR, all of

which can be peer reviewed or non-peer reviewed, published or non-published. Institutional repositories are a subset of open access publishing and tend to be even less known among the faculty. Therefore, the assumption remained and still remains that a large number of faculty that chose not to participate in the survey were likely to be unfamiliar with the OA IRs and/or uninterested. Ergo, they are likely to have unfavorable views of OA repositories.

6.5   Future Research

The results from this study are considered an early experiment that investigated direct correlation between faculty attitudes towards OA IRs and their intention to deposit their work into an OA IR. This study addressed the factors affecting faculty attitudes towards OA publishing, specifically factors that influence faculty participation in OA repositories. This can be described as a step that could possibly reset the current system of scholarly publishing and put information professionals in the forefront.   However, considering that gaining a more comprehensive understanding of why faculty choose to or not choose to participate in OA repositories is a complicated task, the aforementioned task requires a multifaceted approach. Thus, this section suggests issues that can be addressed in future research. Below are some recommendations for future research on how to address the limitations of this study, in addition to suggestions for building upon the current research.

First, the results from this study were based on a public university in North Texas that implemented an IR in 2010 and adopted an OA policy in 2012. Therefore, this study reflects only the views of a rather limited number of faculty from this institution. Taking into account the results derived from a rather small sample size and from only one public university in Texas, the future studies should obtain a more comprehensive sample of faculty that allows for better generalization of results. Second, the results from the current research are obtained at one point in time, and

reveal that more than half of faculty are not familiar with OA and are unclear on what term *open* means. However, considering that the term *open* continues to be used in new ways, depending on the context and time frame, a longitudinal study is necessary to better understand faculty attitudes towards participation in OA repositories. Third, the study identified the factors influencing faculty participation in OA repositories from previous research. However, in the series of confirmatory analysis, it was unsuccessful in incorporating the data into one research model that best fits the data. Future studies should focus in conducting an exploratory solicitation study to generate initial item pools for the instrument development. Through a series of confirmatory analysis, the instrument could identify influencing factors (constructs) that affect faculty attitudes towards OA. This type of analysis could better explain the relationship between factors and offer a broader picture of the OA phenomenon.

6.6   Conclusion

In summary, cross tabulation analysis reveals that similar to previous research findings, the current study found that more than half (62.3%) of faculty were not familiar with any of OA declarations, or its goal. In addition, majority of faculty (66.2%) have never submitted to any type of repository; 26% did submit sometimes, 1.2% half of the time, 5.3% most of the time, and 1.2% always. The first block of LR analysis (demographic data) reveals a difference in faculty intent to participate based on age and college. Demographic predictors alone reveals that faculty from the College of Information and UNT Libraries were more likely to participate in OA IR. Also, the more senior (51-60) faculty members were more likely to deposit their work than their colleagues were.

The overall faculty intention to participate in an OA IR was slightly more than half (53%). Faculty cite a variety of reasons for their reluctance to participate in IRs. Similar to previous

findings (Creaser et al., 2010), and despite the different options available for faculty to submit their work to the UNT Scholarly Works repository, the most significant hindering factor was difficulty and/or unfamiliarly with the submission process. Also, faculty perception of IRs as a low quality publishing venue remains similar to previous studies (Westrienen & Lynch, 2005; Park & Qin, 2007; Dulle, 2010; Laughtin-Dunker, 2014), and still proved to be a significant hindering factor. However, at the same time, faculty perception of IRs as a tool to increases authors' visibility, accessibility, and readership showed to have a significant influence on faculty attitudes toward participation in OA IR. Lastly, the altruism predictor also proved a significant factor indicating that for a unit increase in altruism, there was a decrease in likelihood of faculty intent to participate. Like previous finding (Morris & Thorn, 2009), faculty did seem to agree with the principles of OA in theory, but they were not as willing to participate in OA IRs.

In summary, it appears that the overall attitudes of faculty towards OA IRs is rather unchanged. The results point out that the trend may be moving toward more confusion regarding the goals of OA and the purpose of OA repositories. The quantitative analysis shows that four out of 11 factors significantly influenced faculty intent to participate in IR: difficulty with the submission process, discoverability access and readership, altruism, and faculty perception of IRs as low quality publishing venues. A qualitative analysis extracted myriad of issues that prevent faculty from participating in OA IRs, including all of the previously identified 11 factors. In addition, the study reveals that the term *open access* is poorly understood by faculty in general and often misunderstood. This seems to derive from unfamiliarity with OA and its goals. One of the major themes coming out of this study is the ambiguity of the term *open* that often leads to misinterpretations. I would characterize the overall faculty perception of OA IRs as a confusion and misunderstanding of the term o*pen access,* which is likely due to the faculty indifference toward OA rather than active resistance.

APPENDIX A

QUESTIONNAIRE

Investigating faculty attitudes towards participation in institutional repositories (IR)

Introduction: The purpose of this study is to investigate factors that affect faculty attitudes towards participation in Open access repositories. Open access institutional repositories (IRs) are electronic systems that capture, preserve, and provide access to the scholarly digital work of an institution. Users can use, read, download, copy, distribute, print, search, or link to full publications freely. IRs are a by-product of the emerging development of information and communication technologies (ICT) that led to the Open access (OA) philosophy of global sharing of knowledge and the unbridled universal access to information resources.

Maintaining Confidentiality of Research Records: The anonymous data collected by the survey will be stored in the Qualtrics secure database until it has been deleted by the student investigator. The confidentiality of participants' information will be maintained in any publications or presentations regarding the study. Confidentiality will be maintained to the degree possible given the technology and practices used by the online survey company. The data will also be downloaded to the student investigators and supervising faculty investigator's computers in the form of Excel files. These files will be password protected, stored on secure hard drives for 3 years as required by the Federal IRB regulations, and deleted after that period of time. Questions about the Study: If you have any questions about the study, you may contact Ahmet Meti Tmava at Ahmet.Tmava@unt.edu or Dr. Shawne Miksa, at Shawne.Miksa@unt.edu Review for the Protection of Participants: This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-4643 with any questions regarding the rights of research subjects. Thank you again very much for your participation! Ahmet Meti Tmava Doctoral Candidate, IIS-PhD ProgramCollege of Information, University of North Texas. Tel. (940) 231-3238 Email: Ahmet.Tmava@unt.edu

I have read, understood, and printed a copy of, the above consent form and desire of my own free will to participate in this study.
❍ Yes (1)
❍ No (2)

	Investigating factors that affect faculty attitudes toward participation in institutional repositories		
	Section 1: This section is designed to gather demographic data and information regarding your awareness of OA, OA policy and as self-archiving practices.		
	Direction: Please complete the following demographic information.		
1.	Gender	☐ Male	☐ Female
2.	Age group	……………………………………………	
4.	Please indicate the college(s)/department(s) that you are affiliated with: ……………………………………………………………………………………………………..		
5.	How long have you been with the university? ☐ Less than 5 years ☐ More than 10 years		
6.	Please indicated your academic rank? ☐ Professor ☐ Associate Professor ☐ Assistant Professor ☐ Lecturer/Instructor ☐ Other (please specify)……………………………		
7.	Are you: ☐ Tenured faculty ☐ Tenured track (but not yet tenured) ☐ Non-tenure track		
8.	How many peer-reviewed or non-reviewed articles, papers, datasets, creative works do you typically author or co-author annually? ☐ 0-1 ☐ 2-3	☐ 4-5 ☐ 5-7	☐ 8-10 ☐ greater than 10
10	Are you familiar with any of the three Open access declarations (i.e., Budapest Open access Initiative, the Bethesda Statement on Open access Publishing, and Berlin Declarations on Open access to Knowledge in the Sciences and Humanities? ☐ Yes ☐ No		
11	Are you aware of the UNT Open access policy? ☐ Yes ☐ No		
12	Have you ever been contacted by UNT libraries explaining the purpose of UNT Scholarly works repository? ☐ Yes ☐ No		
13	Have you ever contributed to UNT Scholarly works, if yes, how often? ☐ Never ☐ Sometimes ☐ About half the time ☐ Most of the time ☐ Always		
14	Have you ever contributed to any type of Open access repository? ☐ Never ☐ Sometimes ☐ About half the time ☐ Most of the time ☐ Always		
15	If yes, please indicated what type of digital repository you used to disseminate your work? --		

	Section 2: This questionnaire is designed to gain a better understanding of factors that influence faculty attitudes towards participation in Open access Institutional Repositories (IRs).					
	Directions: Please indicate your opinion about each of the questions below by making one of the six responses in the column on the right side. You may choose any of the five possible responses, ranging from (1) "Strongly Disagree", (2) "Disagree", (3) "Neither Agree nor Disagree ", (4) "Agree", (5) "Strongly Agree" as each represents a level of agreement to indicate how you feel about the statement.					
Please rate your level of agreement regarding copyright concerns: (PCC)		1	2	3	4	5
16	I need to ask permission from publishers to deposit my work in an OA repository					
17	If I deposit my work in an OA repository without permission, I may infringe on copyright or other publishing agreements					
18	I need permission from coauthors and/or collaborators to deposit my work in an OA repository					
19	I cannot publish and/or perform my work if I deposit it in an OA repository before publication					
Please rate your level of agreement regarding plagiarism concerns: (PPI)		1	2	3	4	5
20	I am concerned about plagiarism if I deposit my materials in an OA repository					
21	If I deposit my materials in an OA repository, readers may plagiarize or fail to cite my work					
22	If I deposit my materials in an OA repository I am concerned that others might alter my work without my permission					
23	If I deposit my materials in an OA repository I am concerned that others might copy my work without my permission					
Please rate your level of agreement regarding submission process of your work: (PDS)		1	2	3	4	5
24	I am NOT familiar with the process of depositing my materials in the OA repository					
25	I find it difficult to learn how to enter metadata (e.g., title, author, date etc.) in the records for my materials					
26	I am not familiar with any tools available for submitting my work in the OA repository					
Please rate your level of agreement regarding the quality of work in IRs: (PLQV)		1	2	3	4	5
27	I perceive OA repositories as having low prestige and low quality works					
28	I do NOT trust the quality of materials deposited in OA repositories					
29	Depositing my work in an OA repository will adversely affect my chances of tenure and/or promotion					
30	Depositing my work in an OA repository will adversely affect my chances of receiving research grants					
31	I perceive OA repositories as having less quality control than traditional providers of academic works					
Please rate your level of agreement regarding the time it takes to submit your work: (PATN)		1	2	3	4	5
32	Depositing my work in an OA repository is very time consuming					
33	Additional time and effort is required to make my work available in an OA repository					
34	Depositing my work in an OA repository takes time away from my academic performance and responsibilities					
35	I simply do not have the time to deposit my work in an OA repository					
Please rate your level of agreement regarding the reasons why you chose to submit or not submit your work to IR: (ALT)		1	2	3	4	5
36	I support the principle of Open access (free and unrestricted access to research materials) for all users					
37	Depositing my work in an OA repository will help others build on my work.					

		1	2	3	4	5
38	Depositing my work in an OA repository allows others to access literature or other materials that they could not otherwise					
39	I will continue to deposit my work in an OA repository even if I do not see any direct benefits					
Please rate your level of agreement regarding the influence of academic reward on your decision to submit or not submit your work: (AREW)		1	2	3	4	5
40	Depositing my work in an OA repository will increase the readership and/or recognition of my work and my contribution to my discipline					
41	Depositing my work on OA repository will increase the potential impact of my work.					
42	My college accepts research work in an OA repository as an alternative to traditional publication for reappointment and/or promotion and/or tenure					
43	My department accepts research work in an OA repository as an alternative to traditional publication for reappointment and/or promotion and/or tenure					
44	The decision to deposit in an OA repository is influenced by grant-awarding bodies					
Please rate your level of agreement regarding the culture of your field towards participation in OA repository: (ACUL)		1	2	3	4	5
45	In my field, it is common for faculty to deposit any type of scholarly work in OA repositories					
46	In my college or department, it is common for faculty to deposit any type of scholarly work in OA repositories					
47	The decision to deposit in an OA repository is influenced by my colleagues					
48	The decision to deposit in an OA repository is influenced by my institution					
Please rate your level of agreement regarding the ease of access and discoverability of items deposited in an OA repository: (DEA)		1	2	3	4	5
49	Materials deposited in an OA repository will be cited more frequently					
50	Depositing my work in an OA repository allows for earlier dissemination of my work					
51	Materials deposited in an OA repository are more easily accessible					
52	Materials in an OA repository sites are easier to find through Internet and Web search engines					
Please rate your level of agreement with the following statements: (SE)		1	2	3	4	5
53	Whether or not I choose to deposit in an OA repository is entirely up to ME					
54	The institutional support is NOT important in deciding whether or not to deposit in an OA repository					
55	I am familiar enough with OA repositories and I DO feel confident about submitting my work					
Please rate your level of agreement with the following statements: (CO)		1	2	3	4	5
56	Whether or not I choose to deposit in OA repository depends on the help from OTHERS					
57	The institutional support IS important in deciding whether or not to deposit in an OA repository					
58	I am NOT familiar enough with OA repositories and DO NOT feel confident about submitting my work					

APPENDIX B

FACULTY RANK AND STATUS

Working Draft – January 6, 2014

Policies of the University of North Texas Chapter 6

Academic Affairs

15.0 Faculty Review, Tenure, and Promotion

Definitions of Faculty Subject to Annual Review.
1. **Professor.** A faculty member with a doctorate, terminal degree, or equivalent experience who holds a tenure-system appointment. Faculty members with this classification include the ranks of Assistant Professor, Associate Professor, and Professor. Faculty members with honorific appointments may have additional review and criteria in accordance with other University policies.

2. **Librarian.** A faculty member who holds a tenure-system appointment. Faculty members with this classification include the ranks of Assistant Librarian, Associate Librarian, and Librarian. All references in the following text to Assistant Professor, Associate Professor, and Professor also apply to the ranks of Assistant Librarian, Associate Librarian, and Librarian.

3. **Instructor (ABD).** A faculty member who is expected to join the faculty with a tenure-system appointment but who has not yet successfully completed all requirements for the doctorate or terminal degree; ABD is an abbreviation for "all but dissertation."

4. **Lecturer.** A faculty member with a non-tenure system appointment. Faculty members with this classification include the ranks of Lecturer, Senior Lecturer, Principal Lecturer, and Visiting Lecturer.

5. **Clinical Faculty**. A faculty member with a non-tenure system appointment whose primary professional expertise is in the practice context or whose primary professional responsibility is conducted in a clinical, professional, or practicum setting. Faculty members with this classification include the ranks of Assistant Clinical Professor, Associate Clinical Professor, and Clinical Professor.

6. Adjunct Faculty. A faculty member with a non-tenure system appointment and who typically serves as part-time instructional and/or research faculty. Adjunct faculty members do not serve on a full-time basis; exceptions can be made by the Provost. Appointments are usually made on a semester-by-semester basis.

APPENDIX C

RECRUITMENT E-MAIL TO ALL DEPARTMENT CHAIRS

Subject: Your Assistance is Requested – Faculty Attitudes towards Open access Institutional Repositories

Dear Department Chair,

You are receiving this message because of your position as chair or head of your department at the University of North Texas. Please **distribute** to your faculty this invitation to participate in an important and unique survey that helps provide a better and more complete understanding of the faculty perception and participation in Open access scholarly publishing, specifically in UNT Scholarly Works repository.

This IRB-approved survey seeks to gather data on faculty perceptions towards Open access Institutional Repositories and current practices. Your participation is very important and will provide valuable data to librarians and to all those concerned with the future of scholarly communication.

This study is being conducted by Ahmet Meti Tmava, a PhD candidate at the University of North Texas, as part of his dissertation research in Interdisciplinary Information Science PhD Program. Upon completion of this study Mr. Tmava will share the results with all respondents and other interested individuals.

Please consider participating in this survey.

Thank you for your time and please click on the **anonymous** link to begin the survey.

https://unt.az1.qualtrics.com/SE/?SID=SV_eXoGXBqxJnpIzsh

Sincerely,

Ahmet Meti Tmava

Doctoral Candidate

Interdisciplinary Information Science PhD Program

College of Information, University of North Texas

Faculty Advisor: Dr. Shawne D. Miksa.

APPENDIX D

E-MAIL INVITATION TO PARTICIPATE IN THE STUDY

Subject: Your assistance is needed – A survey regarding faculty attitudes towards Open access

Repositories

Dear Faculty Member,

As a valued member of the University of North Texas you are receiving this invitation to participate in an important and unique survey that helps provide a better and more complete understanding of the faculty perception and participation in Open access scholarly publishing. This IRB-approved survey seeks to gather data on faculty perceptions towards Open access Institutional Repositories and current practices. Your participation is very important and will provide valuable data to librarians and to all those concerned with the future of scholarly communication.

This study is being conducted by Ahmet Meti Tmava, a PhD candidate at the University of North Texas, as part of his dissertation research in Interdisciplinary Information Science PhD Program. Upon completion of this study Mr. Tmava will share the results with all respondents and other interested individuals.

PLEASE consider participating in this short survey.

Thank you for your time and please click on the anonymous link to begin the survey.

https://unt.az1.qualtrics.com/SE/?SID=SV_eXoGXBqxJnpIzsh

Sincerely,

Ahmet Meti Tmava

Doctoral Candidate

Interdisciplinary Information Science PhD Program

College of Information, University of North Texas

Faculty Advisor: Dr. Shawne D. Miksa. Shawne.Miksa@unt.edu

APPENDIX E

IRB APPROVAL

UNT

Research and Economic Development
THE OFFICE OF RESEARCH INTEGRITY AND COMPLIANCE

December 3, 2015

Dr. Shawne Miksa
Student Investigator: Ahmet Tmava
Department of Library and Information Sciences
University of North Texas
RE: Human Subjects Application No. 15-345

Dear Dr. Miksa:

In accordance with 45 CFR Part 46 Section 46.101, your study titled "Faculty Attitudes Towards Institutional Repositories (IR): Investigation Factors that Affect Faculty Participation in UNT Scholarly Works Repository" has been determined to qualify for an exemption from further review by the UNT Institutional Review Board (IRB).

Enclosed is the consent document with stamped IRB approval. **Please copy and use this form only for your study subjects.**

No changes may be made to your study's procedures or forms without prior written approval from the UNT IRB. Please contact Jordan Harmon, Research Compliance Analyst, ext. 4643, if you wish to make any such changes. Any changes to your procedures or forms after 3 years will require completion of a new IRB application.

We wish you success with your study.

Sincerely,

Chad Trulson, Ph.D.
Professor
Chair, Institutional Review Board

CT:jh

University of North Texas Institutional Review Board

Informed Consent Notice

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose, benefits and risks of the study and how it will be conducted.

Title of Study: Faculty Attitudes Towards Institutional Repositories (IR): Investigating Factors that Affect Faculty Participation in UNT Scholarly Works Repository

Student Investigator: Ahmet Tmava, University of North Texas (UNT), Department of Library and Information Sciences. **Supervising Investigator:** Dr. Shawne Miksa

Purpose of the Study: You are being asked to participate in a research study which involves surveying faculty members at the University of North Texas regarding their contribution to the UNT Scholarly Works, a web based Institutional Repository (IR). The purpose of this study is to investigate the faculty attitudes towards IR, in particular why faculty chose not to participate in UNT Scholarly Works repository. The study will address the following questions: 1. What are the faculty perceptions regarding participation in IR? 2. How does the departmental culture, institution and peers influence faculty participation in IR?

Study Procedures: You will be asked to answer 10-15 questions regarding your contribution to the UNT Scholarly Works repository, which will take approximately 5 -10 minutes.

Foreseeable Risks: No foreseeable risks are involved in this study.

Benefits to the Subjects or Others: This study is not expected to be of any direct benefit to you, however we hope to learn more about your attitude towards open access publishing, more specifically your attitude towards UNT Scholarly Works, as an IR. The results from this study are likely to benefit you in your scholarly commnination endeavors.

Compensation for Participants: None.

Procedures for Maintaining Confidentiality of Research Records: The anonymous data collected by the survey will be stored in the Qualtrics secure database until it has been deleted by the student investigator. The confidentiality of participants' information will be maintained in any publications or presentations regarding the study. Confidentiality will be maintained to the degree possible given the technology and practices used by the online survey company. The data will also be downloaded to the student investigators and supervising faculty investigator's computers in the form of Excel files. These files will be password protected, stored on secure hard drives for 3 years as required by the Federal IRB regulations, and deleted after that period of time.

APPROVED BY THE UNT IRB

DATE:

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Questions about the Study: If you have any questions about the study, you may contact *Ahmet Meti Tmava* at Ahmet.Tmava@unt.edu or Dr. Shawne Miksa, at Shawne.Miksa@unt.edu

Review for the Protection of Participants: This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-4643 with any questions regarding the rights of research subjects.

Research Participants' Rights:

Your participation in the survey confirms that you have read all of the above and that you agree to all of the following:

- *Ahmet Tmava* has explained the study to you and you have had an opportunity to contact him/her with any questions about the study. You have been informed of the possible benefits and the potential risks of the study.
- You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.
- You understand why the study is being conducted and how it will be performed.
- You understand your rights as a research participant and you voluntarily consent to participate in this study.
- You understand you may print a copy of this form for your records.

Office of Research Integrity & Compliance
University of North Texas
Last Updated: August 9, 2007

Page 2 of 2

APPROVED BY THE UNT IRB

DATE:

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APPENDIX F

LOGISTIC REGRESSION SPPS OUTPUT

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	138	100.0
	Missing Cases	0	.0
	Total	138	100.0
Unselected Cases		0	.0
Total		138	100.0

a. If weight is in effect, see classification table for the total
number of cases.

**Dependent Variable
Encoding**

Original Value	Internal Value
No	0
Yes	1

Block 0: Beginning Block

Classification Table[a,b]

		Predicted		
		INTENT		Percentage
Observed		No	Yes	Correct
Step 0 INTENT	No	0	64	.0
	Yes	0	71	100.0
Overall Percentage				52.6

a. Constant is included in the model.

b. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.104	.172	.363	1	.547	1.109

Variables not in the Equation[a]

			Score	df	Sig.
Step 0	Variables	Education	1.152	1	.283
		Engineering	3.567	1	.059
		Information	5.917	1	.015
		Coll_Arts_Sci	1.051	1	.305
		Public_Affairs	3.316	1	.069
		Age2	.535	1	.465
		Age3	.483	1	.487
		Age4	6.388	1	.011
		Age5	2.409	1	.121
		Tenure	.469	1	.494
		Tenure_track	.631	1	.427
		Non_tenure	1.410	1	.235

a. Residual Chi-Squares are not computed because of redundancies.

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	24.413	11	.011
	Block	24.413	11	.011
	Model	24.413	11	.011

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	162.374[a]	.165	.221

a. Estimation terminated at iteration number 4
because parameter estimates changed by less
than .001.

Classification Table[a]

			Predicted		
			INTENT		Percentage
Observed			No	Yes	Correct
Step 1	INTENT	No	42	22	65.6
		Yes	18	53	74.6
Overall Percentage					70.4

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Education	-.776	.651	1.422	1	.233	.460
	Engineering	-1.366	.876	2.431	1	.119	.255
	Information	1.675	.825	4.127	1	.042	5.339
	Coll_Arts_Sci	.317	.917	.119	1	.730	1.373
	Public_Affairs	-.626	.615	1.037	1	.309	.535
	Age2	.715	.910	.617	1	.432	2.044
	Age3	1.096	.831	1.738	1	.187	2.991
	Age4	1.801	.840	4.594	1	.032	6.057
	Age5	.412	.826	.249	1	.618	1.510
	Tenure	-.370	.457	.653	1	.419	.691
	Tenure track	-.259	.763	.115	1	.734	.772
	Constant	-.548	.813	.454	1	.501	.578

a. Variable(s) entered on step 1: Education, Engineering, Information, Coll_Arts_Sci, Public_Affairs, Age2, Age3, Age4, Age5, Tenure, Tenure track.

Block 2: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	77.779	11	.000

Block	77.779	11	.000
Model	102.191	22	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	84.596[a]	.531	.709

a. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

Classification Table[a]

			Predicted		
			INTENT		Percentage
	Observed		No	Yes	Correct
Step 1	INTENT	No	57	7	89.1
		Yes	14	57	80.3
	Overall Percentage				84.4

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Education	-.087	.957	.008	1	.927	.916
	Engineering	-1.335	1.287	1.076	1	.300	.263
	Information	1.223	1.380	.786	1	.375	3.399
	Coll_Arts_Sci	.614	1.576	.152	1	.697	1.849
	Public_Affairs	-.611	.913	.448	1	.503	.543
	Age2	-.182	1.581	.013	1	.908	.833
	Age3	.511	1.224	.174	1	.676	1.667
	Age4	1.854	1.135	2.669	1	.102	6.382
	Age5	.004	1.091	.000	1	.997	1.004
	Tenure	.164	.910	.033	1	.857	1.179

Tenure_track	-.180	1.434	.016	1	.900	.835
ALT	-.919	.384	5.729	1	.017	.399
DEA	1.038	.453	5.248	1	.022	2.824
PDSE	-1.898	.573	10.971	1	.001	.150
COLE	.321	.350	.841	1	.359	1.378
AREW	.262	.393	.445	1	.505	1.300
PATN	.519	.378	1.882	1	.170	1.680
PLQV	-1.095	.429	6.523	1	.011	.335
PCC	.488	.365	1.789	1	.181	1.630
SE	.108	.347	.098	1	.755	1.115
PPI	.193	.344	.314	1	.575	1.213
CO	-.192	.419	.210	1	.647	.825
Constant	.268	1.330	.041	1	.840	1.308

a. Variable(s) entered on step 1: ALT, DEA, PDSE, COLE, AREW, PATN, PLQV, PCC, SE, PPI, CO.

APPENDIX G

QUALITATIVE RESPONSES

Comments on motivating factors	Coding	Assigned participant #
I would only submit something to Academia.edu if it were already published or if it was an upcoming talk that I wanted to make accessible for individuals with different learning/comprehension abilities.	Support for OA	M001
As a form of scholarship in the 21st century it is an attractive and timely idea.	Support for OA	M002
To receive more citations	Access and readership	M003
Most are full of "SSRN" fake literature and research. Much of which has bad grammar along with poor research. Don't want my hard earned work published along side this trash.	Low quality venues	M004
Wides access to my work	Dissemination	M005
None.		M006
As a composer of experimental music it is important to provide access using open access avenues (personal web site, SoundCloud, other music access web sites)	Support for OA goals	M007
I believe in sharing knowledge.	Support for OA goals	M008
I believe in free and open access vs. publication in academic journals that are costly and rarely consulted for purposes outside of tenure/promotion.	Support for OA goals	M009
It is an unconscionable state of affairs that the results of intellectual labor (often paid for by taxpayers) is confined behind fortresses of paywalls that only major institutions can afford to pay -- and pay a lot! This system must change. Freedom of information was a promise of the internet, but it seems that information worth accessing is still information that is prohibitively costly - how can students in poor nations possibly hope to compete on the international stage if they're laboring away with decades old textbooks (a situation I saw recently at a Pakistani university).	Strong support for OA	M0010
Publications that derive from research that was supported with public funds should be freely available to the public.	Support for OA goals	M0011
I am not familiar with the reasons to deposit my work to an Open access repository.	Not familiar	M0012
The kind of work that I do is not typically published (transcribing historical texts) unless you extremely well established in your field. This takes lots of time and you have to typically get a contract with a book publisher. By the time I do all of that for one edition, I could have transcribed hundreds of historical documents. This allows me to offer tools to other researchers at a much faster rate.	Faster dissemination	M0013
At the moment, I would only consider depositing work to an OA if I am unable or unwilling to publish it with a peer-reviewed journal or academic press.	Alternative to traditional publishing	M0014
My institution does not recognize publications in an OA toward tenure.	Not counted towards tenure (academic reward)	M0015
The hope that it might be read	Readership	M0016
I strongly believe in open access.	Support for OA goals	M0017

I do not know enough about it.	Not familiar	M0018
Exposure. That's it. Plus, nothing I do as academic work is ever going to count for anything this institution, so it doesn't matter. I don't care if I'm throwing it away, because I have no control over my career options, and never will for the rest of my life. But I'd still like to get things done, and I don't care if anyone pays attention or not. The ideas are on me, fellas.	Access, readership	M0019
Wider dissemination options.	Wider dissemination	M020
Don't know enough about this to say.	Not familiar	M021
In the library, depositing work into the OA repository is encouraged and expected. I have not yet published any work that I feel would have strict publisher restrictions on sharing via an OA repository. All materials that I've added to the OA repository were already freely available or were conference presentations.	Departmental influence	M022
My department expects us to deposit our materials and requires that we do so within ~2 months of publication/presentation. I believe in Open access goals. I can see usage statistics for items I deposit, so I know that users are finding and reading materials that I author/co-author (even if they aren't always being cited in a trackable way). Putting materials in the IR makes them findable via the Web and immediately readable. Many of the contributions from our department are for conferences (rather than academic journals) and materials are not always made available or published consistently across different conferences -- especially in terms of papers, posters, and presentations rather than just "proceedings." Conferences that choose to publish papers/proceedings in established academic journals often take a year or more to make the materials available after the conference. Some conferences do not have an established platform for publishing any proceedings or conference materials. Placing materials in an IR may be the best, fastest, or only way to make conference-related materials that we author available to users.	Departmental influence Support for OA Readership Increased visibility	M023
My department requires that all papers and presentations given at conferences be deposited to our IR.	Departmental influence	M024
Belief in scholarly dissemination. Belief in free access to information.	Free access to Info Support for OA	M025
While I have long archived on my personal website, the institutional mandate compels me to archive in the institutional repository as well.	OA mandate	M026
POTENTIAL of more broad-based dissemination (e.g., number, type of reader).	Increase readership	M027
The work is more widely disseminated, read, and cited.	Wider dissemination	M028
I don't understand the process, I don't understand copyright considerations, and I don't see a huge benefit. In the cost-benefit analysis, I don't see enough benefit to motivate me to take the initiative to pursue the matter.	Difficulty with submission Copyright concern	M029

As te national President of H-NET Humanities and Social STudies Online at the time of the Budapest document I thought it important for me, as President, and for H-NET as an institution to agree with the concept of Open access. As a now ex=President of many years standing I have frankly moved away from the center of this debate. In principle I still support OA, I am just no longer deeply involved in the debate.	support for OA	M030
Establishes priority and makes my work easily accessible to the mathematicsl community	Provide easy Access	M031
Don't really know exactly what is meant by that term.	Unfamiliar with OA	M032
If the institution and my college provide credit equivalent to journal publication, or depositing in an open access repository in no way affects my ability to publish in scholarly journals.		M033
Ungrammatical and loaded question -- "reasons that motivates..." Better phrased: What are your reasons for your decision to deposit or not deposit your work to an OA... As for the reasons, I simply don't understand how it works, and I'm not really that interested in learning how it does. These days, publishing is a low priority to me, although, when I DO publish I want my work to be peer-reviewed.	Unfamiliar with the submission process Low quality venues	M034
Access and dissemination	Provide access	M035
It's better science, allows greater impact, can enhance practice by making information more-readily available.	Enhance science	M036
I believe in open access, open science in order to further the growth of science. And, the publishers have too strong a hold on the publication of scientific and scholarly information, data, etc., which allows some to access the knowledge but blocks many who deserve the access. We need to lessen their hold.	Strong support for OA	M037
I'm old school, and while the principle of open access sounds fine, I do not believe it holds the same value in any sense as peer-reviewed publications in scholarly journals and books that have been vetted by publishers/reviewers for publication.	Support for OA Caution regarding the quality of work in IR	M038
A lot more people can find and use my work if openly published. However, senior members of my field intentionally ensure that closed journals have highest prestige because they are the editors and board members of those journals and are not in favor of losing quality publications to open access.	Readership	M039
I highly OA and I value sharing my knowledge and work with others.	Knowledge sharing	M040
The only motivation would be if a funding agency requires it.	Funding agency	M041
Do not know the procedures in depositing my wok in an OA so do not do it. Also if it is difficult to do I would not do it.	Difficulty with submission	M042
I currently have no motivation to deposit my work in an OA repository.		M043
Open access for scholars everywhere.	Support OA	M044

Depositing does not affect me.		M045
none		M046
Research support by publicly-funded grants, or conducted during the course of work at a public institution, should be freely available to the public.	Suppor OA goals	M047
To disseminate research information for fellow scholars, and get my work read/cited. To allow for practical implications of the research to be implemented with regards to teaching, learning, and online practices.	Readership OA support	M048
I have a number of reports that have been submitted within an OA repository so that layperson's would have access to the documents. The more traditional research work that has been published in traditional journals has been published in OA journals with a page fee, OA journals with no page fee, and traditional journals. Some of the OA journals are questionable in their review process and are not viewed as scholarly places to publish work. Others have an excellent peer review process.	DA&R	M049
to preserve my scholarly work	Preservation	M050
Funding bodies look to see what progress has been made on previous grants and databases or data collections which are not published in traditional journals must be made available in the form of working papers or corpora. For this reason it is imperative that we in my discipline deposit materials in an open repository with strict accesses restrictions on sensitive materials.	Academic reward	M051
time. finding the time to do it.	Time needed	M052
wider dissemination. Helping some student or scholar somewhere.	DA&R	M053
Like to access other's work freely; so I figure that I should return the favor.	DA&R	M054
Lack of familiarity with the process.	Not familiar	M055
Need more information on OA before submitting	Not familiar	M056
It was difficulty to respond to your survey because I do not believe I have participated in OA and most of your questions were for those that have participated.	Not familiar with the process	M057
Wider dissemination	Readership	M058
Open to all	Support oa	M059
Knowledge is free. It should not have a lock put on it as in traditional paid journals.	Support for oa	M060
I like the idea of making the work accessible to all.	Access	M061
Easier access to buy others to my published materials that otherwise requires a subscription to access.	ACCESS	M062
To increase access and citations	Access	M064
Easier to search and find manuscripts that are relevant to the work you are doing.	Discoverability	M065
My advisor in MS program was denied tenure because the dean for not respect OA.	Academic reward	M066
It enhances research by sharing more freely.	Sharing	M067
More citations	Readership	M068

More citations	Readership	M069
Don't know how to deposit materials in OA, would need easy clear instructions to do it. If it is difficult or has a complicated interface will not do it, do not have the time.	Difficulty with the submission	M070
NSF requests some method for preserving data for access by others.	Access	M071
Submitting my papers (after publication) allows more exposure. In the ResearchGate site I have over 200 downloads on one article, but not as much on Academia.edu.	Readership	M072

Concerns regarding participation in OA IR

Comments on concerns regarding participation in IR	Coding	Assigned participant #
Some of the items I tried to submit in the past were tied up under the agreements with the original publisher.	Copyright	HN001
Perhaps lack of recognition/prestige from colleagues more focused on traditional (print) form of publications.	Perception of IRs as low quality venues	HN002
Other researchers may use my results without citing me.	Plagiarism	HN003
Not worth my time and most of my work is sold by the repositories of the journals or publishers and I get a royalty income stream from that to allow me to off set the cost of my research, that is not funded by the university or grants.	No reward	HN004
I'm concerned that OA institutional repositories imposes a scientific model upon all fields, regardless of the negligible benefits to those fields (Literary studies, history, and other humanities fields). Furthermore, OA will erode support for academic journals in the humanities, which are already suffering because public support has been increasingly in short supply and library subscriptions to bundled scientific journals takes away from allocations for humanities journal subscriptions. I see OA as another way to devalue humanistic research and impose a corporate model (free and fast) on faculty. Wish I could be more sanguine. I'll need someone to make the case for why OA would preserve careful peer review and how and in what ways it benefits fields that are being squeezed out by emphasis on STEM and its highly-subsidized publication models.	Does not see the benefits of OA	HN005
I am concerned about my rights to deposit already published work.	Copyright	HN006
Clear from the earlier questions: an abuse of my results by unscrupulous others.	Plagiarism	HN007
It would probably preclude publication in my field, which is creative writing.		HN008
I have no personal concerns. I am aware that plenty of old guard academics, and universities concerned with the present	Academic reward	HN009

state of ranking algorhthyms, see OA contributions as something that waters down the prestige of peer-reviewed work. I don't think this is accurate, but it is a state of mind (esp. from what I hear, in the sciences). The old system is corrupt and freezing out even university libraries with the boundless greed of the for profit databases we are currently in thrall to.	Low quality publishing venues	
My concerns are how materials that are submitted to an OA repository are considered by my profession. Would they have less value that works submitted to other publications?	Low quality publishing venues	HN010
As a junior scholar, it is too risky to submit to an OA institutional repository without first getting it published in a peer-reviewed venue appropriate for my tenure requirements	Academic reward	HN011
I do not have time to publish in peer review journals and OA	Time consuming	HN012
I need training and time to deposit my works.	Time Difficulty with submission	HN013
Again, I do not know enough about it.	Unfamiliar	HN014
The work will not "count" if it isn't published by a mainstream publisher.	Academic reward	HN015
None. I don't have an academic career. Hardly matters at this point.		HN016
Less prestige or weight in evaluations of my scholarly productivity.	LQPV	HN017
I'm happy to deposit my work into an OA repository and I support the idea of OA. My only concern is that OA repositories cannot be an alternative for traditional publications for the purposes of tenure and promotion for faculty or librarians at UNT, as the requirements stand now for many departments (and for academia in general). The institutional repository therefore serves as a central repository for locally-created content but might provide content that is unique or original--since content deposited is, in many cases, duplicated from articles or presentations published/presented elsewhere. I wonder if the effort to maintain such a repository is warranted, given that a paradigm shift for the entire academic publishing community is necessary, in order for such a repository to reach its full potential.	Support for OA Academic reward	HN018
I had provided the paper to the IR librarian - but sometimes, I'd like to just submit it myself.		HN019
Students should not be forced to deposit theses and dissertations immediately upon completion. They need embargos of 1-2 years to submit papers based on their graduate work.	Embargos	HN020
21Field, Uni, dept., etc. require 'high impact publications' for promotion and tenure; many/most 'high impact journals' require preclusive copyright agreements.	Academic reward Copyright concerns	HN021
The issue of plagiarism and not getting properly cited.	Plagiarism	HN022
Time-consuming, possible conflicts with the policies of scholarly publishers	Time Copyright concerns	HN023

lack of peer review	Lack of peer review	HN024
It seems to me that putting one's work out there in a non-peer-reviewed format is a complete waste of time. If you're good enough, you publish in a peer-reviewed journal, or you publish your book with a peer-reviewed press. Only exception to this is if you're so good, you've made full professor, you reputation is such that anything you write has credibility, you don't need the status of peer-review publication for your career advancement or raises, so you have the luxury of putting your work out there in whatever format you damn well please. Other than that-- open access is stupid.	Lack o peer review	HN025
Theft of ideas or data, plagiarism, limitations on subsequent ability to publish. Restrictions on depositing already published work.	Plagiarism Copyright concerns	HN026
I don't know anything about how it works. I am concerned about peer review. I am concerned about plagiarism. I am concerned about perceptions of lower quality.	Peer review Plagiarism Low quality pub venues	HN027
Not something that interests me at this time		HN027
Afraid of being plagiarized. Also, this doesn't seem supported as research by my colleagues.	Plagiarism	HN029
I often simply don't take the time to do it.	Additional time needed	HN030
I like the peer review process, and I would not want to submit it to an OA repository if it is not as strong as I can make it. I never considered submitting a paper for OA after publication.	Peer review	HN031
It tedious, but it must be done. The library should make more of an effort to get us to submit our work for regularly.	Difficulty with submission process	HN032
I feel it is an opportunity for others to "steal" my work.	Plagiarism	HN033
There have been instances where I have found entire pages of my work plagiarized into other articles that came from my OA publications.	Plagiarism	HN034
My discipline privileges traditional publishing methods. I am not knowledgeable of the impact that OA would have on both my career and for my work.	Negative impact on career	HN035
A researcher's research reputation nowadays is often judged on the basis of bibliometrics (numbers of citations, impact factors of journals). Open access repositiories and journals in my field do not help in this regards, and in many cases may be viewed negatively. The only time I would use a repository is if the funding agency required the data to be open access.	Academic reward negative affect	HN036
Time committment	Lack of time	HN037
I've never seen it matter or be relevant in my discipline.	Field influence	HN038
Plagiarism.	Plagiarism	HN039
I have no concerns.		HN040
too much hype about the benefits of open access publishing and too little in depth consideration of the implications for those unable to pay associated fees and the potential loss of quality of established blind peer review processes by highly experienced reviewers	Peer review Publication fees	HN041
Not my concern; however I think the practice and different ways to publish OA are not common practices in academia at	Academic culture Lack of knowledge	HN042

UNT. This is a cultural norm, and a lack of knowledge on the subject matter.		
Some view OA repositories as a place where you can buy a publication due to the poor quality of articles within the journals. As with all things, the OA journal needs to be reviewed for quality and as a place to publish scholarly work. OA repositories such as Research Gate and SSRN are excellent locations for sharing research reports that are not subject peer review. At a prior institution, they spent a great deal of funds to create a Scholar Sphere that many of the faculty did not have time to place their work or to seek the permissions from publishers to place their work in the Scholar Sphere.	Low quality publishing venues	HN043
staff support is very important!	Difficulty with submission	HN044
copyright hassles.	Copyright issues	HN045
Plagiarism, not having work cited, alteration or misrepresentation of my work.	Plagiarism	HN046
Publishing in respected journals is the name of the academic game.	Low publishing venues	HN047
Copyright infringement and waste of time; don't see a great benefit to anyone.	Copyright issues	HN048
No real concerns...simply unfamiliarity.	Unfamiliarity	HN049
Time needed	Time consuming	HN050
No sure how it works	Unfamiliar with the process	HN051
Copyright infringement if my own work and copyright was transferred to a publisher, unless the institution is willing to defend it legally.	Copyright concerns	HN052
I don't know how or if OA deposits count toward tenure or publications. I'm also unclear about how journals feel about the papers being freely available through another source. I don't know if grant agencies view OA deposits in the same way they view other peer-reviewed contributions.	Academic reward	HN053
Honestly, i am not sure i understand exactly what an OA is. it would have been helpful to explain that in the begining. Is research gate an OA? if so i was just told by a UNT librarian that i cannot place published work there. The peer review process is very important on if OA sites is a place to deposit research that has not been reviewed and approved then it seems more like a wikipedia were one cannot trust the content and the whole scientific community will be in trouble.	Unfamiliarity with OA	HN054
I don't understand the process and advantages/disadvantages.	Now familiar with the process	HN055
Peer-reviewed publication is the hallmark of academic success.	Peer review process	HN056
I have been lazy about taking the time to submit.	Lack of time	HN057
I honestly do not know much about it.	Not familiar	HN058
I was not aware until recently that UNT had such a repository	Not familiar with UNT repository	HN059

I do have concerns about submitting papers prior to publication. As a matter of fact, I will only submit papers to Academia.edu and ResearchGate after its been published.	Copyright concerns	HN060

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