

Attitudes and Perceptions of PG Students and Faculty towards the Usability of Digital Institutional Repositories (DIRs)

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ABSTRACT

The aim of this study was to determine the attitudes and perceptions of PG students and faculty towards DIRs. Technology Acceptance Model (TAM) and post-positivist ontology were used to underpin the study. Survey questionnaire was used to collect data. The population comprised of faculty, PG students, Librarians and system developers. Statistical Package for the Social Sciences (SPSS) was used to analyse Quantitative data while qualitative data was analysed using content analysis. Reliability and validity were achieved through methodological triangulation, pretesting the questionnaires, and careful transcription of the data. The findings revealed lack of awareness about DIR among PG students and faculty. The findings further revealed weak institutional policy, which does not clearly stipulate processes and standards on the submission of scholarly works to the repository. The findings revealed misconception by faculty and PG students about DIR and open access. Nevertheless, the findings revealed that PG students generally perceived DIRs as useful. The findings of the study provide evidence based data upon which relevant academic library institutional repositories policies can be formulated. Moreover, the study provides data that is expected to inform budget allocation for ICT infrastructure development for academic libraries, human resource development, and staffing in academic libraries in Namibia. By using the TAM model, this research adds to literature on the aspects that influence the self-archiving and use of information systems such as DIRs in academic libraries from a developing country context.

Keywords: Digital Institutional Repositories (DIRs), Academic Libraries User Experience, Faculty Postgraduate Students User Perceptions User Attitudes, Open Access, DIR Usability

INTRODUCTION

This study focuses on computer based institutional repositories (digital institutional repositories) (DIRs) which house E-print publications. Rieger (2008) describes digital institutional repositories (DIRs) as databases that are accessible online, of which scholarly materials such as articles, reports or datasets are used to enable the sharing, discovery and archiving of scholarly resources produced in a given institution. While the concept of an Institutional Repository (IR) has been assumed to refer to computer-based collections of scholarly works, the term can also be used to describe manual-based collections of scholarly publications. Institutional repositories based on manual systems are simple institutional archives with paper or print publications. Lynch (2003) asserts that DIRs are modern services for academic research which enable community members to manage and disseminate their intellectual works and creations through a digital mechanism. The term institutional repository is used in this thesis; it also connotes digital institutional repository (DIR). During the 1990s, the preservation and dissemination of intellectual works and scholarly knowledge was exclusively the responsibility of scholarly journals and university libraries. University libraries have always served as access points for information, starting from closed stacks, card catalogues and punched cards right up to the Online Public Access Catalogues (OPACs) (Christian, 2008).

UNESCO (2015), points out that generally the majority of institutional repositories are now based on ICT and that they are designed around open source software, thereby enabling institutions to increase the visibility and the impact of their research output. Such DIRs also enhance interoperability with similar systems in other institutions and this helps them to benefit from technical support that may be shared across such different

organisations. Institutional repositories enable open access, which is a practice that offers timely, instant and free opportunities to access scholarly communication and they also enable free, timely, everlasting, full-text and online access to online, scientific and scholarly materials for any use within the internet (Koutras, 2013), to scholarly publications at limited or no charge and free of copyright restrictions (Koutras and Bottis, 2014). In relation to open access, institutional repositories enable open access to scholarly publishing (Koutras and Bottis, 2014) which Kennan (2008) explains that this is supported and facilitated by new technologies such as the Internet and the World Wide Web and their associated standards and protocols. Attitude, according to Blankson (2005:3) means “a complex mental state involving beliefs and feeling and value dispositions to act in certain ways”. Therefore, the degree to which researchers are in favour or not in favour of the DIR may have an impact on their contribution towards it, which will then have an impact on the effectiveness of the DIR. Allen (2005) notes that an understanding of academics’ perceptions and needs should be put into consideration when institutional repositories are in the early stages of development and implementation, as this can be used to plan repositories more efficiently and encourage their adoption by the academic community more effectively (Nicolas et al., 2004). The attitudes and perceptions are measured by the attitude towards using and the subjective normative beliefs construct of the TRA model (Fang, Ng, Wang, and Hsu, 2017). Ankamah, Akussah, and Adams (2018) assert that the use of Information Communication Technology (ICT) in research has become important among postgraduate students. However, available literature illustrates that there is little research on the perceptions and adoption of technology by researchers in developing countries. This situation makes it vital to investigate the perceptions of postgraduate students and faculty towards web-based application systems such as digital institutional repositories.

Digital Institutional Repositories (DIRs) are vital tools for preserving, disseminating, and discovering scholarly content. However, their effectiveness hinges on their usability. This problem statement aims to identify and analyze the usability factors that influence the depositing and use of scholarly content in DIRs.

Over the years, Namibian University of Science and Technology has experienced an increase in student enrolment at both undergraduate and postgraduate levels. Despite the increasing number of postgraduate students and the establishment of a Digital Institutional Repository (DIR) at the Namibia University of Science and Technology (NUST), there is a significant lack of scholarly work being deposited in the repository. This low deposition rate raises concerns about the effectiveness of the DIR in promoting scholarship and knowledge dissemination.

This study aims to investigate the factors influencing the low usage and deposition rates of the NUST DIR. Specifically, it will explore the attitudes and perceptions of postgraduate students and faculty towards the usability of the repository. By understanding these factors, the study seeks to identify strategies to improve the utilization of the DIR and enhance its contribution to academic research and knowledge sharing.

Objective

The study addressed the major research objective which is:

1. To determine the attitudes and perceptions of PG students and faculty towards DIRs;

LITERATURE REVIEW

Theoretical perspectives

This research was underpinned by the Technology Acceptance Model (TAM), complemented by other theoretical models such as Theory of Reasoned Action (TRA); Theory of Planned Behaviour (TPB) and Decomposed Theory of Planned Behaviour (DTPB). These models were chosen because they have been used widely in related studies to understand end users’ acceptance and information systems use behaviour (Kripanont, 2007). According to Malhotra and Galletta (1999), and Kowitlawakul (2011), Technology Acceptance Model, however, appears to be an ideal model with potential and influential potency that has been used to explain the technology acceptance systems compared to TRA, TPB and DTPB. TAM offers a foundation for giving clarity on the influence of variables such as attitudes and intentions of using a technology (Sahin and Shelley, 2008).

The correlation among user attitudes, perceptions, beliefs, and eventually the system is further explained in other significant theoretical models including TRA, in addition to TAM (Ajzen and Fishbein, 1980) and TPB (Agarwal and Prasad, 1999). This study therefore adopted the TAM, TAM has been widely used in understanding the adoption of technology as well as the use of technology in libraries and other institutions. For example, Miller and Khera (2010) used TAM to examine the functionality of digital library adoption in Kenya and Peru. Hong (2002) also used TAM to analyse the user acceptance of digital libraries and the roles of interface characteristics, organisational context, and individual differences. The study broadly adopted the TAM model.

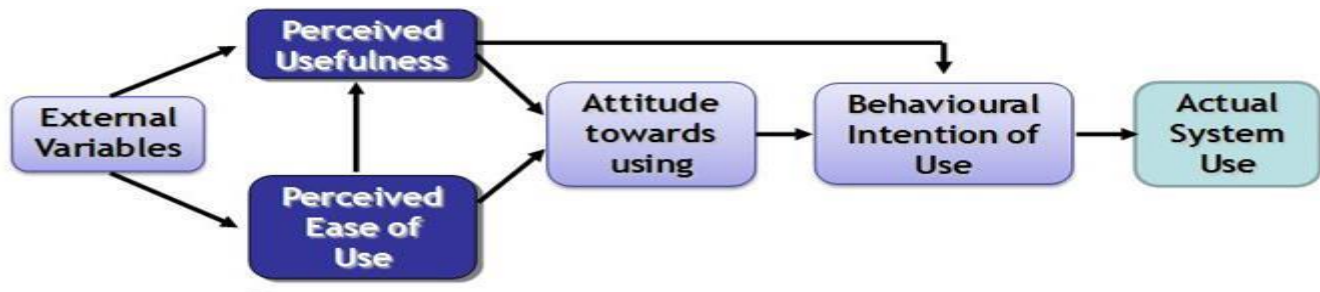


Figure 1: Technology Acceptance Model (Source: Davis, Bagozzi, and Warshaw, 1989)

Table 1 summarises the mapping of research questions to the usability variables investigated in this study.

Research questions	Usability variables in the TAM theories
What are the attitudes and perceptions of PG students and faculty towards DIRs?	Attitude towards (AT) Motivation to comply (MC)

Table 1: Mapping of research questions to the usability variables in this study

Attitudes and perceptions towards DIR

Singeh, Abrizah, and Karim (2013) in a study of Malaysian authors' acceptance to self-archive in institutional repositories used performance expectancy from UTAUT and attitude towards constructs to measure authors' perceptions on performance expectancy. This study also used the performance expectancy construct from UTAUT to measure PG students and faculty perceptions towards the DIR performance expectancy.

Halder (2012) investigated user's attitudes towards institutional repositories at Jadavpur University in India. The outcome revealed that 6.68% teaching faculties, 5% staff, and 8.23% student respondents felt that the key motive for developing an institutional digital repository is only for administrative purposes. In contrast, 17.77% teaching faculties, 20.00% staff, and 18.84% students indicated that the purpose for the existence of an IR is to provide open access to materials. Nevertheless, the majority, involving 31.11% of teaching faculties, 27.50% staff members and 29.41% of student respondents were of the view that the main reason for the existence of an IR is to preserve scholarly materials on campus. Another, 15.55% of teaching faculty, 17.50% staff, and 10.59% students were of the understanding that the main purpose for developing an institutional digital repository is to support the archives, and intensify the visibility of the institution broadly.

Dutta and Paul (2014) shared the results of their survey among selected science and technology faculty members of the University of Calcutta in India. They reported that the faculty members' attitudes regarding IR were also generally positive. However, their awareness of the institutional repository was less than satisfactory. The findings further revealed that most of the respondents came to discover about IR through the Internet. The results revealed that the copyright issue was the most influential factor with regards to the willingness to contribute to the IR.

Ankamah, Akussah, and Adams' (2018) study assessed postgraduate students' perceptions towards the use of ICT in a research on Ghanaian Public Universities. The findings discovered that most postgraduate students and

faculty observed that the use of ICT applications in research as important. Moreover, most of the participants indicated that the ICT facilities that their institutions provided met their research needs. The findings further showed that postgraduate students used ICT applications for accessing information; they found that ICT is convenient in accessing information, is time saving, and helps finding current information. They strongly recommended that public universities in Ghana ought to uphold the already existing ICT facilities for optimal use.

In a study by Wirba, Abrizah, and Harun (2013), that aimed at evaluating Malaysian authors' readiness to self-archive in open access repositories, found that the usefulness and effectiveness of open access repositories to support knowledge sharing is highly dependent on the readiness of authors to self-archive their research output. Overall they found that digital archiving makes the author's research more visible and increases their reputation as scholars.

Reasons PG students and faculty submit their research/teaching materials to the DIR

According to the theory of reasoned action (TRA) (Ajzen and Fishbein, 1980), normative beliefs and motivation to comply affect subjective norms. Subjective norm refers to the perceived social pressure to perform or not to perform certain behaviour. It is also an individual's perception that those who are important to him or her would approve or disapprove the performance of a given behaviour (Ajzen, 1991). In this study, subjective norm was construed as the degree to which a person perceives the demands of the 'important' others on him or her to use the computer. This study used normative beliefs and motivation to comply and subjective norm constructs from TRA to measure PG students' and faculty members' motivation to use the DIR.

Kim's (2006) study entitled 'motivating and impeding factors affecting faculty contribution to Institutional Repositories at University of Michigan'. Findings indicated that faculty members who had an interest in contributing to the DIR in the future agreed more strongly with accessibility and publicity of open access materials and possess a greater altruistic intention to make their work publicly accessible. The faculty members who perceived an influence of a grant-awarding body on their decision to self-archive were much less likely than others to contribute to the IR. The most important reason was found to be preservation of respondents' materials, followed by the DIR capability to show the frequency of viewing and downloading their materials. Institutional recognition was the third most important reason, although its rating was not as high as the first and the second. Retaining copyright did not provide an incentive for future contribution. Respondents also did not connect functions provided by existing publishing systems with the IR. Thus, the peer review process and academic reward were considered least important motivators.

Factors hindering faculty contribution to the DIR

In this study, facilitating conditions were skills training, information or available materials, and administrative support which influenced the use of instructional technologies in teaching (Teo, 2010). Dutta and Paul (2014) in their study of Awareness on institutional repositories-related issues by faculty of University of Calcutta found that low rate of participation of faculty members in IR phenomenon is a major issue for the success of IR. Lack of awareness and confusion about copyright issues are the known barriers in faculty participation in it. Davis and Connolly (2007) assert that publisher copyright concerns and policies discourage authors from submitting to the institutional repository. Davis and Connolly (2007) point out that some authors were confused about what authors could do with their papers and stated that the rules were constantly changing. Others had a misconception that it was not to make articles available to platforms outside the publisher's website, fear that their work would be plagiarized or copied without acknowledgement, and lack of any incentive for making one's work available before formal publication. Davis and Connolly (2007) mention that plagiarism was a real concern and reason scholars were reluctant to disseminate their work early in electronic form. In addition, all authors felt that, releasing results before formal publication was tantamount to giving away one's competitive advantage. Crow (2002) is of the view that the success of archiving movement will depend to a greater extent on the will of the faculty and relationship they have with their institution regarding the copyright issues. Crow (2002) notes that certain questions need answers; for example, who owns the copyrights in the journal articles written by faculty? Is it the faculty themselves, their institution or outside sponsor? Does the faculty know who owns the copyright? This seems very difficult, where the publication industry is established, and also taking into consideration the

services journals and publishers provide to the research community. Such services are for instance screening for significance and peer review. These items would have to be reproduced at the level of OA databases. Another challenge at this point, where OA is not prescribed to all researchers worldwide, is a continuous need and if for the time being, to publish in the journals for career reasons. Usually, the copyright is transferred to the publisher and with that the author loses the right to avail the product to an open access database.

Mooketsi (2020) investigated Factors influencing adoption of institutional repositories in tertiary education institutions: Librarians' perspective The findings of the study show that there is need for institutional repository advocacy and outreach programs by academic librarians to familiarise academic staff on utilisation of IRs. The study also established the need for librarians to reconsider their information resource capturing and dissemination practices, including user support services.

Opinion on free access to scholarly research

Murphy (2016) is of the opinion that scholarly research should be freely accessible and that the public have a right to know by providing free online access to just about every scientific paper ever published on topics ranging from acoustics to zymology. She campaigns for open access, and has shined a light on how scientific findings that could inform personal and public policy decisions on matters as consequential as health care, economics and the environment are often prohibitively expensive to read and impossible to aggregate and determine.

Research methods

The study was underpinned by the “post-positivist paradigm”. According to Teddlie and Tashakkori (2009:5), the “postpositivism paradigm is a revised form of positivism that addresses several of the more widely known criticisms of quantitative orientation and, yet maintains an emphasis on quantitative methods”. The post-positivism paradigm is rooted in multiple methods. With regards to the post-positivist approach, Mason (1992) explains that an experimental quantitative core is buttressed by critiques from varied analyses, theoretical perspectives, and value frameworks, combining the use of survey This study adopted a survey research design because it involves systematically collecting data through the use of questionnaire.

Population of study and sampling procedure

Kazerooni (2001) states that the target population is a group of individuals that the researcher would like to apply the conclusions, and select a sample. The target population for this study was faculty (academic staff), postgraduate students (Master's and Doctorate), and librarians (library professionals with Library Science qualifications) at the Namibia University of Science and Technology. The total population at NUST was thus 743 (as determined through institutions databases). Saunders, Lewis and Thornhill (2009:219) indicate that with a total population of 743 a sample size of 217 is adequate to provide representativeness. The relative distribution of the sample sizes of the population is provided in Table 2. The sample sizes are based on the population strengths of each population.

Table 2: Relative distribution sample sizes

Respondents	Respondents size	Relative sample computation	size	Relative sample sizes
Faculty	307	$307/743 \times 217 =$		90
Masters	397	$397/743 \times 217 =$		116
PhD	26	$26/743 \times 217 =$		7
Total population	743			743
Total sample	217			217

The study applied a purposive sampling technique to sample postgraduate students (Master's and Doctorate students) and librarians (library staff involved in managing the DIR and faculty involved in publishing from all faculties). Snowballing strategy was used to reach out to the target participants. Babbie and Mouton (2001:167) state that "Snowball refers to the process of accumulation as each located subject suggests other subjects". In order to gain access to faculty and students, the researcher made use of faculty offices and study rooms and various university residences intended for postgraduate students. Faculty members were identified through their faculty offices within their departments, and librarians were identified through the library director.

Data collection methods and procedures

Survey questionnaire and observation data collection methods were employed. Survey self-questionnaires were used to collect data from postgraduate students and faculty.

RESULTS

Attitudes and perceptions towards digital institutional repositories

According to Vänninen (2009:107), attitude means "a complex mental state involving beliefs and feelings and value dispositions to act in certain ways". Hence, the extent to which researchers favour the DIR may have an impact on their contribution to it. Attitude is one of the constructs of TAM that is understood to have an impact on the behavioural intention of users to use a technology. This study was grounded on the conjecture that attitude towards DIRs will have a positive impact on the intention to use the DIR. The study integrated the theory of reasoned action (TRA), performance expectancy from UTAUT and technology acceptance model (TAM) to understand how attitude influences the use of DIR.

Advantages of DIR to the PG students

Table 3: Advantages of DIR to the PG students

Advantage	Strongly agree	Agree	Neutral	Disagree Strongly	Disagree
Sharing the work publicly	51(46.3%)	53(48.2%)	4(3.6%)	0(0.0%)	2(1.8%)
Ease of sharing of work with other students	57(51.8%)	48(43.6%)	3(2.7%)	0(0.0%)	2(1.8%)
Sharing of work with peers and research community	63(57.3%)	43(39.1%)	3(2.7%)	0(0.0%)	1(.9%)
Exposure of work via DIR increase work cited	67(60.9%)	36(32.7%)	7(6.4%)	0(0.0%)	0(0.0%)
Availability of work on Google scholar	47(42.7%)	49(44.5%)	13(11.8%)	0(0.0%)	1(.9%)
Long term perseverance of digital copy of research	51(46.4%)	51(46.4%)	8(7.3%)	0(0.0%)	0(0.0%)
Open access of research	61(55.5%)	45(40.9%)	4(3.6%)	0(0.0%)	0(0.0%)
Professional networking	57(51.8%)	51(46.4%)	2(1.8%)	0(0.0%)	0(0.0%)
Enhancement of university DIR research profile	50(45.5%)	43(39.1%)	4(3.6%)	12(10.9%)	1(.9%)

Track record of research	44(40.0%)	46(41.8%)	17(15.5%)	0(0.0%)	3(2.7%)
Availability of types of materials not been available via traditional publishing process	43(39.1%)	58(52.7%)	6(5.5%)	2(1.8%)	1(.9%)
DIR allows searching of most current research findings of the university	61(55.5%)	42(38.2%)	7(6.4%)	0(0.0%)	0(0.0%)
Availability of research is faster than traditional publishing process	54(49.1%)	40(36.4%)	15(13.6%)	0(0.0%)	1(.9%)
Easiness to search and locate the work	47(42.7%)	47(42.7%)	4(3.6%)	12(10.9%)	0(0.0%)

Attitudes of faculty towards repository archiving

Responses from faculty showed that 17 (44.7%) strongly agreed that they find it easy to share their work with the general public; ten other respondents (26.3%) agreed, while 9 (23.7%) held a neutral position and only 2 (5.3%) disagree that their work could be shared easily with the public through the DIR. Regarding how the DIR aids in enhancing their personal profiles, 18 (47.4%) of the faculty respondents strongly agreed, while 15(39.5%) agreed and 4 (10.5%) were neutral and only 1(2.6%) disagreed on the role of the DIR in enhancing their personal profiles. More so, there was a strong agreement by 17(44.7%) respondents that another equally important benefit of the DIR is that respondents can rely on it for the long-term preservation of their digital materials; 13 (34.2%) agreed, 7 (18.4%) were neutral and only 1 (2.6%) disagreed. A couple more questions were posed to the faculty respondents and there was a clear and strong agreement from the respondents that there are numerous positive benefits associated with using the DIR; in some cases, the respondents only agreed and a few of the respondents held a neutral position, while very few disagreed with the supposed benefits of the DIR. A comprehensive expression of responses by participants to the different questions is presented in Table 5.7.

Table 4: Attitudes of faculty towards repository archiving (n=38)

Attitudes towards self-archiving	Strongly agree	Agree	Neutral	Strongly Disagree	Disagree
I can share my work with the public more easily	17(44.7%)	10(26.3%)	9(23.7%)	0 (0.0%)	2 (5.3%)
I can share my work with my peers and the research community	18 (47.4%)	13(34.2%)	6(15.8%)	0(0.0%)	1(2.6%)
It will give my work more exposure	15 (39.5%)	14(36.8%)	9(23.7%)	0(0.0%)	0(0.0%)
It will increase the number of times my work is cited	13 (34.2%)	16(42.1%)	8(21.1%)	0(0.0%)	1(2.6%)
My work will be available on Google Scholar	13 (34.2%)	13(34.2%)	11(28.9%)	0(0.0%)	1(2.6%)
I can get feedback and commentary on my research	13 (34.2%)	15(39.5%)	10(26.3%)	0(0.0%)	0(0.0%)
I can rely on the university to preserve a digital copy of my research for a long term	17 (44.7%)	13(34.2%)	7(18.4%)	0(0.0%)	1(2.6%)

DIR removes cost as a barrier to accessing research	16(42.1%)	16(42.1%)	5(13.2%)	1(2.6%)	0(0.0%)
Enables professional networking	15(39.5%)	19(50.0%)	4(10.5%)	0(0.0%)	0(0.0%)
Attitudes towards self-archiving	Strongly agree	Agree	Neutral	Strongly Disagree	Disagree
Enhancement of research profile of the university	18(47.4%)	15(39.5%)	4(10.5%)	0(0.0%)	1(2.6%)
Enhancement of personal profile	17(44.7%)	15(39.5%)	5(13.2%)	0(0.0%)	1(2.6%)
Recommendation for research	12(31.6%)	17(44.7%)	8(21.1%)	0.0%	1(2.6%)
Track record of research	16(42.1%)	16(42.1%)	5(13.2%)	1(2.6%)	0(0.0%)
Provide long-term preservation of my digital research materials	17(44.7%)	17(44.7%)	4(10.5%)	0(0.0%)	0(0.0%)
Makes my research available with very little effort	14(36.8%)	19(50.0%)	5(13.2%)	0(0.0%)	0(0.0%)
Makes it easy for other people to search for and locate my work	14(36.8%)	18(47.4%)	5(13.2%)	0(0.0%)	1(2.6%)
Allow me to search the DIR for the most current research findings of my institution	14(36.8%)	20(52.6%)	4(10.5%)	0(0.0%)	0(0.0%)
It makes my research available faster than the traditional publishing process	12(31.6%)	19(50.0%)	7(18.4%)	0(0.0%)	0(0.0%)

Motivation for contributing to the DIR

According to the theory of reasoned action (TRA) (Ajzen and Fishbein, 1980), normative beliefs and motivation to comply would affect subjective norms. Subjective norm refers to the perceived social pressure to perform or not to perform certain behaviour. It is also an individual's perception that those who are important to him or her would approve or disapprove the performance of a given behaviour (Ajzen, 1991). The researcher sought to know from postgraduate students what motivated respondents to contribute their research work to the DIR. The results in Table 5.8 show that 77 (46.4%) noted that they were motivated by the need to increase the accessibility of their work, while 33 (19.8%) mentioned creating research work publicity and research community impact; 32 (19.8%) said that they were motivated to contribute as this would enable them to know how many times their research was viewed or downloaded by others; and 23 (14.5%) noted that they contributed when they were told to do so. The extent or the degree to which a postgraduate student is motivated to contribute their work to the DIR is further represented in percentages in the following table.

Table 5: PG students' motivation for contributing to the DIR

Motivations			Responses	
			n	Percent
	will to	Increase accessibility of work	77	46.4%

What reasons motivate you contribute?	Create publicity for research work and impact on research community	33	19.8%
	If the DIR shows how many times my materials in the IR were viewed and downloaded	32	19.8%
	When told to contribute	23	14.5%
Total		166	100%

Faculty were similarly asked to state what motivated them to contribute their research work to the DIR. The results in Table 5.9 show that the highest number of respondents at 28 (34.1%) indicated that they were motivated by the need to increase accessibility of their research work; 26 (31.7%) indicated that contributing to the institutional repository creates publicity for their research work, 11(13.4%) indicated that the DIR facilitates the coordination of interdisciplinary teaching and research efforts, ten (12.1%) noted that the IR shows how many times materials in the IR were viewed and downloaded; however, the lowest number at 6(7.3%) indicated that they only contributed when told to do so.

Table 6: Motivation for faculty to contribute to the DIR

Motivation for faculty to contribute to the DIR			Responses	
			n	Percent
What motivates you to deposit in DIR?	the	Increase accessibility of my research work	28	34.1%
		Create publicity for my research work and impact on research community	26	31.7%
		Facilitates the coordination of interdisciplinary teaching and research efforts	11	13.4%
		If the IR shows how many times my materials in the IR were viewed and downloaded	10	12.1%
		When told to contribute	6	7.3%
Total			82	100%

Factors hindering contribution to the DIR

Based on subjective norm constructs from the TRA, respondents were asked to state what demotivates them from using the DIR. The results shown in Table 5.10 reveal the highest number of PG students at 17(19.7%) that feared the misuse of their work, 16 (16.6%) indicated lack of information about the DIR, 11(12.7%) experienced conflict with publisher policies related to archiving, 11(12.7%) indicated extra effort required, 8 (9.3%) stated lack of rewards, 8 (9.3%) noted complexity and difficulties posed in the system; lack of skills was indicated by 8 (9.3%), while some indicated the nature of research which did not allow them to publish in the DIR at 7 (8.1%); and 6 (6.9%) cited that they found the other modes of information dissemination redundant.

Factors hindering PG students' contribution to the DIR

Table 7: Factors hindering PG students' contribution to the DIR

		Responses	
		n	Percent

Reasons for not contributing to DIR?	Fearing for misuse of work	17	19.7%
	Lack of information to submit	16	16.6%
	Conflict with publishers' policies with regards to authors' issues related to archiving	11	17.7%
	Extra time and effort required	11	12.7%
	Lack of rewards	8	9.3%
	Complexity and difficulties	8	9.3%
	Lack of skills	8	9.3%
	Nature of research does not allow to publish on DIR	7	8.1%
	Redundancy with other modes of information dissemination	6	6.9%
Total		86	100%

Similarly, faculty were also asked to state the reasons why they felt demotivated to contribute their work to the DIR. The results in Table 5.11 show that 5 (20.8%) indicated that they feared misuse of their work (copyright, plagiarism, infringement, etc.), 4 (16.4%) noted that depositing in the DIR is in conflict with publisher policies, 4 (16.4%) indicated that they lacked information on how to submit their work to the DIR, 4 (16.7%) indicated lack of information about how to submit research work to the DIR, 3 (12.5%) alluded to redundancy with other modes of disseminating information; lack of rewards on submission to DIR was indicated by 2 (8.3%), lack of skills to use the system was also indicated by 2 (8.3%), whilst another 1(4.2%) thought that the DIR is only for disseminating students' masters theses and dissertations, while complexity and difficulty to use the system was indicated by 1(4.2%) and the additional time and effort required for self-archiving were highlighted by only 1(4.2%).

Factors hindering faculty contribution to the DIR

Table 8: Factors hindering faculty contribution to the DIR

Factors hindering faculty contribution to the DIR		Responses	
		n	Percent
Why are you not Contributing to the DIR?	Fearing for misuse of my work (for example copyright, plagiarism, infringement, etc.)		20.8%
	Conflict with publisher policies with regards to author issues related to archiving	4	16.7%
	Lack of information to submit my research work to the DIR	4	16.7%
	Redundancy with other modes of information dissemination	3	12.5%
	Lack of rewards on submission to the DIR	2	8.3%
	Lack of skills to use the system	2	8.3%
	DIR is only to disseminate students' master's thesis and dissertations	1	4.2%
	Nature of my research work does not allow me to publish on the DIR (ex. co-authoring, versioning)	1	4.2%

	Complexity and difficulty to use the system	1	4.2%
	Additional time and effort required from me to perform self-archiving	1	4.2%
Total		24	100%

Perception towards free access to scholarly research

The construct attitude from TAM was used to measure PG students' and faculty's opinions on free access to scholarly research. All respondents were asked either to agree or to disagree whether research output of NUST should be freely accessible through the Institutional Repository. The results in figure 5.1 below show that 60 (43.5 %) agreed with the statement, whereas 48 (34.8%) strongly agreed, 26 (18.89%) were neutral, and 4(2.97%) disagreed.

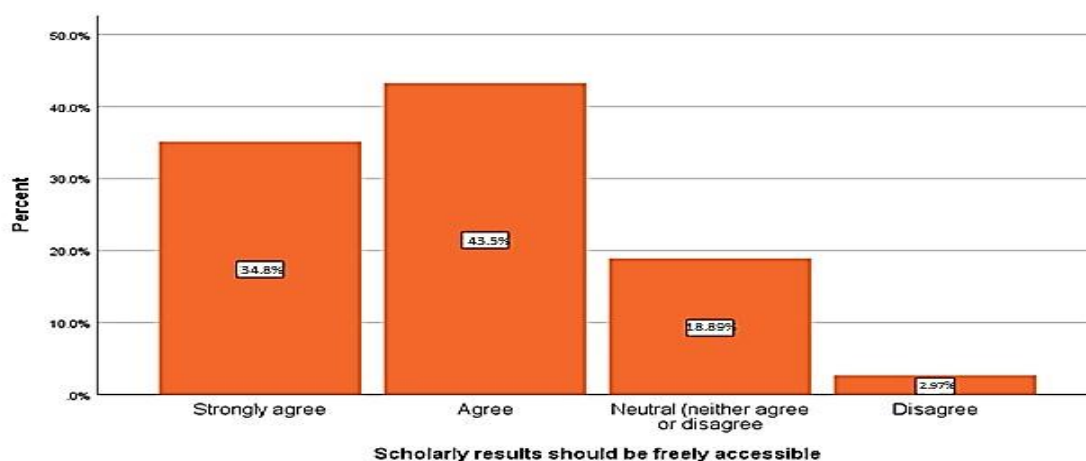


Figure 2: PG students' and faculty's opinions on free access to scholarly research

To validate the findings obtained through survey questionnaire, the researcher carried out the library observation along with document review, and by using the facilitating condition construct, the study aimed to measure how the institution's administration supports and encourages the PG students and faculty to use the DIR. Facilitating conditions are perceived as enablers or barriers in the environment that influences a person's perceptions of ease or difficulty of performing a task. In this study, facilitating conditions were skills training, information or available materials, and administrative support, which influenced the use of instructional technologies in teaching (Teo, 2010). During the library observation and document review, it was found that in addition to general user education services, an information literacy programme was introduced in the library in 2007. This programme was launched because library management acknowledged the need to assist the users to use ICTs that are available to them optimally. The literacy programme was carried out in different ways such as group training in an electronic classroom, communication skills classes for 6 weeks during each semester; online searching and retrieval, preparing and executing a search strategy and utilising search tools.

DISCUSSION

Attitudes and perceptions towards digital institutional repositories

This section presents attitudes and perceptions of faculty and postgraduate students at the Namibia University of Science and Technology towards DIRs. According to Vänninen (2009:107), attitude means "a complex mental state involving beliefs and feeling and value dispositions to act in certain ways". The implication here is that the degree to which researchers like or dislike DIRs may have an impact on their contribution to them. The preceding view is in tandem with the supposition of TAM that attitude has an effect on the behavioural intention of users to adopt or use technology. This study holds that attitude towards DIRs will have a positive effect on the intention to use the DIR. The study integrated the theory of reasoned action (TRA), performance expectancy from UTAUT and technology acceptance model (TAM) to understand the attitude towards use of DIRs.

Perceptions and attitudes of PG towards DIR

Singeh, Abrizah, and Karim (2013) in a study of Malaysian authors' acceptance to contribution to institutional repositories used performance expectancy from UTAUT and attitude towards constructs to measure authors' perceptions on performance expectancy. This study also used the performance expectancy contract from UTAUT to measure PG students and faculty perceptions towards the DIR performance expectancy. The respondents were then asked to rate the statements in terms of benefits associated with publishing with the DIR. PG students either agreed or strongly agreed that open access or DIR was beneficial. The results revealed that 67 (60.9%) strongly agreed, 36 (32.7%) agreed that exposure of work via DIR increases work cited and 7(6.4%) were neutral. In addition, 63(57.3%) strongly agreed and 43(39.1%) agreed that sharing one's work with peers and the research community is a benefit, while 3 (2.7%) were neutral and 1 (0.9%) disagreed. Sixty-one (55.5%) of the respondents agreed and 45(40.9%) strongly agreed that open access of research is beneficial, while 4 (3.6%) were neutral. The findings suggest that a large majority of PG students agree that there are gains from self-archiving research, thus increasing personal merits. Drawing from responses of PG students, it can be established that their attitude is heavily influenced by their beliefs in the benefits of DIR. It is pertinent to underscore that the supposed benefits of the DIR to the students vary but overall there is a firm affirmation that the use of the DIR is beneficial nonetheless. A plethora of studies (Halder, 2012; Duttah and Paul, 2014; Ankamah et al., 2018) have also established that a varying number of positive benefits is acknowledged by PG students across all academic disciplines with regards to their use of the DIR.

A similar positive attitude or perceived benefit of the DIR was also recorded in the responses from faculty. Results from respondents showed that 17 (44.7%) strongly agreed that they find it easy to share their work with the general public; ten other respondents (26.3%) agreed while 9 (23.7%) held a neutral position and only 2 (5.3%) disagreed that their work could be shared easily with the public through the DIR. Regarding how the DIR aids in enhancing their personal profiles, 18 (47.4%) of the faculty respondents strongly agreed, while 15 (39.5%) agreed and 4 (10.5%) were neutral and only 1(2.6%) disagreed on the role of the DIR in enhancing their personal profiles. There was a strong agreement by 17 (44.7%) of respondents that another important benefit of the DIR is that respondents can rely on it for a long-term preservation of their digital materials; 13 (34.2%) agreed, 7 (18.4%) were neutral and only 1 (2.6%) disagreed. A couple of more questions were posed to the faculty and there was a clear and strong agreement from the respondents that there are numerous positive benefits associated with using the DIR. Research results replicate benefits reported in the literature, especially the public benefit of open access, enhanced exposure of work through Google Scholar and the potential for increased citation, as well as the potential to receive feedback and commentary (Cullen and Chawner, 2009).

Other benefits cited by faculty through questionnaire included: research work, which will be available on Google Scholar, getting feedback and commentary on researchers' research; the DIR preserves a digital copy of the researcher's research for the long term. As per literature review, the benefits of repositories to institutions and individuals are numerous (Barwick and

In a study by Wirba, Abrizah, and Harun (2013), that aimed at evaluating Malaysian authors' readiness to self-archive in open access repositories, found that the usefulness and effectiveness of open access repositories to support knowledge sharing is highly dependent on the readiness of authors to self-archive their research output. Overall they found that digital archiving makes the author's research more visible and increases their reputation as scholars.

Reasons PG students and faculty submit their research/teaching materials to the DIR

According to the theory of reasoned action (TRA) (Ajzen and Fishbein, 1980), normative beliefs and motivation to comply affect subjective norms. Subjective norm refers to the perceived social pressure to perform or not to perform certain behaviour. It is also an individual's perception that those who are important to him or her would approve or disapprove the performance of a given behaviour (Ajzen, 1991). In this study, subjective norm was construed as the degree to which a person perceives the demands of the 'important' others on him or her to use the computer. This study used normative beliefs and motivation to comply and subjective norm constructs from TRA to measure PG students' and faculty members' motivation to use the DIR.

The researcher sought to find out from postgraduate students what motivated them to contribute their research work to the DIR. The results showed that 77 (46.4%) of the respondents noted they were motivated by the need to increase accessibility of their work, while 33 (19.8%) mentioned creating publicity for research work and impact on research community while 32 (19.8%) said they were motivated to contribute as this would enable them to know how many times their research was viewed or downloaded by others, and (23, (14.5%) noted how they contributed when they were told to do so.

Faculty members were similarly asked to state what motivated them to contribute their research work to the DIR. The results showed majority of respondents (28, 34.1%) indicated that they were motivated by the need to increase accessibility of their research work, while 26 (31.7%) indicated that contributing to institutional repository creates publicity for their research work; 11 (13.4%) indicated the DIR facilitates the coordination of interdisciplinary teaching and research efforts; ten (12.1%) noted that IR shows the frequency in which materials were viewed and downloaded; however, the lowest 6 (7.3%) indicated that they contributed when they are told to do so.

These findings concur with Kim's (2006) study entitled 'motivating and impeding factors affecting faculty contribution to Institutional Repositories at University of Michigan'. Findings indicated that faculty members who had an interest in contributing to the DIR in the future agreed more strongly with accessibility and publicity of open access materials and possess a greater altruistic intention to make their work publicly accessible. The faculty members who perceived an influence of a grant-awarding body on their decision to self-archive were much less likely than others to contribute to the IR. The most important reason was found to be preservation of respondents' materials, followed by the DIR capability to show the frequency of viewing and downloading their materials. Institutional recognition was the third most important reason, although its rating was not as high as the first and the second. Retaining copyright did not provide an incentive for future contribution. Respondents also did not connect functions provided by existing publishing systems with the IR. Thus, the peer review process and academic reward were considered least important motivators.

Factors hindering faculty contribution to the DIR

This study used normative beliefs, motivation to comply and subjective norm constructs from TRA to measure PG students and Faculty reasons for not using the DIR. Faculty were asked to state reasons why they were not willing to contribute their work in the DIR. The results showed that 5 (20.8%) indicated they feared misuse of their work (copyright, plagiarism, infringement); 4 (16.4%) noted that depositing in the DIR is in conflict with publisher policies; 4 (16.4%) indicated that they lacked information on how to submit their work to the DIR; 4 (16.7%) indicated lack of information about how to submit research work to the DIR; 3 (12.5%) alluded to redundancy with other modes of disseminating information; lack of rewards on submission to DIR was indicated by 2 (8.3%); lack of skills to use the system was noted 2 (8.3%), another 1 (4.2%) thought DIR is only for disseminating students' masters theses and dissertations, while complexity and difficulty to use the system was noted by 1 (4.2%) and the additional time and effort required for self-archiving was cited by 1 (4.2%) of the respondents.

These results concur with Dutta and Paul (2014) in their study of Awareness on institutional repositories-related issues by faculty of University of Calcutta found that low rate of participation of faculty members in IR phenomenon is a major issue for the success of IR. Lack of awareness and confusion about copyright issues are the known barriers in faculty participation in it.

The findings of the study show that there is need for institutional repository advocacy and outreach programs by academic librarians to familiarise academic staff on utilisation of IRs. Results also agree with Mooketsi (2020) findings that there is need for institutional repository advocacy and outreach programs by academic librarians to familiarise academic staff on utilisation of IRs. The study also established the need for librarians to reconsider their information resource capturing and dissemination practices, including user support services.

To validate the findings obtained through survey questionnaire, the researcher carried out the library observation along with document review, and by using facilitating condition construct, the study aimed to measure how the institution management supports and encourages the PG students and faculty to use the DIR. Facilitating

conditions are perceived enablers or barriers in the environment that influence a person's perception of ease or difficulty in performing a task. In this study, facilitating conditions were skills training, information or available materials, and administrative support which influenced the use of instructional technologies in teaching, this results are in agreement with findings (Teo, 2010).

During the library observation and document review, it was found that in addition to general user education services, an information literacy programme was introduced in the Library in 2007. This programme was launched because library management acknowledged the need to assist the users to use ICTs available to them optimally. The literacy programme was carried out in different ways such as Group Training in an Electronic Classroom, Communication Skills classes for 6 weeks during each semester; online searching and retrieval, preparing and executing a search strategy and utilising search tools.

Fear of misuse for their work, copyright, plagiarism and infringement has led to poor motivation of depositing of contents into the DIR, hence the low contents. Davis and Connolly (2007) assert that publisher copyright concerns and policies discourage authors from submitting to the institutional repository. Davis and Connolly (2007) point out that some authors were confused about what authors could do with their papers and stated that the rules were constantly changing. Others had a misconception that it was not to make articles available to platforms outside the publisher's website, fear that their work would be plagiarized or copied without acknowledgement, and lack of any incentive for making one's work available before formal publication. Davis and Connolly (2007) mention that plagiarism was a real concern and reason scholars were reluctant to disseminate their work early in electronic form. In addition, all authors felt that, releasing results before formal publication was tantamount to giving away one's competitive advantage. Crow (2002) is of the view that the success of archiving movement will depend to a greater extent on the will of the faculty and relationship they have with their institution regarding the copyright issues. Crow (2002) notes that certain questions need answers; for example, who owns the copyrights in the journal articles written by faculty? Is it the faculty themselves, their institution or outside sponsor? Does the faculty know who owns the copyright? This seems very difficult, where the publication industry is established, and also taking into consideration the services journals and publishers provide to the research community. Such services are for instance screening for significance and peer review. These items would have to be reproduced at the level of OA databases. Another challenge at this point, where OA is not prescribed to all researchers worldwide, is a continuous need and if for the time being, to publish in the journals for career reasons. Usually, the copyright is transferred to the publisher and with that the author loses the right to avail the product to an open access database.

Opinion on free access to scholarly research

The researcher used attitude (construct from TAM) to measure PG students and faculty members' opinions on free access to scholarly research. The respondents were asked to either agree or to disagree whether scholarly research generated at NUST should be freely accessible through Institutional Repository. The results showed that 60 (43.5 %) agreed with the statement whereas 48 (34.8%) strongly agreed; 26 (18.89%) were neutral, while 4 (2.97%) disagreed.

These results agree with the literature; for example, Murphy (2016) is of the opinion that scholarly research should be freely accessible and that the public have a right to know by providing free online access to just about every scientific paper ever published on topics ranging from acoustics to zymology. She campaigns for open access, and has shined a light on how scientific findings that could inform personal and public policy decisions on matters as consequential as health care, economics and the environment are often prohibitively expensive to read and impossible to aggregate and determine. Generally, the study found that the respondents had positive attitudes and acknowledged the benefits and gains from the DIR. Figure 3. provided a detailed description of the relationship between perceptions, beliefs, and attitudes by adult internet users. The respondents were found to have a positive attitude towards internet (DIRs) because they believed that it is good and beneficial to their research needs. This finding suggests that the relationship between normative and behaviour intention by DIR users is significant.

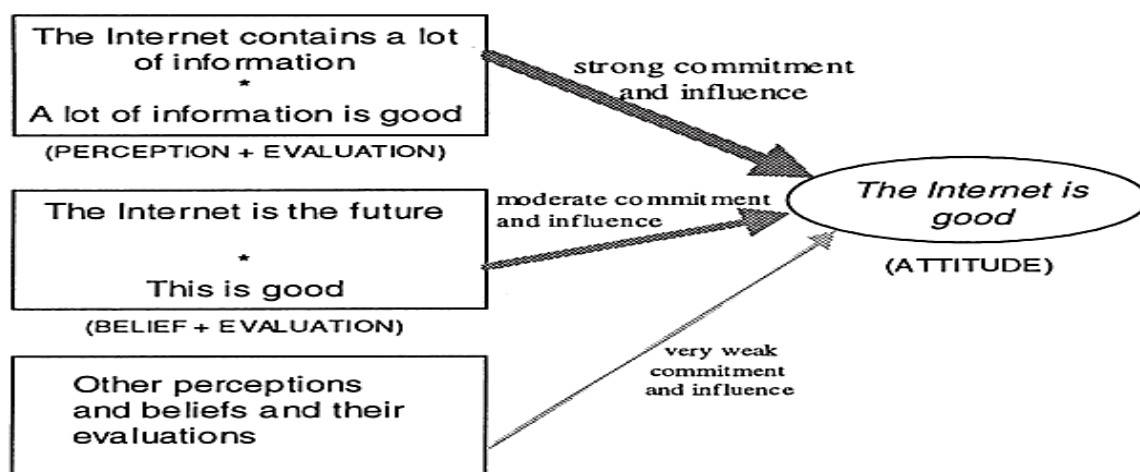


Figure 3: Relationship between perceptions, beliefs and attitudes (Source: Klobas and Clyde, 2000:7)

CONCLUSION

The respondents were found to have a positive attitude towards internet (DIRs) because they believed that it is good and beneficial to their research needs. This finding suggest that the relationship between normative and behaviour intention by DIR users is significant.

These results further revealed that there was low level of content submission by both PG students and faculty. These results confirm the findings of Bamigbola (2014) who also reported low submission of scholarly works by faculty to the repository. The current study found that though faculty engaged in research they did not contribute their research output to DIR because they were not informed on the need to contribute their research output to the digital repository of their institution. Other faculty members were ignorant of the value of depositing their research work in the repository. In addition, some faculty were wary to deposit in the repository for fear that journals restricted authors to submit their research work elsewhere. The results revealed that although the majority of respondents have contributed to the DIRs, there were others who preferred to submit their research work elsewhere rather than the repository. The results suggest that the policy did not encourage authors to self-archive as it gave the responsibility to the librarians to do it on behalf of the authors.

The findings also revealed that performance expectancy (PE), facilitating condition (FC) (noted from trainings offered) and attitude towards (AT) did not influence PG students and faculty behavioural intention to archive in the DIR. Even though PG students and faculty tended to approve that DIRs are best means of information dissemination (which implies positive attitude), most participants had not wholly adopted archiving in DIRs

The study also found a need for facilitating conditions and policies issues to be addressed as a way of promoting open access through DIR. The results suggested that the NUST DIRs were hardly used for information access. This was attributed to the lack of awareness about the existence, benefit, and role of DIRs.

RECOMMENDATION

From policy perspective, NUST should make provisions for faculty and postgraduate students to personally self-archive their research work in the DIR instead of the current policy that requires only librarians to archive on behalf of researchers. This may help to increase the rate of depositing in the repository. Academic institutions in Namibia should get more information revolving the conflict with publisher's policies in regards to author's issues related to archiving. Since scholars appeared uneducated about copyright issues, considering that some publishers give permission to authors to make contributions into their institutional repositories though making their articles accessible via their university's institutional repository. Marketing: NUST should provide strong advocacy and marketing about benefits of institutional repositories and depositing materials thereof to encourage faculty and PG students to contribute their research to the Digital Institutional repository to enhance visibility of the University and that of the authors.

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