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## Academic Staff Awareness of Institutional Repositories (IRs) in Tanzania Universities

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### Abstract

This paper presents the results of an investigation on the awareness of Institutional Repositories (IRs) among academic staff in Tanzania's universities. The study employed descriptive research design and mixed methods approaches. The study was conducted in four institutions: The University of Dar es Salaam (UDSM), Muhimbili University of Health and Allied Sciences(MUHAS), Sokoine University of Agriculture(SUA) and Saint Augustine University of Tanzania(SAUT). It employed both qualitative and quantitative techniques to collect, process and analyse data. The study found that most of respondents were not conversant with strategies used to collect scholarly works for their universities IRs. Besides, they were not aware of self-archiving practices of their scholarly works in their respective university IRs. The findings further indicate that, institutional websites and academic colleagues are the main sources of information on IRs. The study recommends implementation of diverse marketing strategies and conducting regular training, workshops and seminars to improve awareness, skills and knowledge about IRs among academic staff.

**Keywords:** Awareness, institutional repositories, research outputs, academic staff, universities, Tanzania.

### Introduction

The quality of a particular university is measured by the quality and quantity of research outputs produced by its community members (Alegbeleye & Oyewole, Anenene, 2017). As a result, universities and academic institutions worldwide are engaged in generating new knowledge to solve social, political, economic and technological problems particularly in applied research which in turn helps to improve the quality of human life (Okoroma, 2018). In support of this view, Ezema and Okafor (2015, p.45) noted that "the wealth of the nation depends much on research and the utilisation of the research findings in solving personal, socio-economic, political, scientific, and industrial problems of the nation". Implicitly, viable access to and utilisation of research-based



knowledge positively contributes to competitive and sustainable development in different walks of life (Atela, Ndege, & Mwantimwa, 2020).

Expectedly, the knowledge the university community generates through research outputs is disseminated, shared and utilised by scholars within and outside the university corridors through various channels (Musa, Kabir, & Dhahiru, 2016). However, most of these outputs produced by universities are not effectively accessed and shared by researchers and other stakeholders. In fact, the generated knowledge remain in personal computers, or they are stashed away in cupboards in departmental offices and on library shelves where they cannot be easily accessed by information users from outside the university environment (Ezema & Okafor, 2015; Mohammed, 2013; Mutwiri, 2014; Sokoine University of Agriculture Institutional Repositories [SUAIRs] Policy, 2014). Worse still, some research findings are not published and, thus, there is no way that they can be sufficiently utilised by the community (Okoroma & Abioye, 2017). Consequently, there is a huge gap between the knowledge generated and its application in solving the prevailing problems to enhance community development (Nwakaego, 2017).

As prior studies (e.g. Nunda & Elia, 2019; Sain, 2018; Dlamini & Snyman, 2017; Rifai & Hasan, 2016; Ogbomo, 2015) have evidenced, universities have been taking numerous initiatives globally to enhance access and ultimately the utilisation of research output. These initiatives include the development of Wikis and portals as well as the adoption of IRs that universities utilise to enhance access to and use of research products. IRs have been adopted and implemented in universities at different times and rates (Sain, 2018). The establishment of IRs in Europe, Asia, Australia and America, can be traced to early in the 21st century (Nunda & Elia, 2019). Comparatively, universities in European, American, Asian and Australian countries have higher adoption rate of IRs than those of other parts of the world, including Africa (Okum, 2015; Sain, 2018). In Africa, the implementation of IRs started in the 2000s. The first IRs was established in South Africa at Pretoria University in 2000 (Kakai, 2018; Malekan & Kavishe, 2018). Since that time there has been an increase in the rate of IRs adoption in African countries from a single repository before 2006 to 136 repositories in 2015 (Dlamin & Snyman, 2017).

In East Africa, the first repository was developed at Makerere University in Uganda, in 2007 (Kakai, 2018; OpenDOAR, 2021). By 23<sup>rd</sup> June, 2021, East African universities had developed a 68 IRs and registered them in OpenDOAR: 43 repositories were from Kenya, 14 from Tanzania and 11 from Uganda (Dlamin & Snyman, 2017; Kakai, 2018; Kakai, Musoke & Okello-Obura, 2018; OpenDOAR, 2021). Indeed, as Kakai et al. (2018) observed, the growth of IRs in East Africa differ with Kenya having the highest number of repositories with highest number of items. Like other East African countries, some of Tanzania's universities have adopted IRs since 2012 to collect, preserve disseminate and share research products (Nunda & Elia, 2018; Samzugui, 2014)

Universities adopt IRs for diverse reasons. To begin with, the adoption of IRs has enhanced the preservation, dissemination, sharing and utilisation of research findings (Sain, 2018; Dlamini & Snyman, 2017; Rifai & Hasan, 2016; Ogbomo, 2015; Ogbomo & Muokebe, 2015). In fact, the adoption and utilisation of IRs in universities plays a vital role in raising the visibility and accessibility of research findings produced by the university community, which in turn contributes to the improvement of web ranking position of the university (SUAIRs Policy, 2014). Besides, IRs help to market the university and, thus, enhance its visibility, prestige and ranking through research output (Jain, 2012). Overall, IRs have improved the sharing of research findings among scholars within and outside the country in addition to improving the application of research findings in solving the prevailing problems in the society (Aliyu & Mohammed, 2013; Ivwighrehweta, 2012; Mohammed, 2013).

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The benefits of deploying IRs in preserving, disseminating, sharing and using research outputs notwithstanding, African countries have experienced slow adoption and use of IRs compared to other continents (Ofosu-Ampong, 2016; Sain, 2018; Kakai et al., 2018). Various factors explain this slow adoption and application of IRs in African universities. Notably, most of academic staff have yet to be committed to depositing their scholarly works in their university IRs (Dulle, 2010; Lwoga & Questier, 2014; Malekani & Kavishe, 2018; Mgonzo & Yonah, 2014). As a result, poor visibility and accessibility of research outputs and products produced by the universities are documented in extant studies and reports (e.g. Nyamwihula, 2008; Jangawe, 2011; Samzugui, 2012; Wema & Ndumbaro, 2015) have indicated and documented poor visibility and accessibility of research outputs produced by university communities. Poor visibility of research outputs and products is accompanied by the decline of university web ranking position (Mugonzo & Yonah, 2014). Yet, the studies to establish academic staff's awareness are limited. The empirical studies (e.g. Nunda & Elia, 2019; Mnzava & Chirwa, 2018; Malekani and Kavishe, 2018; Muneja & Ndenje-Sichalwe, 2015; Muneja, 2009) have not deeply focused on the status of awareness, hence limiting the realisation of a deeper understanding on the aspect. Muneja (2009) explored stakeholders' views on the establishment of IRs at the University of Dar es Salaam whereas Nunda and Elia (2019) mainly examined the adoption and use of IRs among postgraduate students in selected Tanzania higher learning institutions. Similarly, Malekani and Kavishe (2018) investigated the role of IRs in protecting the cultural heritage in Africa. It was against this background that the present study established academic staff's awareness on IRs. The specific objectives were twofold: Firstly, to examine the level of awareness on various aspects of IRs and, secondly, to ascertain the sources of awareness of IRs among academic staff in the universities under review.

## Literature review

This section presents a review of literature related to the awareness of IRs among academic staff and the sources of their awareness in their respective universities.

### *Awareness of IRs among academic staff*

Creating awareness is an essential aspect for successful IRs implementation because it ensures that potential users and stakeholders are familiar with the concept, purpose, benefits and how their participation enhances the achievement of the project (Chilimo, 2016). In this regard, Ogbomo and Muokebe (2015) suggest that for IRs to be effectively used by lecturers, awareness should be created before they are being established to integrate how the university community would benefit from the service. Dlamini and Snyman (2017) identified lack of awareness to be one among the major challenges facing adoption and use of IRs in African academic institutions.

Studies on the faculty awareness of IRs in universities in different countries have revealed mixed results. Whereas academic staff in some universities are aware of the existing of IRs, in others they were not. Chilimo (2016), who conducted a study in public universities in Kenya, found that the level of awareness among academic staff was low, hence the limited number of self-archived scholarly works in their university IRs. Similarly, Ratanya's (2017) study at the Egerton University in Kenya revealed that most of the academic staff were not aware of the availability of IRs at their universities. Both of these studies concur with that of Dutta and Paul (2014), who found that awareness levels of IRs among faculty members at the University of Calcutta was unsatisfactory as just more than half of the respondents were aware of IRs. These findings are



contrary to what emerged in Nigerian universities in various studies (e.g. Omeluzor, 2014; Bamigbola, 2014; Aughwotu & Ebiere, 2016; Temboge, 2018) which found that most academic staff in various universities were aware of the availability of IRs in their respective institutions. These findings concur with Ofosu-Ampong (2016) whose study at the University of Ghana (UG) found that most of the respondents were familiar with the existence of IRs and associated services at the university.

Furthermore, the literature reviewed shows that academic staff in various universities, faculties or disciplines may be more aware in some aspects of IRs but not aware in others. For instance, Aughwotu and Ebiere (2016) revealed that most of lecturers at Niger Delta University were aware of the IRs concept, the types of resources that should be deposited there and the benefits associated with doing so. Similarly, Anenene, Alegbeleye and Oyewole (2017) in their study in universities in South-West Nigeria found that most of the respondents (86%) were aware of the existence and value of IRs at their universities. Bamigbola (2014) also found that faculty members in the Faculty of Agricultural Disciplines at Federal University of Technology, Akure (FUTA) were adequately aware of the existence of IRs at their university, the meaning of IRs and the purpose for establishing them; however, they lacked adequate knowledge on how to deposit their works on IRs and did not know the contents deposited in their university's IRs. This finding concurs with Singeh, Abrizah and Karim (2013) whose study in five Malaysian research-intensive universities found that most (59.6%) of respondents were familiar with IRs in their universities but lacked adequate knowledge and experience on them, let alone the opportunities associated with self-archiving. Similarly, Mnzava and Chirwa (2018) revealed that most (68.9%) of academic staff at the College of Veterinary Medicine and Biomedical Science (CVBMS) Sokoine University of Agriculture (SUA) in Tanzania were aware of the existence of SUAIR but lacked knowledge on how to archive their scholarly works in their institutional IRs. Another study by Manjunatha and Thandavamoorthy (2011), which was carried out in Karnataka, India, found a difference in awareness on the existence of IRs in the university among faculty members, with scholars from the faculty of humanities and social sciences not being familiar with their IRs relative to other faculties.

### ***Sources of awareness about IRs***

There is a significant relationship between awareness of IRs among academic staff and the type of source of awareness used to inform them about them. To ensure that academic staff were well-versed with IRs, universities adopted and executed various marketing strategies. In fact, various authors (e.g. Ezema and Okafor, 2016; Ukwoma and Okafor, 2017; Shukla & Ahmad, 2018) have underscored the importance of implementing marketing strategies to promote IRs among the university community members. In this regard, the literature reviewed has shown that there are diverse strategies different universities deploy in both developed and developing countries to promote IRs among potential users. For instance, Shukla and Khan (2014) revealed that 35 (69%) of research scholars and 36 (37%) of faculty members learned about IRs from friends and colleagues; 29 (66%) of research scholars and 27 (68%) faculty members learned about IRs from the library website. Meanwhile 15 (50%) research scholars and 14 (76%) of faculty members got IRs information from promotional brochures and journals. Furthermore, Sawant (2012) revealed that 52 (43%) of Indian institutional repositories users learned about the IRs services from the links provided on institutions' websites.

Likewise, Manjunatha and Thandavamoorthy (2011) revealed that most of the respondents at Karnataka University in India learned about IRs from colleagues/ friends and through the internet. Academic Staff Awareness of Institutional Repositories (IRs) in Tanzania Universities

Similarly, Dutta and Paul (2014) revealed that the internet was the main source of IR awareness among faculty members. Similar findings were reported by Obiora and Ogbomo (2013) and Ogbomo and Muokebe (2015), who found that most of the academic staff in Federal universities in South-South zone of Nigeria learnt about IRs through academic staff/colleagues, publishers and internet browsing. Additionally, Halder and Chandra (2012) conducted a study at Jadavpur University and found that colleagues/friends, teaching staff and library websites were the main sources of IR awareness.

Also, Aughwotu and Ebire's (2016) study in Nigeria at Niger Delta University, Bayelsa, found that conferences, seminars and workshops were the main sources of information on IRs for the university management and other stakeholders in the university community. Similarly, Ofosu-Ampong (2016) established that, repository users at the University of Ghana (UG) were informed about IRs through workshops. Ezema and Okafor (2015) revealed that the main means for creating awareness on IRs to users in six government-funded institutions in South-East Nigeria include face-to-face interaction with target groups, seminars and workshops, banners and posters and institutional media outlets and websites were main information sources used to create awareness about IRs. Furthermore, a study that was conducted by Bamigbola (2014) at the Federal University of Technology, Akure (FUTA) in Agricultural disciplines revealed that the main sources of awareness through which faculty members were informed about IRs were the university library, colleagues and departmental meetings.

The literature review has demonstrated that various studies on IRs awareness have been conducted in various institutions elsewhere. In Tanzania, on the other hand, a related study was conducted by Muneja (2009) as a needs assessment in Tanzania's universities towards the establishment of IRs in such institutions. Another study was conducted by Nunda and Elia (2019), who explored the awareness of concept and services of IRs among postgraduate students in selected Tanzania higher learning institutions. Furthermore, Mnzava and Chirwa (2018) carried out a study at SUA to investigate the level of awareness among academic staff from a single College of Veterinary Medicine and Biomedical Science on various aspects related to SUAIR. To fill this gap, this study investigated the awareness of IRs and the sources of awareness among academic staff in selected universities in the context of Tanzania.

## Methodology

This study adopted a cross-sectional descriptive research design coupled with qualitative and quantitative approaches. The study was conducted in four selected universities in Tanzania of UDSM, MUHAS, SUA and SAUT between January and June, 2019. These universities were purposively drafted in the study because they had been involved in initiatives aimed to establish IRs for several years and, therefore, had adopted and implemented IRs in their respective institutions. However, due to time and financial constraints, only universities whose institutional repositories had been operating for more than two years were involved in the study. The study involved both academic staff and IR administrators. Academic staff were involved in the study because they are the main contributors of materials hosted in the IRs in universities whereas IR administrators deal with the management and administration of IRs. The involvement of these groups of respondents yielded information that helped to achieve the objectives of the study. The study applied simple random sampling technique to select 359 respondents from a population of 2,178 academicians using the following procedure: first, lists of academic staff were obtained from heads of department selected for the study in respective universities. Then, the lottery method was employed to select respondents in which names of academic staff from these lists were



assigned numbers and written on small pieces of paper following their respective numbers in the lists and mixed thoroughly in a small box. From the box, the names of academic staff equivalent to the sample size for each department in respective universities were picked as respondents of the study. Besides, purposive sampling was used to select four IRs systems' administrators, one from each university depending on their positions.

The study used a cross-sectional survey and interview as main data collection methods. Questionnaire guide (with close-ended questions) was adopted as the main data gathering instrument for quantitative data from academic staff on the awareness of IRs and the sources of awareness. An interview guide (semi-structured) was used to collect qualitative data on the sources of awareness from four IRs administrators during face-to-face interviews. Qualitative data were subjected to content analysis whereas quantitative data were analysed descriptively using the Statistical Products and Service Solutions (SPSS). Frequency and percentages derived from descriptive statistics are presented in tables and figures. Besides, the Pearson Chi-Square test was used to measure the level of significance in the differences found on awareness aspects among respondents across universities.

## Research findings

### *Demographic characteristics of respondents*

Respondents were requested to indicate their university affiliation, academic disciplines, educational qualification levels, academic rank, age category as well as gender. Table 1 presents the sample distribution:

**Table 1: Demographic characteristics of respondents**

<b>Distribution of respondents by affiliation</b>		
<b>Universities</b>	<b>Frequency</b>	<b>Percentage</b>
MUHAS	43	13.4%
SAUT	37	11.6%
SUA	75	23.4%
UDSM	165	51.6%
<b>Total</b>	<b>320</b>	<b>89%</b>
<b>Academic disciplines of respondents</b>		
<b>Natural Sciences</b>	<b>126</b>	<b>39.4%</b>
<b>Social Sciences</b>	<b>133</b>	<b>41%</b>
<b>Engineering and Technology</b>	<b>61</b>	<b>19.1%</b>
<b>Total</b>	<b>320</b>	<b>100%</b>
<b>Educational qualification of respondents</b>		
Masters	13	40.9%
PHD	189	59.1%
<b>Total</b>	<b>320</b>	<b>100%</b>

<b>Academic rank of respondents</b>		
Assistant Lecturer	127	37.8%
Lecturer	97	30.3%
Senior Lecturer	70	21.9%
Associate Professor	22	6.9%
Professor	10	3.1%
<b>Total</b>	<b>320</b>	<b>100%</b>
<b>Age groups of respondents</b>		
21-30	26	8.1%
31-40	123	38.4%
41-50	101	31%
51-60	43	13.4%
Above 61	27	8.4%
<b>Total</b>	<b>320</b>	<b>100%</b>
<b>Distribution of respondents by gender</b>		
Male	209	65.3%
Female	111	34.7%
<b>Total</b>	<b>320</b>	<b>100%</b>

As Table 1 illustrates, out of 359 academic staff, 320(89%) respondents filled out and returned the questionnaires. Derivation of the proportion of respondents from each university was based on the ratio of the sample size, which was calculated based on the population size of each university. The results in Table 1 show that the proportion sample size of the University of Dar es Salaam is greater than those of other universities under review. This was so because the university of Dar es Salam had a large population compared to other universities because it was among the oldest public universities in the country.

The study involved respondents from three broad academic disciplines: Social Sciences, Natural Sciences, and Engineering and Technology. Most of the respondents were from Social Sciences (41.6%) followed by those from Natural Sciences (39.4%) and a few from Engineering and Technology (19.1%). The results show that most (59.1%) of the respondents were PhD holders whereas a considerably lower number were master's degree holders (40.9%). The PhD holders' group comprised lecturers, senior lecturers, associate professors and professors. This a group of academic staff was expected to be active in conducting research and publishing their research findings. Overall, the study involved respondents from academic ranks ranging from Assistant Lecturer to Professor; however, these were unevenly distributed. The distribution of academic ranks of respondents in the sample shows the dominance of cadre in the lower academic ranks. Indeed, 90 percent of the respondents were either Assistant Lecturers or either Lecturers or Senior Lecturers. Those in the professorial ranks—Associate Professor and Professor—accounted for only 10 percent of the sample. These findings imply that the higher you climb to the academic ladder, the fewer the staff. This was evidenced in lists of academic staff in the universities under review whereby the number of academic staff in the professorial rank was lower than in the lower ranks.



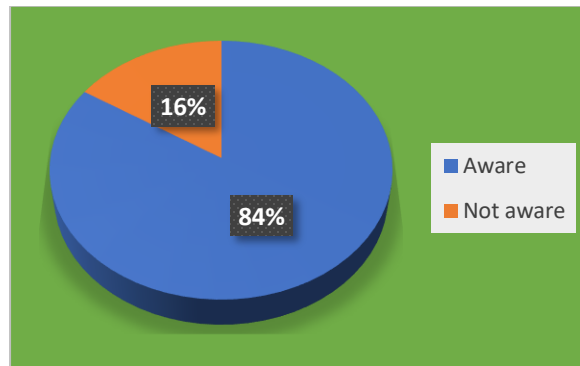
The age group of respondents ranged from 20 years and above 61. The majority respondents were aged 31 – 50 (69.4%) whereas a few respondents (13%) were aged 51 – 60. Fewer still were aged 21 (8%) and above 61 years. Gender-wise, the study sample comprised 65.3 percent males and 34.7 percent female. In other words, the number of female respondents in all sample universities is less than that of males primarily because the number of female academic staff in sample universities was also low relative to that of their male counterparts.

***Awareness of IRs among academic staff in universities***

The study explored awareness of IRs among academic staff in aspects such as the availability of IRs in universities, strategies used to collect IRs content, the IR concept, the IR content, the benefits of IR usage in universities and self-archiving practices of scholarly works in their university IRs. The findings are presented in figures and tables.

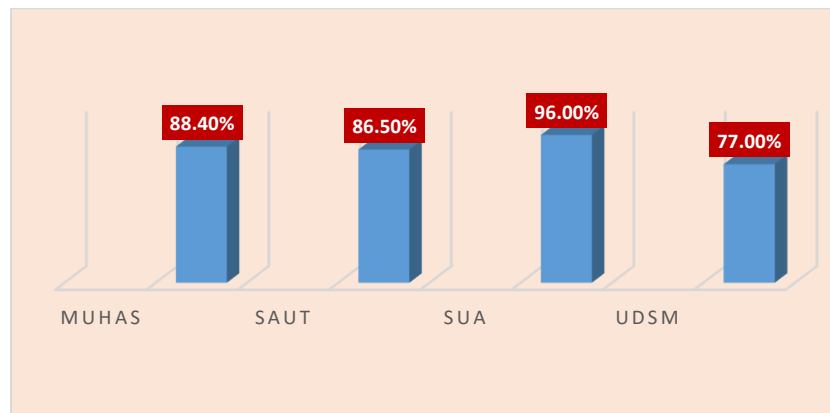
***Awareness of the availability of IRs among academic staff of sample universities.***

The study explored the awareness of the availability of IRs among academic staff in their respective universities. Figure 1 presents the results:



**Figure 1: Awareness of the availability of IRs**

The results indicate that the majority (84.1%) of the respondents were aware of the availability of IRs in their universities. Only a few (15.9%) were not. Moreover, the study sought to establish whether there was a significant difference in terms of awareness of the availability of IRs among academic staff of the universities under review. The responses are as presented in Figure 2:



**Figure 2: Awareness on the availability of IRs in each university**

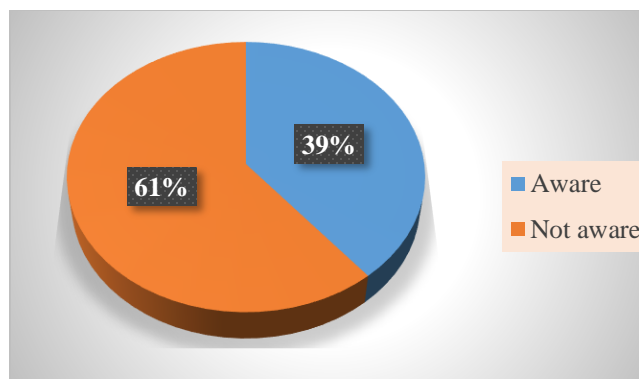
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The results also reveal that, most of the academic staff in each university were aware of the availability of IRs in their universities with limited variations. At SUA, 96 percent of the respondents were aware of the availability of IRs; at MUHAS 88.4 percent were; at SAUT it was 86.5 percent; and at the UDSM 77 percent of the respondents were aware of the availability of IRs in their university. Similarly, Pearson Chi-Square test ( $\chi^2=14.932$ ;  $df=3$ ;  $p\text{-value}=.002$ ) suggests that there was a significant difference in the levels of awareness on the availability of IRs among academic staff of the studied universities since  $p\text{-value}<.05$ .

***Awareness of strategies collecting IR content in universities***

The study sought to establish whether academic staff, who were aware of the availability of IRs in their universities, also knew the strategies for collecting content for their university’s IRs. The results are as presented in Figure 3:



**Figure 3: Awareness of strategies used to collect IRs contents**

The findings indicate that 61 percent of the respondents reported not being aware whereas 39 percent were affirmative.

Moreover, the study explored awareness of IRs among academic staff on the IR concept, the IR content, the benefits of IRs usage in universities and self-archiving practices of scholarly work in their university’s IRs. In this regard, the respondents were required to use the Likert Scale—Strongly Agree (SA), Agree(A), Disagree(D) and Strongly Disagree(SD)—to rate their awareness on the IR aspects. To simplify the analysis and interpretation of data, the ‘strongly agree’ and ‘agree’ scale responses were combined to form “agree” (affirmative) whereas the ‘strongly disagree’ and ‘disagree’ scale answers were collapsed into ‘disagree’ (non-affirmative). The findings are as presented in Table 2:

IRs aspect		MUHAS	SAUT	SUA	UDSM	Total
<b>I am aware of IRs concept</b>	SA	10(23.3%)	7(18.9%)	10(13.3%)	54(32.7%)	<b>81(25.3%)</b>
	A	23(53.5%)	24(64.9%)	60(80.0%)	90(54.5%)	<b>197(61.6%)</b>

D	7(16.3%)	6(16.2%)	5(6.7%)	17(10.3%)	<b>35(10.9%)</b>
SD	3(7.0%)	0(0.0%)	0(0.0%)	4(2.4%)	<b>7(2.2%)</b>
<b>Total</b>	<b>43(100%)</b>	<b>37(100%)</b>	<b>75(100%)</b>	<b>165(100%)</b>	<b>320(100%)</b>

Pearson Chi-square tests ( $\chi^2 = 24.864$ ,  $df = 9$ ,  $p\text{-value} = .003$ )

<b>I am aware of IRs contents</b>	<b>SA</b>	6(15.4%)	9(27.3%)	13(18.6%)	35(27.6%)	<b>63(23.4%)</b>
	<b>A</b>	16(41%)	10(30.3%)	35(50.0%)	66(52.0%)	<b>127(47.2%)</b>
	<b>D</b>	15(38.5%)	14(42.4%)	22(31.4%)	24(18.9%)	<b>75(27.9%)</b>
	<b>SD</b>	2(5.1%)	0(0.0%)	0(0.0%)	2(1.6%)	<b>4(1.5%)</b>
	<b>Total</b>	<b>39(100%)</b>	<b>33(100%)</b>	<b>70(100%)</b>	<b>127(100%)</b>	<b>269(100%)</b>

Pearson Chi-square tests ( $X^2=19.031$ ;  $df=9$ ;  $p\text{-value}=.025$ )

<b>I am aware of the benefits of IRs usage in my university</b>	<b>SA</b>	7(17.9%)	9(27.3%)	6(8.6%)	23(18.1%)	45(16.7%)
	<b>A</b>	17(43.6%)	13(39.4%)	42(60.0%)	57(44.9%)	129(48.0%)
	<b>D</b>	12(30.8%)	11(33.3%)	20(28.6%)	43(33.9%)	86(32.0%)
	<b>SD</b>	3(7.7%)	0(0.0%)	2(2.9%)	4(3.1%)	9(3.3%)
	<b>Total</b>	<b>39(100%)</b>	<b>33(100%)</b>	<b>70(100%)</b>	<b>127(100%)</b>	<b>269(100%)</b>

Pearson Chi-square tests ( $X^2=14.346$ ;  $df=9$ ;  $p\text{-value}=.0111$ )

<b>I am aware of Self-archiving practices of my scholarly works in my university IRs</b>	<b>SA</b>	7(17.9%)	4(12.1%)	16(22.9%)	23(18.1%)	43(16.0%)
	<b>A</b>	10(25.6%)	6(18.2%)	15(21.4%)	12(9.4%)	43(16.0%)
	<b>D</b>	20(51.3%)	19(57.6%)	31(44.3%)	66(52.0%)	136(50.6%)
	<b>SD</b>	2(5.1%)	4(12.1%)	13(18.6%)	27(21.3%)	47(17.5%)
	<b>Total</b>	<b>39(100%)</b>	<b>33(100%)</b>	<b>70(100%)</b>	<b>127(100%)</b>	<b>269(100%)</b>

Pearson Chi-square tests ( $X^2=13.325$ ;  $df 9$ ;  $p\text{-value}=.130$ )

Regarding the awareness of the IR concept, the study results presented in Table 2 reveal that the majority (86.9%) of the respondents agreed that they were aware of the IR concept whereas the least (13.1%) disagreed. Implicitly, the IR concept was well-known to most academic staff. Moreover, cross-tabulation between universities and awareness of IRs concept among academic staff shows that, most of the respondents from all the universities under review agreed that they were aware of the IR concept with some variation in their agreement: MUHAS (53.5%), SAUT (64.9%), SUA (80.0%) and UDSM (54.5%). Similarly, the Pearson Chi-square test ( $\chi^2 = 24.864$ ,

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df = 9, p-value = .003) suggests that, since p-value < 0.05, there is a significant difference in the levels of awareness on the IR concept among the respondents.

To determine the awareness of the IR content, the respondents who are aware of the availability of IRs in their universities rated their awareness on the content deposited in their university IRs. The findings reveal that the majority (76.6%) of the respondents agreed that they were aware of the content deposited in their university IRs whereas 23.4 percent were not. A cross-tabulation of universities and awareness of the content deposited in IRs in these institutions revealed that, most of the respondents in the universities surveyed agreed that they were aware of the content deposited in their respective universities' IRs though with a slight variation as follows: MUHAS (81.6%), SAUT (78.1%), SUA (68.1%) and UDSM (79.6%). Evidently, the Pearson Chi-square test ( $X^2=15.032$ ; df=9; p-value=.090) suggests, since p-value > 0.05, there is no significant difference on awareness of the content deposited in their university IRs among the respondents of the universities under review.

### *Awareness of the benefits of IRs usage in universities*

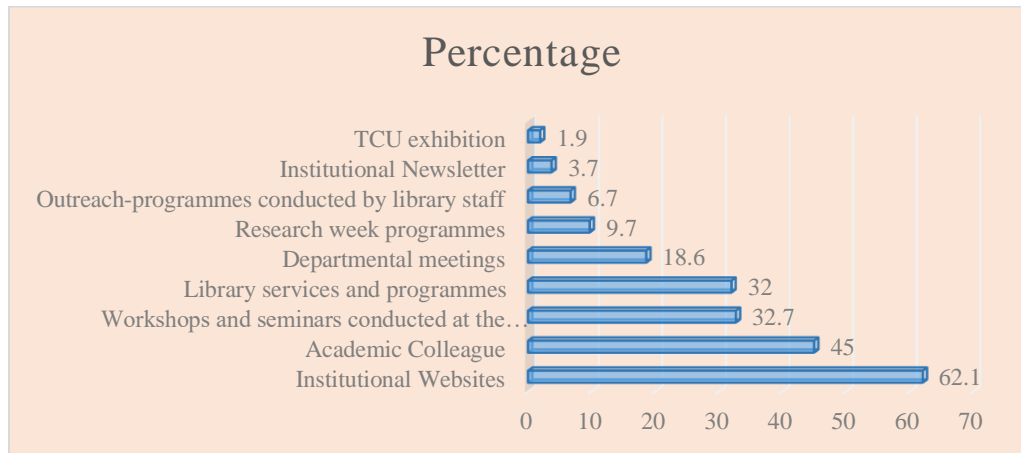
Furthermore, the study ascertained the awareness on the benefits of IRs usage in universities among academicians in sample universities. The general findings indicate that most (64.7%) of respondents who participated in the present study agreed that IR usage in their universities offered some benefits whereas a moderate percentage (35) disagreed. Further investigation revealed that, most of the respondents from the sample universities agreed that IRs usage in their universities had some benefits. For instance, respondents from MUHAS (63.1%), SAUT (62.5%), SUA (64.9%) and UDSM (63.0%) agreed that IRs usage in their universities presented some benefits. Impliedly, most of the academic staff in the universities under review were aware that IRs had some tangible benefits in their universities though their awareness on that aspect had a significant difference. This has also suggested by Pearson Chi-square test ( $x^2=14.346$ ; df 9 and p-value=.0111), which revealed a p-value of < 0.05.

Moreover, the study investigated the awareness of self-archiving IR practices among academic staff in sample universities. The findings indicate that majority (66.2%) of the respondents were non-affirmative that they were aware of self-archiving practices of their scholarly works in their universities' IRs whereas (33.8%) were affirmative. Further investigation revealed that most of the respondents in universities under study disagreed that they were aware of self-archiving practices of their scholarly works in their university IRs. For instance, at MUHAS (56.6%), SAUT (69.7.3%), SUA (60%) and at UDSM (71.7%) respondents disagreed that they were aware of self-archiving practices of their scholarly works in their respective universities' IRs. In this regard, most academic staff in all the study universities are not aware of self-archiving practices of their scholarly works in their university IRs. In the same vein, the statistical measure of association ( $X^2=13.801$ ; df 9; p-value=.130) revealed that there was no significant difference in their levels of awareness on this aspect.

All-in-all, the findings indicate that most of the respondents were aware of the IR concept, its availability in their universities, the content deposited found that most of the academic staff were not aware of the strategies their institutions used to collect the IR content for their IRs as well as self-archiving practices of their scholarly works in these repositories.

### *Sources of awareness about IRs in sample universities*

The study sought to identify the sources of the academics' awareness of the existence of institutional IRs. Respondents who confirmed that were aware of the IRs in their universities were requested to identify the source of such awareness to establish the strategies the universities mostly used to market their IRs to community members. The findings are as presented in Figure 4:



**Figure 4: Source of information on IRs in sample universities**

The findings indicate that the majority (62.1%) of the academics received information on IRs via Institutional Websites whereas a significant minority of academic staff (45%) did so from colleagues. These are followed by 32.7 percent of the academic staff who get informed about IRs through workshops and seminars conducted at the university and 32 percent who did so through library services and programmes. Other sources of awareness which are not frequently used to inform academic staff about IRs in universities include departmental meetings (18.6%), research week programmes (9.7%), outreach-programmes conducted by library staff (6.7%), institutional newsletter (3.7%), and TCU exhibitions (1.9%). In other words, the major sources of awareness through which academic staff were informed about IRs in their universities were institutional websites (62.1%) and colleagues (45%). Sources such as outreach-programmes, departmental meetings, research week programmes and TCU exhibition week are not frequently used in all the universities under review to promote IRs to clients. On the contrary, one of IRs administrator from one university narrated:

*We use the research week programme conducted every year to promote IRs but the turn up of academic staff to the event is not satisfactory even though a reminder is sent through dean Faculty/Schools and heads of departments to encourage members to attend the event and submit their publications.*

The IR administrator's narration it appears that, academic staff are not effectively attending the research week programme and other training sessions conducted in universities. This consequently deprived them of opportunities of getting adequate awareness, knowledge and skills provided during the programme about IRs.

Another source of information, which was not mentioned by respondents but was cited during interviews by IRs administrator at MUHAS, was the use of brochures with information on IRs, which are displayed on various notice-boards in the university premises.

## Discussion

The study sought to investigate academic staff's awareness on institutional repositories in their institutions. While one of specific objective was to examine the level of awareness on various aspects of IRs, another objective was to ascertain the sources of awareness of IRs among academic staff in the studied universities. On awareness of various aspects of IRs, the study revealed mixed findings. For some aspects, academic staff were more aware of IRs, others were not. The findings indicate a significant percentage ( $> 60$ ) of academic staff who were aware of the IR concept, its availability, content and benefits. Similarly, Mnzava and Chirwa (2018) observed that most (68.9%) of the respondents in the College of Veterinary Medicine and Biomedical Science (CVMBS) at SUA were aware of the availability of SUARIs. Yet, it appears that awareness is not a problem not only in the universities surveyed in Tanzania but also in other similar institutions. Indeed, the same phenomenon was observed in Nigeria and Ghana. A study conducted by Anenene et al. (2017) in Nigeria suggests that most (86%) of academic staff in South-West Nigerian universities were aware of the existence and value of IRs in their institutions. These findings match with what Ofosu-Ampong (2016) revealed to the effect that most of academic staff at the University of Ghana (UG) were aware of the existence of IRs and their services. In contrast, the studies (e.g. Ratanya, 2017; Chilimo, 2016) revealed that most of academic staff had low awareness on the availability of IRs in Kenyan universities.

Alongside that, the study findings unveil a difference on the awareness across universities under study. On this aspect, statistical measure of association revealed a significant difference in the levels of awareness about the availability of IRs among academic staff of the sample universities since  $p$ -value  $< .05$ . Generally, the findings expose that large proportional of responding academic staff were aware of IRs. This does not tally with the findings by Bamigbola (2014) who revealed a difference across disciplines in the Faculty of Agriculture at Federal University of Technology, Akure (FUTA). Unexpectedly, the findings of the current study indicate that a moderate percentage (38.8) and 39 percentage of the academic staff were not conversant with strategies used to collect IRs contents and self-archiving practices, respectively, in their universities. In other words, awareness of the concept, availability, content and benefits does not tally with being conversant with strategies used to collect IRs content. Yet, training to enhance awareness, knowledge and skills on IR usage in universities are rarely conducted. The attendance of academic staff in training sessions remained largely unsatisfactory as reported by some IR administrators during interviews. In support of these findings, a study by Singeh, Abrizah and Karim (2013) revealed that most of academic staff in five Malaysian research-intensive universities had inadequate knowledge and experience about IRs and were ignorant with opportunities associated with self-archiving practices. On similar grounds, other extant studies (e.g. Ratanya, 2017; Chilimo, 2016) associated limited self-archiving practices with low awareness on the availability of IR in their institutions. In this regard, awareness is essential as it ensures that academic staff get thorough understanding of IRs and how it functions.

### *Sources of awareness among academic staff*

Academic staff identified the sources of awareness on IRs in their universities. The findings indicate that the major sources of such awareness in all the sample universities were institutional websites and academic colleagues. The study concurs with Shukla and Khan (2014) who found that the main sources of information on IRs for respondents at Integral University in India were



'friends and colleagues'. Similarly, Dutta and Paul (2014) found that the majority (80%) of the respondents at the University of Calcutta also in India were informed about IRs via the internet and not from IRs administrators or library staff as one would expect. This finding is in line with the current findings. Furthermore, the current study's findings partly support Ogbomo and Muokebe (2015) who established that most lecturers in federal universities in the South-South zone of Nigeria came to know about IRs through 'academic staff/colleagues, internet browsing and publishers'. Similarly, Halder and Chandra (2012) reported that IRs users at Jadavpur University in India were informed about their IRs through colleagues/ friends, teaching staff and through library website. In contrast, the present study's findings do not match with those of Aghwotu and Ebiere (2016) who found that conferences, seminars and workshops were the main strategy for creating awareness and imparting knowledge on IRs to the university management and other stakeholders at Niger Delta University, Bayelsa State, Nigeria. Similarly, Ofosu-Ampong (2016) found that at the University of Ghana (UG), the respondents had gotten informed about IRs and its services through a workshop that had been conducted for three days at the university under the theme "providing practical guidance for effective digital collection programme". In addition, Ezema and Okafor (2015) revealed that, apart from the institutional website, the major advocacy strategies for promoting IRs in six government-funded institutions in South-East Nigeria were face-to-face interaction with target groups, seminars and workshops, banners and posters and institutional media outlets.

Apparently, the use of institutional websites and colleagues serves as main sources of awareness about IRs might not satiate the need as they do not provide detailed information to clients on IRs. In consequence, academic staff lacked important knowledge, skills and adequate awareness on IRs. Moreover, the study findings signal that yearly events such as the research week, and TCU exhibitions were not used effectively by IRs administrators to promote IRs to their clients. Worse still, in some universities academic staff were generally, unsatisfied with these events. During interview IRs system administrators from sample universities associated this dissatisfaction with lack of adequate awareness, knowledge and skills on IRs usage, which have far-reaching implications for the use of IRs among academic staff in universities.

### **Conclusion and recommendations**

The adoption and use of IRs in universities is essential in the collection, preservation, dissemination, sharing and application of scholarly works produced by the community of such institutions. Besides, IRs improves the visibility and prestige of authors and the university through research work done at the university. Academic staff are main contributors and users of IRs in universities. Nevertheless, they have not fully enjoyed the benefits emanating from the use of IRs in their universities as they lacked adequate awareness in various IRs related aspects. The study findings illuminated on the status regarding the awareness of IRs among academic staff in the universities under review. Stakeholders can use these findings to improve awareness creation in universities. The study, thus, proffers the following recommendations: First, implementation of diverse marketing strategies in these universities would improve awareness, knowledge and skills on various aspects related to IRs instead of using limited sources of awareness. Second, training, regular workshops and seminars should be conducted to improve awareness, skills and knowledge among academic staff on important issues regarding the IR usage in their respective universities. Third, academic staff should be encouraged to attend IR-related training, workshops and seminars conducted in their universities to gain new insights into IRs. Also, annual programmes in

universities such as research weeks and TCU exhibition should serve as platforms for promoting IRs to their clients.

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