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## Assessing Determinants of Perceived Ease of Use of Institutional Repositories by Lecturers in Nigerian Universities

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### ABSTRACT

Institutional repositories (IRs) present platform to disseminate research findings to complement the traditional scholarly communication model. The use of IRs is beneficial to authors, host institutions, libraries and society at large. Despite the numerous benefits of IRs, there is low deposit of scholarly works by lecturers and the investment on IRs seems to be a waste. This study examined determinants of perceived ease of use (PEOU) of IRs by lecturers in Nigerian universities. A survey of lecturers received 857 respondents. Awareness, anchor and adjustment factors were found to be determinants of PEOU of Institutional repositories by lecturers in Nigerian Universities.

### KEYWORDS

Adjustment factors; anchor factors; awareness; institutional repositories; lecturers; Nigerian universities; perceived ease of use

### Introduction

Production of scholarly works through rigorous research activities is the core business of the university and lecturers are the main producers. These scholarly works were disseminated mainly through journals, conference proceedings, technical reports, books, theses and dissertations until the 20th Century when scholarly communication had crisis (serial crisis). The crises were characterized by ever increasing journal prices, consistent reduction in library budget because of economic recessions, to the point that even the wealthiest institutions could not access the required information for their research. Consequently, the traditional scholarly communication model became unsatisfactory and scientific community came up with quite a number of initiatives seeking to change the scholarly communication process to free “scientific literature from the ‘chains’ of lucrative commercial publishers” (Pelizzari, 2003; Hughes, 2004). The serial crisis and emergence of the Internet brought about digital platforms for disseminating scholarly works. Institutional Repository (IR) being one of such platforms was initiated to provide open access to institutions’ scholarly works (Suber,

2012). Institutional Repository, therefore is a way by which educational institutions especially universities capture, archive, manage and disseminate the intellectual output of their faculty and students (Bamigbola, 2014). It is the green road to achieve Open Access Initiative (OAI) of the 21st Century (Swan & Brown, 2005).

Institutional repository has four features: institutionally defined, scholarly content, cumulative and perpetual and open inter-operability. It is institutionally defined means that IR captures only the intellectual property of its host, such as scholarly work, administrative, teaching and research materials both published and unpublished by an institution. Secondly, scholarly content contains scholarly output of an institution; however, this varies from one institution to another and depends on the policy of the institution. Thirdly, it is cumulative and perpetual, in the sense that it has a long term obligation to preserve its content. Fourthly, it is open inter-operability means it makes its content open and inter-operable with multiple systems with different hardware and software platforms, data structures, and interfaces worldwide (Crow, 2002; Johnson, 2002) From these four main features of

IR, it is obvious that IR is a suitable platform that has the capacity of disseminating scholarly works to solve the problem of accessibility, thereby contributing to the process of scholarly communication.

Institutional repository offers numerous benefits to authors such as showcasing of intellectual products, wide accessibility of authors scholarly works, large-scale collaboration among authors, collocation of research output and increase of the rate of citation of authors. At the institutional level, the benefits of use of IR were considered as provision of a centralized venue to store and curate on long-term all types of institutional output, and a supporting tool for learning, teaching and research. IR is also seen as a marketing tool to attract high quality staff, students and funding and a means to break down publishers' costs and permissions challenges. Furthermore, IR is a way of maximizing availability, accessibility, discoverability and functionality of scholarly research outputs at no cost to the user. Institutional repository makes libraries as major digital publishers in scholarly world, offering librarians opportunities to collaborate with lecturers and improving the image of libraries. To the society, IR accelerates and expands research cycle which leads to effective advancement of scientists due to easy access to needed materials (Canessa & Zennaro, 2008; Cullen & Chawner, 2010; Jain, 2011). In summary, the use of IR offers digital content submission, organization, access, distribution and preservation to intellectual work (Chang, 2003).

Globally, it has been confirmed that generating content for IR posed a serious problem to its sustainability. For instance, in the United States, Yang and Li's (2015) study revealed low contribution from lecturers into institutional repository of Texas A and M university, and in India, Dutta and Paul's (2014) study found unwillingness of faculty members to submit their scholarly works into institutional repository of University of Calcutta. Chilimo's (2016) study found low use of institutional repositories by academic researchers in five public universities in Kenya. Similarly, Omeluzor's (2014) study submitted that there was low deposit of scholarly works in institutional repository by faculty members from two

universities (one private and one public) in Nigeria.

To investigate reasons for low deposit of scholarly works by lecturers, past studies (Bamigbola, 2014; Omeluzor, 2014) have examined attitude, discipline and it seems that no study investigated perceived ease of use, thus, this study examined determinants of perceived ease of use of institutional repositories by lecturers in Nigerian universities. It is believed that to any new technological innovation, perceived ease of use of such innovation by an individual would determine its usage. According to Technology Acceptance Model (TAM), Davis posited that two beliefs: perceived usefulness and perceived ease of use determine use behavior (Davis, 1989).

Perceived ease of use (PEOU) is a construct that is attached to an individual's assessment of the effort exerted in the process of using any system and it is also a predictive of use (Venkatesh, 2000). Thus, perceived ease of use is a vital factor in the usage of any system. Perceived ease of use (PEOU) has been suggested to be a stronger predictor of intention to use and actual usage of any technological innovation especially in developing countries (Miller & Khera, 2010). Apparently, perceived ease of use is based on external variables; that is, user and system characteristics namely anchor and adjustment factors (Venkatesh & Bala, 2008). Anchor and adjustment factors have been suggested to be important general decision making heuristics by behavioral decision theory. Meanwhile, awareness is another construct that is crucial to perceived ease of use of any technological based system because without awareness of such system, perceived ease of use of such system is impossible (Velmurugan & Velmurugan, 2014).

This study hypothetically examined the relationship between the independent variables (awareness, anchor and adjustment factors) and the dependent variable (perceived ease of use) of institutional repositories by lecturers in Nigerian universities. Five hypotheses were tested at 0.05 level of significance being a study in behavioral science. It is important to note that in Nigeria, lecturers are university staff that teach, carry out research and involve in community development

activities. They are also referred to as faculty members or researchers.

## Literature review

### *Awareness and perceived ease of use of IRs by lecturers*

There seems to be very few studies on awareness and perceived ease of use in general and no study on awareness and perceived ease of use of institutional repository was found. It is what one is aware of that one can perceive how easy or difficult its use would be. Hence, awareness is an antecedent of perceived ease of use. A person must be aware of the existence and concept of an innovation before forming perception of its ease of use. Thus, awareness is a prerequisite of perception of ease of use of any technological innovation. Islam and Gronlund (2012) explained awareness to be a person's degree of attentiveness and ability to depict beliefs in a certain time and space as an object. Perceived ease of use (PEOU) is a key construct in user acceptance and usage of technology especially in Technology Acceptance Model (TAM). Davis (1989) defined it as the degree to which an individual believes that using a technology will be free of effort.

Safeena, Hundewale, and Kamani (2011) submitted that the sum of information on an innovation or product is a major factor impacting on perception about the said innovation or product. According to Velmurugan and Velmurugan (2014), awareness and perceived ease of use are two vital determinants of information technology adoption in 3 G mobile phones. They reported that increase in awareness of 3 G mobile phone features will influence consumers' perception of ease of use of 3 G mobile phone in India.

### *Anchor factors and perceived ease of use of IRs by lecturers*

Perceived ease of use is based on two major external variables or determinants namely anchor and adjustment factors. According to Venkatesh (2000), at the early stage of a new system, users anchor their perceived ease of use to general beliefs about computers and its usage. Anchor factors comprise computer self-efficacy, perceived

external control, computer anxiety and computer playfulness. These anchor factors denote individual differences in general beliefs associated with use of computers.

Self-efficacy is a construct that plays a vital role in the cognitive regulation of motivation. According to Bandura (2001), people regulate the level of effort they employ in relation to the result they expect from their actions. Self-efficacy is a positive influence on perceived ease of use. Computer self-efficacy is, therefore, the self-perception that one is capable and has the required skills to perform computer related tasks. It is believed that an individual with high self-efficacy with computers usage, will be willing to accept and use an information system. In addition, when an individual with high computer self-efficacy encounters difficulties in the course of using computer based information system, such individual is likely to accept the challenge and adjust to the system.

Some studies have portrayed self-efficacy as significantly related to perceived ease of use of web-based technologies both in developed and developing countries contexts. Dulle, Minishi-Majanja, and Cloete (2010) conducted a study on factors that influence the adoption of open access for scholarly communication in Tanzanian public universities. The finding revealed that self-efficacy was acknowledged as a key determinant for effective utilization of information in the digital environment because low internet self-efficacy was responsible for why most of the researchers and policy makers in six Tanzanian public universities accessed but did not disseminate their scholarly content in open access outlets. However, the study of Nasri and Charfeddine (2012) on factors that affect the adoption of Facebook by Tunisian students did not support that self-efficacy would have positive direct impact on perceived ease of use.

Perception of external control is the extent that an individual recognizes that there are facilitating conditions such as technological and human support to use the target system. Venkatesh (2000) submitted that external control in work place context includes the availability of support staff to help users to overcome early stage system specific barriers. External control is

also known as facilitating conditions in Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, 2003). Most of the literature reviewed are studies that were based on UTAUT because there seems to be no study on IR that based on TAM 3, hence, facilitating conditions would be interchangeably used with perceived external control. Available literature indicate that perceived external control is a critical factor to perceived ease of use. In addition, items under perceived external control are context specific. It is evident that in developing countries where most of the enabling infrastructure to use of internet related facilities are not adequately available, items such as constant power supply and adequate internet bandwidth are considered as part of items on external control to use of web-based technologies in general (Dulle et al., 2010; Miller & Khera, 2010).

In developed countries, power supply and internet bandwidth might not be named among perceived external control. According to Miller and Khera (2010), in their study on features that inform user acceptance of a digital library system in two developing countries: Kenya and Peru, it was revealed that infrastructure and librarian assistance (facilitating conditions) were significant predictors of “The Essential Electronic Agricultural Library (TEEAL)’s perceived ease of use by TEEAL users in Kenya. However, these factors were not significant predictors of TEEAL’s perceived ease of use by TEEAL users in Peru. The users in both locations of the study were students, researchers and professors. It implies that what constitute facilitating conditions could be location specifics.

In another study, perception of external control (facilitating conditions) such as IR administrator, valid IR links and hyperlinks, secured IR and necessary knowledge to use IRs were seen as issues that determine perceived ease of use of institutional repositories in Malaysia as revealed by Singeh, Abrizah, and Karim (2013). Precisely, they found a positive significant relationship between perception of external control (facilitating conditions) and perceived ease of use (effort expectancy) of 108 authors from five universities in Malaysia. Also, Lwoga and Questier (2015) examined the adoption and use of open access

scholarly communication by 415 faculty in Tanzanian Health Sciences Universities and found that perceived external control (facilitating conditions) such as internet bandwidth, power supply and technical support were positively associated to perceived ease of use (effort expectancy).

Computer anxiety is another construct of anchor factors that determine users’ perceived ease of use of information technology. It is defined as an individual’s apprehension or even fear when he or she is faced with the possibility of using computers (Venkatesh, 2000). Computer anxiety is a negative emotional influence on perceived ease of use of computer. This apparently means the higher the computer anxiety, the less the perceived ease of use of the specific system. Saade and Kira (2009) discovered that computer anxiety influences how users perceived ease of use of an information system by students of a major university in Canada. They found that students with high computer anxiety had decreased perceived ease of use. Therefore, computer anxiety has a negative relationship with perceived ease of use.

Whenever an individual feels uneasy with use of computer, it is obvious that such individual will have high perception of complexity of computer related technology, which will definitely lead to low use of such technology. Alenezi, Abdul Karim and Veloo (2010) investigated factors that determine students’ adoption and use of e-learning in five government universities in Saudi Arabian and revealed that computer anxiety negatively and significantly influenced students’ intention to use e-learning.

Computer playfulness is an anchor factor that might determine perceived ease of use. In the words of Venkatesh and Bala (2008) “computer playfulness represents the intrinsic motivation associated with using any new system”(p. 278). Intrinsic motivation is the perception of pleasure and satisfaction while performing an act (Venkatesh, 2000). In this context, computer playfulness is seen as a motivational characteristic to use computer; that is, feeling good or having fun in performing computer related activities. According to Lin et al. (2005), an individual with higher degree of playfulness or

pleasure in usage of computer related activities will have positive perception about its ease of use which will translate to continual usage. In their study on the value of playfulness in expectation-confirmation theory (ECT) when studying continued use of a web site, they found that computer playfulness is a determinant of perceived ease of use of a portal by 254 undergraduate students of three universities in Taiwan. They, therefore, submitted that computer playfulness is a vital consideration of World Wide Web usage. Apparently, there are no studies on IR that had considered computer playfulness as a construct. However, based on past related studies, lecturers that derive pleasure in using IR would be intrinsically motivated and would perceive using IR as an easy task.

#### ***Adjustment factors and perceived ease of use of IRs by lecturers***

According to Venkatesh (2000), an individual will adjust his or her judgement on an information technology after a period of time of experiencing such technology. Adjustment factors are beliefs that are shaped after a direct experience of a specific system. In other words, an individual's perceived ease of use of a particular system will reflect the specific and concrete attributes of such system after direct experience with such system. Adjustment factors comprise perceived enjoyment and objective usability. Perceived enjoyment signifies an intrinsic motivation for use of computer.

Davis, Bagozzi and Warshaw (1992) defined perceived enjoyment as the extent to which the activity of using a specific system is perceived to be enjoyable in its own right, aside from any performance consequences resulting from system use. The meaning of this is that how an individual perceives that the process or the act of using a computer related activity is enjoyable to him or her is referred to as perceived enjoyment. It is not the result of using the system that is considered as enjoyable. This is why it is called an intrinsic motivation and not extrinsic. Explaining the relationship among the factors, Venkatesh (2000) stressed that when there is increase in direct experience with a specific system, the function

of general computer playfulness will reduce while system-specific perceived enjoyment is expected to increase. Therefore, perceived enjoyment is system specific rather than general computer perception.

In this context, the way individual lecturers perceives enjoyment of using institutional repository will influence his or her perceived ease of use of IR and it will lead to use. Saade, Nebebe, and Tan (2007) conducted a comparative study on factors that influence students to use web based learning information systems in Canada and China. Their study reveals that perceived enjoyment had impact on students' perceived ease of use of online learning environment. Similarly, Ongena, Van de Wijngaert, and Huizer (2013) examined the antecedents of user acceptance of an online audio-visual heritage archive using Technology Acceptance Model and found that perceived enjoyment was a better predictor of users' perceived ease of use of visual heritage archive. On the other hand, perceived ease of use was seen as a factor influencing perceived enjoyment.

Objective usability is the second adjustment factor that Venkatesh (2000) proposed to be a determinant of perceived ease of use of any technological innovation. Objective usability is defined as "a comparison of systems based on the actual level of effort required to complete specific tasks" (Venkatesh, 2000). Venkatesh (2000) evaluated measuring items on both anchor and adjustment factors that determine perceived ease of use with three studies but only "objective usability" had no construct of measurement. Rather, he used difference in ration of time spent in completing a task as a subject and as an expert. However, usability could be evaluated through observation of users as they use technology, objective use logs or computer-recorded objective use, task performance measures and perceived usability or self-reported (Raaij & Schepers, 2008; Zhang, Maron, & Charles, 2013). Self-reported intensity of use could also be measured in technology acceptance and use. Raaij and Schepers (2008) measured intensity of use of virtual learning environment by 45 Chinese managers for an executive MBA program in China.

Horden and Rada (2011)'s study on 99 K-12 teachers' use of educational technology in two public schools in Virginia, the United States of America found that perceived ease of use with subjective usability perceptions or self-reported use had a stronger connection and explained more of the difference in usage behavior. As regards usability of repositories, it could be either computer recorded objective usability method or perceived usability; that is, self-reported use. Zhang et al. (2013) suggested that whether objective usability method or perceived usability method, metrics should include usability of the submission of scholarly works into repositories and information retrieval from repositories. In essence, Zhang et al. (2013) was advocating for measurement items that should cover use of IR as archive and also as information source. Apparently, there seems to be no study that has used adjustment factors variable to examine use of IR and that made it difficult to find context specific studies rather general literature on adjustment factors and perceived ease of use have been reviewed.

## Research method

The study employed a descriptive survey of the correlational type and it used a questionnaire to collect data from lecturers in five universities in Nigeria. The items of the questionnaire were adapted from Technology Acceptance Model 3. Technology Acceptance Model (TAM) was originally proposed by Davis (1989) as an information systems theory. TAM is used to predict adoption and use of new information technology. The model proposes that acceptance and use of a new technology by users are influenced by some factors, especially two beliefs or perceptions; that is, perceived usefulness and perceived ease of use. Venkatesh and Bala (2008) extended TAM to include determinants of perceived ease of use and perceived usefulness. In particular, anchor factors (computer self-efficacy, perceptions of external control, computer anxiety and computer playfulness) and adjustment factors (perceived enjoyment and objective usability) were added as determinants of perceived ease of use. Five universities, with functional institutional repositories

that have operated for at least three years as the time of data collection, were purposively selected. Five faculties that were common to the five universities were purposively sampled and 1151 lecturers (50% of the population) were randomly sampled. To select the sample, the list of all the lecturers was collected from each of the five faculties and 50% of the lecturers across the rank were selected from all of the departments in the five faculties. Statistical Package for Social Sciences (SPSS) was used for computing and analyzing the data generated from the study. Data sets used for the analysis were found to be normally distributed; hence, hypotheses 1 to 3 were tested using Pearson Product Moment Correlation for relationships between each of the independent variables (awareness, anchor and adjustment factors) and dependent variable (perceived ease of use) at the 0.05 level of significance being a behavioral science. In addition, multiple regression analysis was carried out in hypotheses 4 and 5 to predict relative as well as joint contributions among independent and dependent variables.

## Hypotheses

H<sub>01</sub> There is no significant relationship between awareness and perceived ease of use of institutional repositories by lecturers in Nigerian universities.

H<sub>02</sub> There is no significant relationship between anchor factors and perceived ease of use of institutional repositories by lecturers in Nigerian universities.

H<sub>03</sub> There is no significant relationship between Adjustment factors and perceived ease of use of institutional repository by lecturers in Nigerian universities.

H<sub>04</sub> There is no composite contribution of anchor and adjustment factors on perceived ease of use of institutional repositories by lecturers in Nigerian universities.

H<sub>05</sub> There is no relative contributions of awareness, anchor and adjustment factors on Perceived ease of use of institutional repositories by lecturers in Nigerian universities.

## Conceptual model

Figure 1

### Results

The results of this research are presented in Tables 1–3 and thereafter the discussion follows. Table 1 reveals the result of hypotheses 1 to 3.

Hypothesis 1: There is no significant relationship between awareness and perceived ease of use of institutional repositories by lecturers in universities in Nigeria.

The data in Table 1 reveals that the correlation coefficient between awareness about IR and perceived ease of use of IR was significant ( $r = .414^*$ ,

$N = 857, p < .05$ ). This means that there was a positive and significant relationship between awareness and perceived ease of use of IR by lecturers in universities in Nigeria. Therefore, the null hypothesis 1 is rejected.

Hypothesis 2: There is no significant relationship between anchor factors and perceived ease of use of institutional repositories by lecturers in universities in Nigeria.

Table 1 indicates that there was a positive and significant relationship between anchor factors and perceived ease of use of institutional repositories ( $r = .497^*$ ,  $N = 857, p < .05$ ). This result implies that there was positive significant relationship between anchor factors and perceived ease of use of institutional repositories by

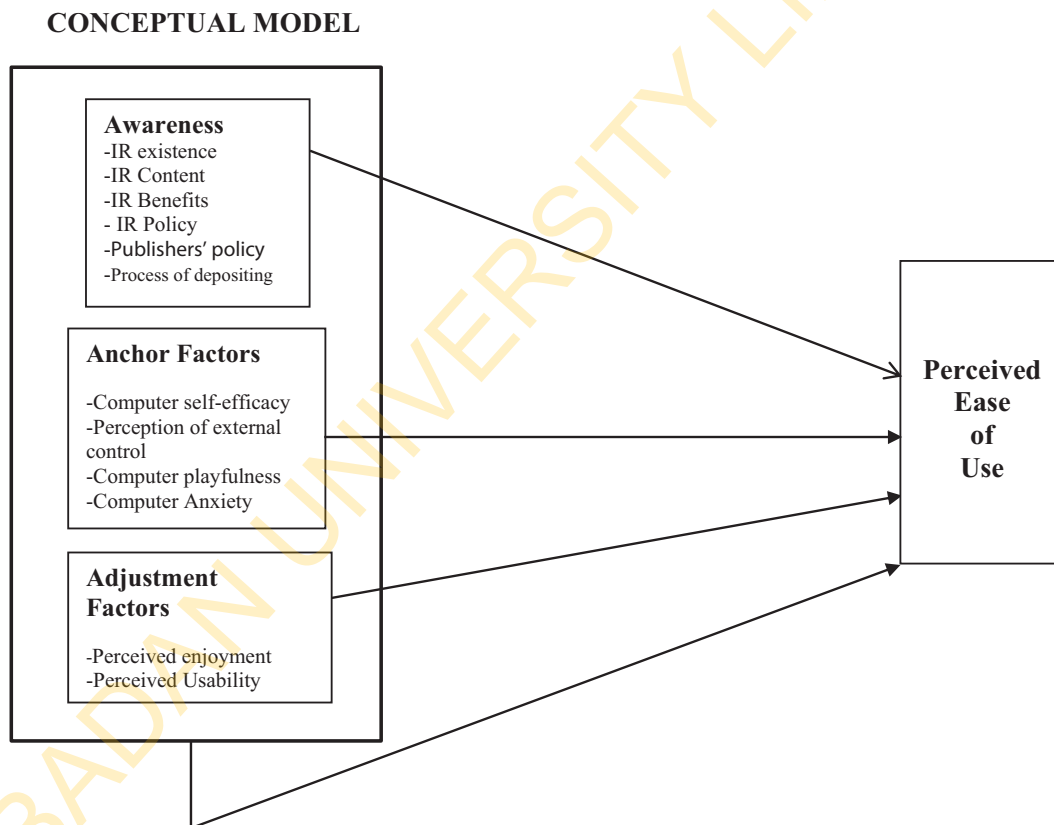


Figure 1. Determinants of perceived ease of use of institutional repositories.

Table 1. Correlation matrix showing the relationship among the independent variables and dependent variable.

Variables	Perceived ease of use	Awareness	Anchor	Adjustment
Perceived ease of use	1			
Awareness	0.414* 0.000	1		
Anchor	0.497* 0.000	0.417* 0.000	1	
Adjustment	0.730* 0.000	0.435* 0.000	0.580* 0.000	1
Mean	16.76	16.43	66.70	30.89
STDDEV	5.282	3.7745	11.270	8.166

\*Correlation is significant at the 0.05 level (2-tailed).



**Table 2.** Composite contributions of awareness, anchor and adjustment factors to perceived ease of use of IRs by lecturers.

<i>R</i>	<i>R</i> square	Adjusted <i>R</i> square	Std. error of the estimate	<i>R</i>	<i>R</i> square
.741	.548	.547	3.55528	.741	.548
Sources of variance	Sum of squares	Df	Mean squares	<i>F</i>	Significant
Regression	12882.087	3	4294.029	339.717	0.000*
Residual	10604.988	839	12.640		
Total	23487.075	842			

NB: 0.000 = significant P.

**Table 3.** Relative contribution of independent variables to perceived ease of use of institutional repositories by lecturers.

Model	Under standardized Coefficients		Standardized Coefficient		<i>T</i>	Sig.
	Beta ( $\beta$ )	Std. error	Beta ( $\beta$ )	Std. error		
(Constant)	-.977	.781			-1.251	.211
Awareness	.144	.037	.102		3.841	.000*
Anchor	.040	.014	.085		2.916	.004*
Adjustment	.411	.019	.636		21.555	.000*

lecturers in universities in Nigeria. Therefore, the null hypothesis 2 is rejected.

Hypothesis 3: There is no significant relationship between adjustment factors and perceived ease of use of institutional repository by lecturers in universities in Nigeria.

The result as presented in Table 1 reveals that the correlation coefficient between perceived ease of use of institutional repositories and adjustment factors was significant ( $r = .730^*$ ,  $N = 857$ ,  $p < .05$ ). The implication is that there was a positive and significant relationship between adjustment factors and perceived ease of use of institutional repositories by lecturers. Therefore, the null hypothesis 3 is rejected.

Hypothesis 4: There is no composite contribution of anchor and adjustment factors on perceived ease of use of institutional repositories by lecturers in universities in Nigeria. A multiple regression was carried out to determine the composite contributions of awareness, anchor and adjustment factors to perceived ease of use and the result stated in Table 2.

Table 2 shows that the composite contribution of awareness, anchor and adjustment factors to the prediction of perceived ease of use of institutional repositories by lecturers was significant ( $F(3,839) = 339.717$ ;  $p < .05$ ). This implies that awareness, anchor and adjustment factors jointly predicted perceived ease of use of institutional repositories by lecturers. It further revealed a multiple regression coefficient ( $R = 0.741$ ) and multiple regression adjusted ( $R^2 = 0.547$ ). The implication is that 54.7% of the variation in

lecturers' perceived ease of use of institutional repositories was accounted for by the joint effect of the independent factors when combined, the remaining is due to other factors and residuals.

Hypothesis 5: There is no relative contributions of awareness, anchor and adjustment factors on Perceived ease of use of institutional repositories by lecturers in universities in Nigeria. A multiple regression was carried out to showing the relative contribution of awareness, anchor and adjustment factors to perceived ease of use and the result stated in Table 3.

Table 3 reveals the relative contribution of awareness, anchor and adjustment factors to perceived ease of use of institutional repositories by lecturers in universities in Nigeria. The relative contributions of awareness ( $\beta = 0.102$ ;  $t = 3.841$ ,  $p < .05$ ), anchor factors ( $\beta = 0.085$ ;  $t = 2.916$ ,  $p < .05$ ) and adjustment factors ( $\beta = 0.636$ ;  $t = 21.555$ ,  $p < .05$ ) to perceived ease of use of institutional repositories by lecturers were significant. Therefore, the null hypothesis 5 is rejected. It also shows the relative contributions of the independent variables to the prediction of lecturers' perceived ease of use of institutional repositories at different levels and ranks as expressed by the  $t$ -values. The strength of the prediction is as shown: adjustment factors ( $t = 21.555$ ,  $p < .05$ ) > awareness ( $t = 3.841$ ,  $p < .05$ ) > anchor factors ( $t = 2.916$ ,  $p < .05$ ). Adjustment was the independent factor that strongly predicts lecturers' perceived ease of use of institutional repositories, followed by awareness, while anchor was the least predictor of perceived ease of use of institutional

repositories by lecturers in universities in Nigeria. The prediction equation is given by  $Y = -0.977 + 0.411X_1 + 0.144X_2 + 0.040X_3$ . Where  $Y =$  Perceived ease of use of institutional repositories,  $-0.977 =$  Constant,  $X_1 =$  Adjustment,  $X_2 =$  Awareness and  $X_3 =$  Anchor.

## Discussion

The study revealed that there was a positive significant relationship between awareness and perceived ease of use of institutional repository by lecturers in universities in Nigeria. The implication of this finding is that the level of awareness about institutional repository will influence or determine the perceived ease of use of it. The finding shows that increase in level of awareness about institutional repository mean increase in the degree of perceived ease of use of institutional repositories. On the other hand, if there is decrease in the level of awareness about institutional repositories, then there will be decrease in the degree of its perception of ease of use. The finding is consistent with the submission of Velmurugan and Velmurugan (2014) that averred that awareness and perceived ease of use are related and vital determinants of information technology adoption of 3G mobile phones by consumers in India. In essence, awareness about institutional repository is a determinant of perceived ease of use of institutional repository by lecturers in universities in Nigeria.

Secondly, the study showed that there was a positive significant relationship between anchor factors (computer self-efficacy, perception of external control, computer playfulness, computer anxiety) and perceived ease of use of institutional repositories by lecturers in universities in Nigeria. This implies that because there is a positive relationship between anchor factors and perceived ease of use, the increase in computer self-efficacy, positive perception of external control, increase in computer playfulness and decrease in computer anxiety of the lecturers in universities in Nigeria will increase their perception of ease of use of institutional repositories.

This is in line with the finding of Dulle et al. (2010) that confirmed positive relationship between self-efficacy and perceived ease of use in

a study on factors that influence adoption of open access scholarly communication in Tanzanian public universities. Similarly, Adetimirin (2015) in a study of online discussion forum by library and information science postgraduate students using Technology Acceptance Model 3 in Nigerian universities found that there was a positive significant relationship between postgraduate students' computer self-efficacy and use of online discussion forum. If the postgraduate students' computer self-efficacy increases, there will be increase in their perceived ease of use of online discussion forum. Contrary to the finding of this study, Nasri and Charfeddine (2012) submitted that computer self-efficacy had negative relationship with perceived ease of use of Facebook by Tunisian students. Even though there was relationship between computer self-efficacy and perceived ease of use of Facebook by Tunisian students, the relationship was negative, meaning that when there is increase in computer self-efficacy there will be decrease in perceived ease of use of Facebook.

Lwoga and Questier (2015) and Singeh et al. (2013) confirmed that perception of external control had positive significant relationship with perceived ease of use and open access scholarly communication and institutional repositories respectively. In particular, Singeh et al. (2013) found that perception of external control had positive significant relationship with perceived ease of use of institutional repositories by 108 authors from five universities in Malaysia. The implication was that increase in perception of external control of the 108 authors from five universities in Malaysia will increase their perceived ease of use of institutional repositories. Similarly, the study of Lwoga and Questier (2015) confirmed positive significant relationship between perception of external control and perceived ease of use of open access scholarly communication by 415 faculty in Tanzanian Health Sciences Universities.

Saade and Kira (2009) support this finding as they discovered that computer anxiety influences perceived ease of use of an information system by students of a major university in Canada. The finding of their study revealed a negative significant relationship between computer anxiety and

perceived ease of use. This implies that increase in computer anxiety will decrease perceived ease of use. This was confirmed by another study, Alenezi et al. (2010) who found that computer anxiety had negative significant relationship with PEOU of e-learning by students in Saudi Arabian universities. In conclusion, anchor factors are determinants of perceived ease of use in this study and this concurred with Adetimirin (2015) who submitted that optimum use of online discussion forum is determined by anchor factors.

In addition, the findings revealed that there was a positive significant relationship with adjustment factors (perceived enjoyment and perceived usability) and perceived ease of use of institutional repository by lecturers in universities in Nigeria. This infers that increase in perceived enjoyment and perceived usability will also increase perceived ease of use of institutional repositories by lecturers in universities in Nigeria. This finding is in agreement with those of Horden and Rada (2011) that revealed that subjective/perceived usability had strong relationship with perceived ease of use of 99 K-12 teachers' use of educational technology in two public schools in Virginia, US. On the other hand, Ongena et al. (2013) discovered in a Web-based survey that perceived ease of use influenced perceived enjoyment of 205 of the Dutch Internet population in Netherlands.

Finally, the finding showed that when awareness, anchor and adjustment factors were combined jointly predicted perceived ease of use of institutional repositories by lecturers. The inference of this finding is that there were relationships between awareness, anchor factors (computer self-efficacy, perception of external control, computer anxiety and computer playfulness), adjustment factors (perceived enjoyment and perceived usability), and perceived ease of use of institutional repository. Also, the finding revealed relative contributions of the independent variables to the prediction of lecturers' perceived ease of use of institutional repositories at different levels and ranks.

## Conclusion

This study investigated determinants of perceived ease of use of institutional repositories by

lecturers in Nigerian universities. Anchor and adjustment factors in TAM 3 and awareness were used to analyze the perceived ease of use of institutional repositories by lecturers in Nigerian Universities. Awareness, anchor and adjustment factors were found to be determinants of perceived ease of use of institutional repositories by lecturers in Nigerian Universities. For increased awareness and better perceived ease of use of institutional repositories by lecturers in Nigerian universities, it is crucial to consider among other factors: awareness of institutional repositories, anchor and adjustment factors of the lecturers in Nigerian universities.

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## Appendix: Questionnaire

### SECTION A: Demographic information

- Name of your University:.....
- Name of your Faculty/School:.....
- Name of your Department:.....
- Please indicate your age (years) 25 – 29 [ ] b. 30 – 34 [ ] c. 35 – 39 [ ] d. 40 – 44 [ ] e. 45 – 49 [ ] f. 50 – 54 [ ] g. 55 – 59 [ ] h. 60 – 64 [ ] i. 65–69 [ ] j. Above 69 [ ]
- Gender: Male [ ] Female [ ]
- Highest Educational qualification: (a) Master degree [ ] (b) Ph.D in view [ ] (c) PhD [ ] (d) Others (please specify) ... ..

- Rank: (a)Asst Lecturer/Equivalent [ ] (b) Lecturer II [ ] (c) Lecturer I [ ] (d) Senior Lecturer [ ] (e) Reader [ ] (f) Professor [ ] (g) Others: ... ..
- Work Experience as a lecturer in the university: (a) 1- 5 [ ] (b) 6 – 10 [ ] (c) 11- 15 [ ] (d) 16 – 20 [ ] (e) 21- 25 [ ] (f) 26 – above [ ]

### SECTION B: Awareness about institutional repositories (AIR)

- How did you first get to know about your university institutional repository? Through
  - the university bulletin/newsletter/website [ ]
  - an advertisement on a flyer or pamphlet [ ]
  - Seminar/lecture [ ] (d) a colleague/friend [ ]
  - Presentation by an IR staff member at a Faculty/ University meeting [ ]
  - Others (please specify)
- Please indicate what kind of materials an institutional repository should contain. (please tick as many as appropriate)
 

Drafts [ ] Lectures [ ] Dissertation [ ]

Peer-reviewed articles [ ] Full Text Journal articles [ ]

Unpublished staff material [ ] Educational materials [ ]

Pre-print articles [ ] Conference materials [ ]

Datasets [ ] Powerpoint presentations [ ]

Curriculum information [ ] Administrative documents [ ]

Others (please specify)
- Please indicate your level of awareness about IR using the statements below using the scale where Strongly agree = SA, Agree = A, Disagree = D, Strongly disagree = SD

Items: I am aware of:		SA	A	D	SD
AWA1	the existence of my university IR				
AWA2	the benefits of IR				
AWA3	the content of my university IR				
AWA4	my university IR policy				
AWA5	the publishers' policy on open access IR				
AWA6	the process of depositing my work into IR				

### 1. Section C: Anchor factors to use of Institutional Repositories (ANFUIR)

2. Please indicate your level of agreement with the statements below using the scale (Strongly Agree = SA, Agree = A, Disagree = D, Strongly Disagree = SD)

	Items	SA	A	D	SD
CSE1	I am able to use institutional repositories if there is no one around to show me how to use it				
CSE2	I feel comfortable using institutional repositories on my own				
CSE3	I can confidently download and save files from institutional repositories when needed				
CSE4	I can confidently deposit my scholarly works into our University Institutional repository				
CSE5	I can confidently retrieve scholarly works from our University Institutional repository				
CSE6	I could use IR if there was no one around to tell me what to do				
PEC1	I have control over using institutional repositories				
PEC2	I have the resources (e.g. Internet access) necessary to use the institutional repositories				
PEC3	Given the resources and opportunities it takes to use the institutional repositories, it would be easy for me to use the institutional repositories				
PEC4	I have the requisite knowledge to use the IR				
PEC5	The institutional repository is compatible with other systems I use				
PEC6	Given the support by the IR manager I can use IR				
CA1	I feel nervous about using institutional repositories				
CA2	It skeptical that my work could be plagiarized if deposited in institutional repository				
CA3	I hesitate to use institutional repositories for fear of making mistakes I cannot correct				
CA4	Institutional repositories worry me				
CA5	Using institutional repositories scare me				
CA6	Using institutional repositories make me uncomfortable				
CPLAY1	I am playful when using institutional repositories				
CPLAY2	My using institutional repositories is spontaneous				
CPLAY3	I am creative in using institutional repositories				
CPLAY4	I am original in using institutional repositories				
CPLAY5	I am imaginative when using institutional repositories				
CPLAY6	I am inventive when using institutional repositories				

### Section D Adjustment factors to use of Institutional Repository (ADFUIR)

1. Please indicate your level of agreement with the statements below using the scale (Strongly Agree = SA, Agree = A, Disagree = D, Strongly Disagree = SD)

	Items	SA	A	D	SD
PEJ1	I find using Institutional Repositories enjoyable				
PEJ2	The actual process of using institutional repositories is pleasant				
PEJ3	I have fun using institutional repositories				
PEJ4	Depositing my scholarly work into our university institutional repository is exciting				
PEJ5	Retrieving scholarly works from institutional repositories is pleasurable				
PEJ6	The whole idea of using institutional repository is delightful to me				
PU1	I use IR to search for scholarly works				
PU2	I retrieve scholarly works from Institutional repositories				
PU3	I deposit my pre-print scholarly works into my university IR				
PU4	I deposit my lecture note into my university IR				
PU5	I deposit the dataset of my scholarly works into my university IR				
PU6	I retrieve lecture notes from institutional repositories				

### 2. Section E Perceived Ease of Use

Please indicate your **Agreement or Disagreement** with the following statements by ticking the appropriate option where: Strongly Disagree = 1, Disagree = 2, Agree = 3, Strongly Agree = 4

	Perceived ease of use items	SA	A	D	SD
PEU1	Learning to use institutional repositories is easy for me				
PEU2	Interacting with institutional repositories is clear and understandable to me				
PEU3	Interacting with institutional repositories does not require a lot of my mental effort				
PEU4	I find it easy making institutional repository accomplish tasks I need to accomplish				
PEU5	It would be easy for me to become skillful at using institutional repositories				
PEU6	I find institutional repository easy to use				