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A MODIFICATION OF UTAUT MODEL TO DETERMINE ACADEMICS' ADOPTION AND USE OF OPEN ACCESS PUBLISHING

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Abstract

Open Access (OA)publishing system aims to provide free access and wide dissemination of information. Although universities in Nigeria have started to embrace OA initiatives recently, its adoptions and uses remain slow. Therefore, this paper explores factors of academics' adoption and use through a research survey approach by gathering empirical evidence based on the adapted Unified Theory of Acceptance and the Use of Technology (UTAUT). Survey Data collected from 337 respondents was examined using Statistical Package for Social Sciences (IBM-SPSS) version19.0. The results show that awareness, attitude, performance expectancy, effort expectancy, and Internet self-efficacy significantly influenced the adoption and use of OA publishing by academics in selected universities in Southwest, Nigeria. Moreover, as a result of this study a modified UTAUT model was proposed. Such a model contributes to the discussion and development of adoption model for OA publishing in Nigeria context. The significance of the study is in three-fold: theoretical, societal, and practical. The significance of the findings, recommendations and future research directions are discussed.

Keywords: Adoption and use, Open access publishing, Universities, UTAUT, Nigeria

Introduction

Open Access (OA) publishing has become an important strategic approach to scholarly publishing system in many countries around the world. Many of these countries have proceeded to embrace and use OA publishing. It reflects the intention for tertiary institutions especially universities to take advantage of the communications improvements made possible by the Information and Communication Technology (ICT) and Internet revolution. OA publishing has enormous benefits: it improves free access and wide dissemination of scholarly content without restriction except cost of Internet service. OA publishing has potential to bridges gap between developed and developing countries. In spite of the huge benefits of OA publishing its adoption and use in Nigeria is slow (Gbaje, 2010; Oluwasemilore, 2013). According to Chan, Krisop and Arunachalam (2011) despite the improved access to the Internet, academics and researchers in the developing world continue to face two types of problems: difficulty in gaining access to academic publications and getting research published in international

journals has been a problem. However, the adoption and use of OA publishing is quite different from traditionally publishing approach, it requires a deep understanding of academic needs and requirements and comprehensive manner for successful application of the Internet.

OA publishing has started evolving in Nigeria with the aids of Internet that serves as a platform for OA initiatives. ICTS and Internet has made an essential transformation in Nigeria society, attitude and the ways of conducting, accessing, and disseminating scholarly work by utilizing the potential of ICT and Internet as a tool in the current scholarly activities. Therefore, the emergence of OA publishing has been identified as one of the modes of scholarly communication system that promotes effective, efficient access and wide dissemination of research findings for scholarly communities. What is supreme to academics is access and wide dissemination of their scholarship works from which they seek no direct financial benefit (Bashorun, 2016). Hence, this paper identifies the factors that influence academics 'adoption and use of OA publishing by applying an adapted UTAUT Model. According to Venkatesh, Morris, Davis and Davis(2003) UTAUT is an empirically validated model combining eight major models of technology acceptance and their extensions. This makes UTAUT model to have the highest explanatory power (69%).

Although, empirical studies that had established factors influencing adoption and use of OA publishing by academic staff in Nigerian universities are many, none of these studies seem to use UTAUT model as a lens to examine the identified factors. Thus, there is a need to explore the vital factors of academics' adoption and use of OA publishing in Nigeria context through a research survey approach by gathering empirical evidence based on modified UTAUT model with intention of closing the gap in literature. Therefore, this study examines factors that influence the adoption and use of OA publishing with main aim of validating or invalidating the major proposition.

Literature Review

Open Access Concept

Open access (OA) is a new concept in the scholarly communications system. Many scholars, researchers and other stakeholders around the world follow this phenomenon hoping to reduce costs, improve access to information and to provide wider, effectiveness, and efficiency dissemination of information to users without geographical barriers. OA is an essential initiative that comes to existence in order to promote free access and wide dissemination of research findings. The main principle behind OA is to maximize access to research. According to Frandsen (2009) scholars from developing countries have limited access to research publications due to

expensive subscription costs. The exorbitant prices of journals as well as the enabling Information and Communication technologies (ICTs) have prompted academics, researchers, scholars and other stakeholders to devise an alternative mode of scholarly publishing. This alternative mode, referred to as OA publishing, aims at achieving free access and a wider dissemination of scholarly work without barrier to users (Moller, 2006; Jain, 2012; Suber, 2012).

OA literature is digital, online, free to access and free from most copyright and licensing constraints (Suber, 2012). OA publishing has dramatically transformed the research landscape in universities worldwide in the twenty-first century. The most influential definition of open access is the one by the Budapest Open Access Initiative in (BOAI),OA is defined as: free availability on public Internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the Internet itself(2002, p.1). Hence, OA publishing can be defined as a new mode of scholarly communication, that is digital, online whose contents can be accessed free of charge at the point of consumption by the users via the Internet. There are two main basic strategies that can be used to achieve the main objective of open access initiative. These two approaches are Open Access journal (Gold route)/OA publishing and Open Access archive (Green route). For the sake of time and financial implication, this study mainly focused on OA publishing.

The Unified Theory of Acceptance and Use of Technology (UTAUT)

Information technology acceptance and adoption research has developed several competing and harmonizing models\theories each with a various set of adoption determinants. Many models and theories exist to attempt prediction of human behaviour focusing the intention to adopt technology or its use as the key dependent variable(s). These models have developed over the years and came as a result of determined efforts towards models' validation and extension that took place at different times and each was presented to the scholarly community. These theories, however, lack a unified view towards understanding the domain. The recent proposed work by Venkatesh et al. (2003) was advanced from the portioned view of technology acceptance to a unified view. The integration of the model was done by synthesizing from eight existing models of use of technology. The technology acceptance models include: Theory of Reasoned Action (TRA)(Ajzen & Fishbein, 1980);Technology Acceptance Model (TAM) (Davis, 1989);Theory of Planned Behaviour, (TPB) (Ajzen, 1985);Motivational Model (MM) (Davis,Bagozzi &Warshaw,1992);The Combined TAM and TPB (C-TAM-TPB)(Taylor & Todd, 1995);Model of PC Utilisation (MPCU)(Thompson, Higgins & Howell,

1991);Social Cognitive Theory (SCT) (Bandura,1986) and Innovation Diffusion Theory (IDT) (Rogers,1995). The 32 variables found in the existing eight models were compressed into four key variables and four moderating factors. The combinations of the independent and moderating variables have resulted to an increased in the predictive efficiency to 70%, a huge improvement over TAM model rates of 30% and TAM2 (TAM extension) with 40% predictive efficiency. The UTAUT model identifies the key factors in acceptance of ICT as measured by behavioural intention to use the technology and actual usage. The UTAUT has four variables (i.e. performance expectancy, effort expectancy, social influence, and facilitating conditions) that influence behavioural intention to adopt and use a technology. The most prominent amongst these models are TRA, TAM,TPB, TAM2, IDT) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003).

UTAUT is one of the latest developments in the field of general technology acceptance models. Like earlier acceptance and adoption models, it aims to explain user intentions to use an Information System (IS) and further the usage behavior. Venkatesh et al. (2003) created this synthesized model (UTAUT) to present a more complete picture of the acceptance process than any previous individual models had been able to do. Eight models previously used in the IS literature were merged in an integrated model, all of which had their origins in psychology, sociology and communications.

Each model attempts to predict and explain user behaviour using a variety of independent variables. Aunified model was created based on the conceptual and empirical similarities across these eight models. The UTAUT holds that four key constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) are predictors of usage intention and behavior (Venkatesh et.al., 2003). Gender, age, experience, and voluntariness of use are posited to mediate the impact of the four key constructs on usage intention and behavior as indicated in Figure1. The predictors are defined as follows:

1. Performance expectancy (PE): "is the degree to which an individual believes that using the system will help him or her to attain gains in job performance."
2. Effort expectancy (EE): "is the degree of ease associated with use of the system."
3. Social influence (SI): "is the degree to which an individual perceives that important others believe he or she should use the new system."
4. Facilitating conditions (FC): "is the degree to which an individual believes that an organizational and technical infrastructure exists to support use of the system."

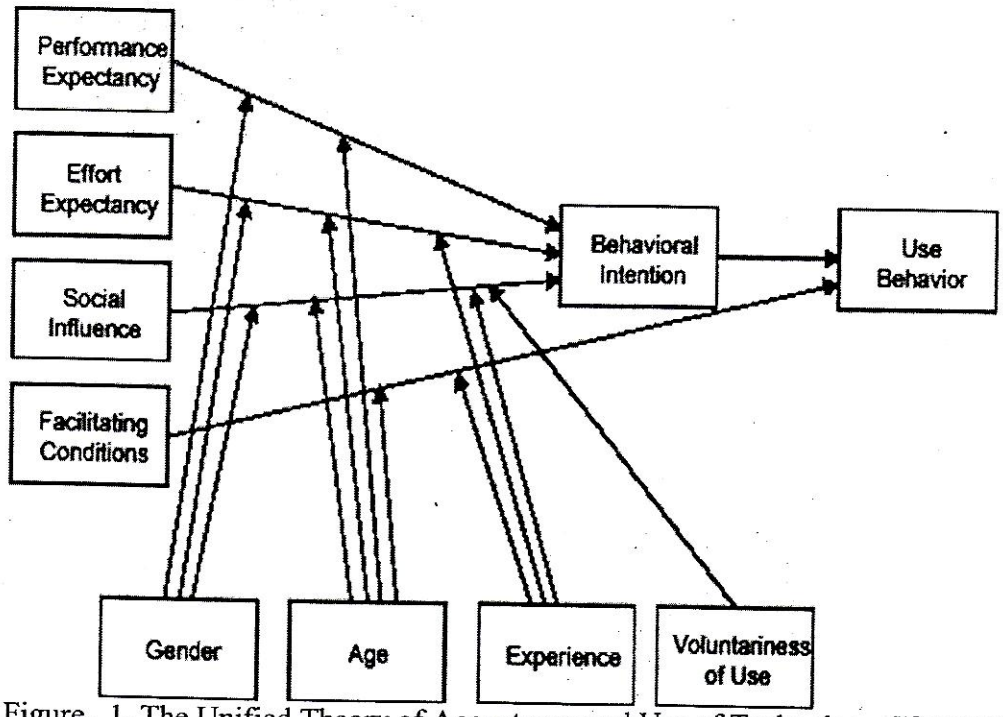

Figure. 1. The Unified Theory of Acceptance and Use of Technology (UTAUT)
Source: (Venkatesh et al., 2003:447)

Research Model and Hypotheses Development

Based on the attributes of innovations posited by Venkatesh et al.(2003) on UTAUT and its modification, this study proposes the following main hypothesis to predict the influence of the adoption and use of OA publishing by academic staff in universities in Nigeria. The researcher hypothesized the relationships between the variables as shown in Figure2.

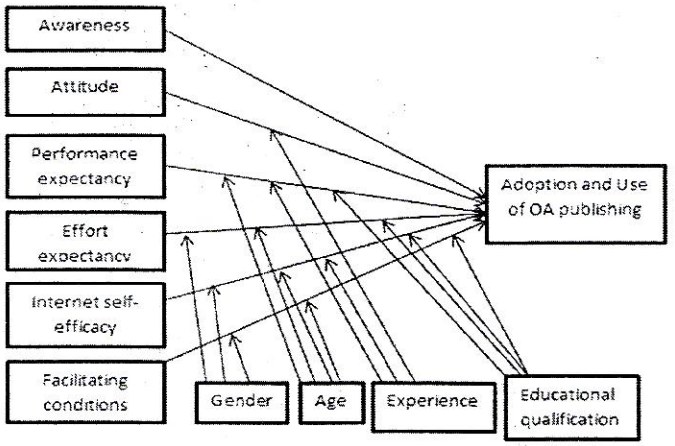

Figure.2. Research Model

Awareness

Awareness plays a vital role. Adequate knowledge about a concept leads to awareness. Dinev and Hu (2005, p.41) define awareness as "raising consciousness and knowledge about a certain technology and its personal and social benefits". Awareness of OA publishing can be defined as raising perception and sufficient knowledge about OA publishing with its associated benefits. Awareness of an innovation is an important factor in the innovation-decision or adoption process. According to Rogers (2003, p.171) such awareness takes place when "an individual is exposed to an innovation's existence and gains an understanding of how it functions". Dinev and Hu (2005) establish awareness as the central determinant of user attitude and behaviour towards technology. Several studies (Warlick & Voughan, 2007; Fullard, 2007; Emojorho, Ivwighregwta & Onoriode, 2012) acknowledge that awareness is one of the essential factors determining usage in OA circumstances. This is supported by Dulle (2010) who says that awareness determines usage of scholarly communication. Based on the importance of awareness in determining the relationship with adoption and use of OA publishing, the hypothesis is proposed in Table 1(H1) and other hypotheses discussed as follows:

Attitude

Attitude is an individual's overall affective reaction to using a system (Venkatesh et al., 2003). The UTAUT model's assumption that the effect of attitude is captured by the

existence of other constructs, such as efforts expectancy and the model, does not consider attitude construct as having a major influence on the behavioural intention of technology usage (Venkatesh et al., 2003). However, several studies (Chau & Hu, 2002; Louho, Kallioja & Oittinen, 2006) established that individuals' attitude towards technology had a strong effect on the adoption and use intention. Chau and Hu (2002) point out that the attitudes towards computers are important for technology acceptance decisions as well as behavioural intent to physicians and nurses. In addition, Louho etal(2006) argue that attitude has a strong effect toward technology behavioural intention to use.

Kim, Chun, and Song, (2009) indicate that the moderating effect of the strength of attitude on behaviour may result in a strong behavioural intention to use the system. The positive relation between attitude and behavioural intention is likely to be more pronounced when the attitude is stronger than when it is weak (Kim etal., 2009). The authors investigated the perspective in order to understand technology adoption characterizations and the role of attitude-strength. The results of the study showed that attitude was a major factor in determining the behavioural intention to technology use. Also, their findings showed the need for a redirection of technology adoption research to factors affecting attitude-strength. Studies (Dulle,Minishi-Majanja & Cloete, 2010; Mammo & Ngulube, 2013;Obuh, 2013) examined attitude towards OA publications and their findings indicated that researchers developed positive attitude towards OA. The study is important to avoid situations where technology is accepted but not put to actual use. The measure used in the study remains one of many factors explaining attitude-strength in the context of technology adoption and use. Therefore, the hypothesis is proposed in Table1 (H2):

Performance expectancy

The performance expectancy variable indicates that the end users would show positive acceptance towards information system if it improves productivity or accomplished the task. Dulle (2010) carried out a survey among academics in Tanzanian public universities using the UTUAT as a research theory. The study proposed that performance expectancy had a major impact in forecasting behavioural intention. Before an individual could use the system in place, one would consider the benefits. Many academic staff in Nigerian universities would like to consider the benefits of OA publishing before its use.

Several technology acceptance studies have acknowledged the strength of performance expectancy in predicting behavioural intention and usage of technology (Al-Qeisi, 2009; Garfield, 2005; Zhou, Lu & Wang, 2010). According to the UTAUT model, it is expected that individuals will build interest in using a certain technology, if

they believe that it will enable them to improve their performance in whatever task they have at hand. This means that unless the new technology improves efficiency or the quality of an individuals' job, it is less likely to attract their interest in it.Hence, the hypothesis is proposed in Table 1(H3)

Effort expectancy

Kijsanayotin, Pannarunothai and Speedie (2009) observe that effort expectancy is similar to the perceived ease of use construct in TAM and IDT models and complexity of technology construct in the MPCU model. Several scholars (Chang et al., 2007; Gupta, Dasgupta& Gupta, 2008) have established that effort expectancy has a vital influence on intention to use behaviour. Contrary to that, Chau and Hu (2002) observe that effort expectancy does not have significant influence over the intention to use behaviour. The model assumes that individuals are likely to display interest in technology usage if that technology is convenient to use. This implies that less complicated technology will attract adoption intention of more users than complex technologies. Dulle, (2010) points out that age, gender and experience play a vital moderating role for effort expectancy towards technology adoption behavioural intention. Effort expectancy is said to influence behavioural intention and is stronger for women, older workers and those with little experience than for other categories of people (Dulle, 2010). Thus, it is reasonable to assume that academics in universities in Nigeria would adopt and use OA publishing provided it is suitable and rigor free. Thus, the statement is proposed in Table 1 (H4):

Internet self-efficacy

Internet is one of the technologies widely used today to access and share information. The use of Internet requires certain skills for set target to be achieved. For OA publishing, Internet serves as a platform (Gbaje, 2010). According to Hsu, Chiu and Ju, (2004, p.768) Internet self-efficacy refers to "what individuals believe they can execute with the Internet skills they acquire". According to Dulle(2010),Internet self-efficacy is about what individuals believe regarding their capabilities. This might not be necessarily indicating whether they are actually be able to accomplished. Studies (Ifinedo, 2006; Hsuetal, 2004) have demonstrated that technology self-efficacy plays a vital role in the acceptance and use of technology. According to Dulle (2010), exploitation of OA is dependent on Internet usage, except that academics exhibit to have

specific competences to use the Internet in disseminating and accessing research findings, they may not gain from OA publishing. Individuals' decision towards adoption and use of OA publishing is influenced by Internet self-efficacy. Hence, the statement is hypothesized as shown in Table1 (H5):

Facilitating conditions

Facilitating conditions (FC) is defined as "the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system" (Venkatesh et al., 2003, p.453). FC represents organizational and technical support which is typically significant in both voluntary and mandatory settings in the early stage of usage. FC is a variable of the UTAUT model and is made of factors such as availability of funds, availability of university policy, perceived behavioural control, organizational; infrastructure and electricity power supply. FC includes management support, training and provision of technological support and focuses on removal of barriers in technological usage (Venkateshet al., 2003). Scholars in the field of technology studies (Chang et al., 2007; Venkatesh et al., 2003) have found that the FC construct has a positive effect or innovation use. However, it does not predict intention to use IT when both constructs, performance expectancy and effort expectancy, are used in the same model. FCs includes management support, training and provision of technological support all of which focus on removal of barriers in technological usage (Venkatesh et al., 2003). It seems FC plays an essential role as regards to adoption and use of OA publishing. Hence, the statement is hypothesized as indicated in Table1 (H6).

Table1: Hypotheses of the Study

No	Hypotheses
H1	Awareness will have a positive influence on adoption and use OA publishing.
H2	H2; Attitude will have a positive influence on adoption and use of OA publishing. H2a: Experience will positively moderate the influence of attitude on adoption and use of OA publishing
H3	H3: Performance expectancy will have a positive influence on adoption and use OA publishing. H3a; Gender will positively moderate the influence of performance expectancy on adoption and use of OA publishing H3b: Age will positively moderate the influence of performance expectancy on adoption and use of OA publishing H3c: Educational qualification will positively moderate the influence of performance expectancy on adoption and use of OA publishing
H4	H4: Effort expectancy will have a positive influence on adoption and use OA publishing. H4a: Gender will positively moderate the influence of effort expectancy on adoption and use of OA publishing

	H4b:Age will positively moderate the influence of effort expectancy on adoption and use of OA publishing H4c: Experience will positively moderate the influence of effort expectancy on adoption and use of OA publishing H4d: Educational qualification will positively moderate the influence of effort expectancy on adoption and use of OA publishing
H5	H5: Internet self-efficacy will have a positive influence on adoption and use OA publishing. H5a: Gender will positively moderate the influence of Internet self-efficacy on adoption and use of OA publishing H5b: Age will positively moderate the influence of Internet self-efficacy on adoption and use of OA publishing H5c: Experience will positively moderate the influence of Internet self-efficacy on adoption and use of OA publishing H5d: Educational qualification will positively moderate the influence of Internet self-efficacy on adoption and use of OA publishing
H6	H6: Facilitating conditions will have a positive influence on adoption and use OA publishing. H6a: Age will positively moderate the influence of facilitating conditions on adoption and use of OA publishing H6b: Educational qualification will positively moderate the influence of facilitating conditions on adoption and use of OA publishing

Methodology

The present study used quantitative research method and questionnaires survey was used to conduct an interpretive study. The aim of the questionnaire was to ascertain the academics' adoption and use of OA publishing. The questionnaire was divided into different sections for easy reading and time saving in the process of questionnaire completion. A Likert scale with four levels of possible answers respect to UTAUT model (from Strongly Disagree to Strongly Agree) was used. Questionnaires were distributed to a variety of academic staff in all the three different ownership status of universities (Federal, state, and private) in Nigeria. Federal universities were represented by University of Ibadan, state universities represented by Adekunle Ajasin University and private universities represented by Babcock University. The study focused on different age groups oflecturers and librarians (academic staff). A total of 337 questionnaires were distributed, of which 317 were completed usable for this study.

Data Analysis Instrument

Statistical Packages for Social Science (IBM-SPSS) version 19.0 was used to analyse the data collected through the surveys.The study applied multiple regression analysis

with a focus on hierarchical regression to evaluate the relationships in the UTAUT model and to test the hypotheses among the variables in the model. Hierarchical multiple regression (HMR) is a statistical analysis used to analyze and test hypotheses of theory driven research. According Pedhazur (1997) HMR is an appropriate tool for analysis when variance on criterion variable is being explained by predictor variables that are correlated with each other. The following section will illustrate the study analysis in more detail.

Background of the Participants

The data present in this section provides a summary of major characteristics of the academic staff (lecturers and librarians) that were surveyed with regards to gender distribution, age group, years of experience, educational qualifications and rank. The main target population was the academic staff members that have been publishing their scholarly work in peer reviewed journals. The questionnaire was directed to this set of academic staff to ensure necessary information is captured. The following Tables provide general overview of academic staff in three selected universities in Southwest, Nigeria:

Table2: Demographic information of the participants

	Variables	Frequency	Percentage(%)
Gender	Male	209	67
	Female	108	33
Age	20-30yrs	38	12
	31-40yrs	121	38
	41-50yrs	95	30
	51-60yrs	60	19
	61yrs and above	3	1
Experience	1-5yrs	75	23.7
	6-10yrs	140	44.2
	11-15yrs	83	26.2
	16-20yrs	16	5.0
	21 yrs and above	3	0.9
Educational Qualification	Bachelor	19	6
	Master Degree	95	30
	PhD Degree	203	64

Field Data, 2015

Reliability

The reliability of a measure refers to the degree to which the instrument is free of random error. It is concerned with consistency and stability of the measurement. Internal consistency tends to be a frequently used type of reliability in the IS domain (Sekaran, 2003). In this study Cronbach's coefficient alphas, which are calculated based on the average inter-item correlations, were used to measure internal consistency. Reliability coefficient was run on SPSS for each set of constructs and the results are presented in Table 2.Overall, the result shows that all alpha values of the study instrument are reliable and exhibits appropriate construct reliability.

Table 3: Cronbach Alpha Reliability Results

Constructs	No of Item	Question	Cronbach's alpha
Adoption and Use	10	Part B, Question 8 – 17	.859
Awareness	8	Part B, Question 18 - 25	.723
Attitude	6	Part B, Question 26 - 31	.745
Internet self-efficacy	5	Part B, Question 32 – 36	.749
Performance expectancy	6	Part B, Question 37 – 42	.903
Effort expectancy	6	Part B, Question 43 – 48	.861
Facilitating Conditions	6	Part B, Question 49 – 54	.837

Hypotheses Testing Results

Testing the hypotheses aims to determine which predictors (independent variables) provide a positive influence to the explanation of the dependent variables (Hair et al., 2010). In this study, hypotheses testing were conducted using IBM-SPSS version 19.0. Table 4 represents the results of testing the current research hypotheses.

The 'Conclusion' column indicates whether that hypothesis was: supported or not supported depending on the result coefficients beta.

Table 4: Hypotheses Testing Results

Hypotheses	Findings	Conclusion
H1(AW-AUP)	Beta= 0.37(significant)	Supported
H2(ATT-AUP) H2a:	Beta=0.41(significant) Beta=0.13(not significant)	Supported Supported
H3(PE-AUP) H3a; h3b: H3c:	Beta= 0.15 (significant) Beta= 0.26(not significant) Beta= -0.56(not significant) Beta= 1.60(not significant)	Supported Supported Not supported Supported
H4 (EE-AUP) H_{4a}: H_{4b} H_{4c} H_{4d}	Beta =0.01(not significant) Beta= 1.46(not significant) Beta= 0.14(not significant) Beta= 1.46(not significant) Beta= -1.08(significant)	Supported Supported Supported Not supported Not Supported
H5(ISE-AUP) H_{5a}: H_{5b} H_{5c} H_{5d}	Beta= -0.11(significant) Beta= 0.14(not significant) Beta= -0.27(not significant) Beta= -0.31(not significant) Beta= 0.51(not significant)	Not Supported Supported Not supported Not supported Supported
H6(FCs-AUP) H_{6a} H_{6b}	Beta= 0.13(not significant) Beta=0.18(not significant) Beta= -0.07(not significant)	Supported Supported Not supported

p-value <0.05

Discussion

This section discussed the results of the survey based on the finding of hypotheses results. As shown in Table4 the impact of the factors in the study model and its influences on adoption and use of OA publishing can be classified to significant and non-significant factors as follow:

Significant factors and moderators

Awareness (AW) had a positive influence on the adoption and use of OA publishing. The result emphasizes that awareness of OA remains significant and a strong factor of adoption and use of OA publishing. Attitude (ATT) of academic staff towards OA had a positive influence on the adoption and use of OA publishing and would be moderated by experience of Internet only though not significant; age, gender and educational

qualification were not being considered as important moderators. The result evince that attitude remains significant and a strong factor of the adoption and use of OA publishing. Performance expectancy (PE) had a positive influence on the adoption and use of OA publishing and would be moderated by age, experience and educational qualification, though experience with negative beta value did not support the hypothesis. Overall, this result shows that PE remains significant and a strong factor of behavioral adoption and use of OA publishing (Venkatesh et al., 2003).

Effort expectancy (EE) had a positive influence on the adoption and use of OA publishing and would be moderated by gender, experience and educational qualification. However, gender was not considered as important moderator in this connection. Internet self-efficacy (ISE) had a negative influence on the adoption and use of OA publishing and would be moderated by gender, age, experience and educational qualification. Facilitating conditions had positive effect on adoption and use of OA publishing and hence, supported the hypothesis.

Non-significant factors and moderators

Gender, age and experience were found to be insignificant in terms of moderating performance expectancy on the adoption and use of OA publishing by academic staff in Southwest universities in Nigeria. Efforts expectancy did not have a significant effect on adoption and use of OA publishing and its hypothesis was supported but it was moderated by gender and educational qualification only. Gender, age, experience and educational qualifications were found to be insignificant in terms of moderating effort expectancy on the adoption and use of OA publishing. Also, gender, age, experience and educational qualification were insignificant in terms of moderating Internet self-efficacy to adopt and use OA publishing. Facilitating conditions did not have significant effect on the adoption and use of OA publishing.

Conclusion

This study applies presently an adapted UTAUT model on adoption and use of OA publishing by academic staff in universities in Southwest Nigeria. Based on the data collected and the results of the analysis, it can be concluded that awareness, attitude, performance expectancy, effort expectancy and facilitating conditions have positive influences on user's adoption and use of OA publishing. However, Internet self-efficacy had negative influences on adoption and use of OA publishing and found to be significant and its hypothesis was not supported. In future work, the researcher would add social factor as independent variable into research model and consider the effects of other crucial constructs of the UTAUT model within the context of Nigeria. To be more precise and convincing, this work will continue and new findings will be anticipated.

Recommendations

This study has some limitations. Such limitations include its restriction to the Southwest of Nigeria. Despite the fact that the universities and participants selected from them were randomly, so as to enable valid generalization, the sample size nevertheless is relatively smaller than the whole population of academic staff in Nigerian universities, so generalization might not be absolutely valid. In light of this, it is essentially recommended that this study should be taken further by involving more academic staff in universities in other geopolitical zones (Northeast, South-south, South east, North-central, and North-west) of Nigeria. Such further studies should deeply examine how other vital variables like social factors and mediators influence academics' adoption and use of OA publishing in Nigeria universities.

With reference to the major findings of this study, the following are recommended.

- To improve academics' Internet self-efficacy, there is need for universities management to provide more of ICTs, Internet training, and upgrading of Internet facilities. This will enhance Internet skills and boost Internet self-efficacy
- Government, universities and individual partnership should provide more facilitating conditions like regular supply of power or making provision for alternative source of power like solar energy to power ICTs facilities. Technical support for regular maintenance of available facilities. This and others will enhance development of positive attitude by academic towards OA adoption and use of OA publishing.

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