

Relative Contributions of Individual, Institutional and System factors to Utilisation of Research4Life Databases in National Agricultural Research Institutes in Nigeria

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Abstract

This study investigated the relative contributions of individual, institutional and system factors to utilisation of Research4Life databases by scientists in the National Agricultural Research Institutes (NARIs) in Nigeria. The study adopted the descriptive survey research design of the correlational type. Simple and stratified random sampling techniques were used to select 744 (62%) research scientists from a population of 1,205 in 13 NARIs. A validated and pre-tested questionnaire was the instrument adopted for this study and it consisted of 105 questions arranged in five sections A – E with 0.99 reliability coefficient based on Cronbach alpha method. Descriptive and inferential statistics - simple percentage, mean, correlation, multiple regression and analysis of variance were used to analyse the data. Result revealed that utilisation of Research4Life databases was low and the 22 individual, institutional and system factors significantly influenced utilisation of Research4Life databases in the NARIs. Individual, institutional and system factors showed varied levels of variances to utilisation of Research4Life databases in the NARIs. Out of the 22 factors investigated, five factors made significant relative contributions towards utilisation of Research4Life databases in the NARIs. System factors made significant relative contributions of three factors (perceived ease of use, database design features, local journal content), followed by one institutional (accessibility of databases) factor and one individual factor (computer anxiety). For increased utilisation of Research4Life databases in NARIs in Nigeria, individual, institutional and system factors have to be given utmost consideration.

Keywords: individual factor, institutional factor, system factors, utilisation, Research4Life databases, Agricultural scientists

Introduction

Research4Life is the collective name for the four programme - HINARI (Health Internetwork Access to Research Initiative), AGORA (Access to Global Online Research in Agriculture), OARE (Online Access to Research in the Environment) and ARDI (Access to Research for Development and Innovation) that provide developing countries with free or low cost access to over 79,000 academic and professional peer-reviewed online resources including 21,000 quality peer-reviewed international scientific journals, 50,000 e-books, with several databases and millions full-text journal articles. Research4Life was designed to empower universities, colleges, research institutes and government ministries etc. with access to scientific knowledge in the areas of health, agriculture, environment, and applied sciences. The goal is to reduce knowledge gap between high-income countries and low- and middle-income

countries. Research4Life databases were launched in 2002, 2003, 2006 and 2009 respectively and usage is increasing every year (Research4Life, 2017).

Utilisation of Research4Life databases has impacted positively on the productivity of agricultural scientists in some countries where the databases have been adequately used. Lwoga, Chimwaza, Aronson and Vent (2007) posit that the major challenges now are to ensure that Research4Life databases and contents are used to their fullest extent. Various factors have been known to influence utilisation of different Information Technology (IT) and Research4Life databases. IT acceptance and utilisation literature classified these factors as personal/individual/users, institutional/organisational and system/technology factors (Buabeng-Andoh, 2012; Park, 2009; Rahim, 2008; Zabukovsek, & Bobek, 2013). In this study, individual, institutional and system factors were adopted. Individual factors include demographic (e.g., traits or states of individuals, gender, and age), personality and cognitive styles that can influence individuals' perception of the use of IT (Harrison and Rainer, 1992). Agarwal and Prasad (1999), Scott (2007) and Angello (2010) opined that individual factors are important determinants of acceptance and utilisation of IT, while Shih and Huang (2009) posit that the success of an Information System (IS) is predicted especially by the individual user's acceptance or resistance. Six individual factors investigated in this study include: intention to use, task at hand, computer anxiety, prior ICT experience, ICT searching skills and computer/Internet self-efficacy.

Institutional factors are range of conditions including technical infrastructure provided by institutions to support the use of IT and IS. Institutional factors have also been found to influence the use of various ICT in different settings (Anandarajan, Igbaria & Anakwe, 2002; Angello, 2010; Buabeng-Andoh, 2012). Six institutional factors investigated in this study include: accessibility of databases, availability of password, fast Internet access, adequate training, adequate ICT infrastructure and help/technical support services.

System factors include information content, physical design features and quality of an IS that can help individuals develop favorable perception to use the system. Al-Mamary and Aziati (2014) state that system factors are the desirable characteristics of IS such as perceived ease of use, flexibility, reliability, intuitiveness, sophistication, database system design, system features, information contents, relevance, functionality and response time. Hong, Thong, Wong and Tam (2002) found significant relationships between system factors and TAM's constructs. Ten system factors investigated in this study include: availability of full text articles, quality of content, currency of content, free download of articles, local journal content, database design features, quick access to journal articles, databases compatibility, perceived usefulness and perceived ease of use. In all, there are 22 factors under investigation.

The influence of individual, institutional and system factors on utilisation of IT and Research4Life databases has not been constant across nations including Nigeria. There is extreme variance among findings noting that factors found to be important for one innovation study are found to be considerably less important, not important at all, or even inversely important in another study. For instance, Miller and Khera (2010) opined that the patterns of interaction of factors influencing digital libraries and Research4Life databases are not constant across institutions, culture and users. Individual factors show more predictive power

in some studies (Agbonlahor, 2008; Deng, 2009; Zabukovsek & Bobek, 2013); while institutional or system factors are more relevant in others (Davis, 1993; Park, 2009; Angello, 2010; Buabeng-Andoh, 2012). The predictive and contributory powers of these factors to utilisation of Research4Life databases are yet to be determined especially in the NARIs. The aim of this study therefore, is to determine the relative contributions of the 22 individual, institutional and system factors on utilisation of Research4Life databases in the NARIs. Specifically, the study attempts to determine the level of utilisation of Research4Life databases in NARIs. Secondly, to find out the individual, institutional and system factors influencing utilisation of Research4Life databases, thirdly to determine the joint influence of these factors on utilisation of the databases, and finally to establish their relative contributions to utilisation of Research4Life databases in NARIs in Nigeria.

Research Question: The following research questions guided the study:

1. What is the level of utilisation of Research4Life databases by scientists in NARIs.
2. What are the individual, institutional and system factors influencing utilisation of Research4Life databases by scientists in NARIs.
3. What is the joint influence of individual, institutional and system factors on utilisation of Research4Life databases by scientists in NARIs.
4. What are the relative contributions of individual, institutional and system factors to utilisation of Research4Life databases by scientists in NARIs.

Literature Review

Agricultural information technology research often focus on ICT implementation and design but perhaps not enough on how agricultural researchers and scientists and the individual end-users react to implemented ICT. Today, there is more to ICT success than design or purchasing a functional technology. Many recent studies on the unexpected consequences of agricultural ICT show that the fit between ICT and the agricultural scientists research work will lead intended end-users to accept or reject the ICT, to use and to incorporate it into their work or routine activities or not. Therefore, the success of IS and IT is decided especially by the individual user's acceptance or resistance (Shih & Huang, 2009).

Agarwal and Prasad (1999) posit that individual factors are important in information technology acceptance. Hong et al. (2002) opined that research emphasis has now shifted from technology development research to user-focused research because digital library research has shown that potential users may not use the systems in spite of their availability. Commenting on the imperative of user-focused IT research, Deng (2009) revealed that usage of digital portal resources was significant in higher education, and utilisation was dependent on the individual users and purpose.

One of the factors that can motivate users to accept and use IT in developing countries such as Nigeria includes institutional factors. While institutional factors may be adequate in developed countries, the reverse may be the case in developing countries like Nigeria. Institutional factors have been found to influence the use of various ICT in different settings.

Anandarajan, Igbaria and Anakwe (2002) study of 143 computer users in nine organisations in Lagos found that perceived usefulness and perceived enjoyment did not motivate users to accept the microcomputer but organisational support and social pressure. Exploring how different factors influence user intentions to accept Wireless Internet via Mobile Technology (WIMT) in China, Lu, Lu, Yu and Yao (2003) found facilitating conditions as one of the factors influencing acceptance and use of WIMT in China. In the areas of e-commerce, Unsal and Movassaghi (2008) survey of literature uncovered environmental factors, knowledge factors, organisational factors and technology factors as four broad set of factors that seem to have influence on the utilisation of IT systems in general among small and medium-sized (SMEs) companies around the world.

Writing on access to health literature, Smith, Bukirwa, Mukasa, Snell, Akeh-Nsoh, Mbuyita, Honorati, Orji and Garner (2007) posits that HINARI and other initiatives could be more effective with strong institutional endorsement and management support to promote and ensure access. Bhattacharjee and Hikmet (2008) examined the role of organisational factor (infrastructure support and technical support) in motivating IT usage in health care using TAM. The study confirmed that organisational support played a critical role in shaping user perceptions toward IT and their subsequent IT usage. In another study, Shih and Huang (2009) found that top management support had a positive direct effect on the use of Enterprise Resource Planning (ERP) systems. Using the UTAUT model, Dulle and Minish-Majanja (2011) reported significant influence of facilitating conditions on researchers' actual usage of open access in public universities in Tanzania. It can be seen that different variables constitute institutional factors in the studies reviewed above and influenced usage of different IT and IS.

System factors have the potentials to directly and indirectly affect utilisation of any IS including Research4Life databases. System factors are usually divided into two broad groups. They are the system's information components and the physical system quality. Nelson, Todd and Wixon (2005) developed a model consisting of nine fundamental determinants of quality in an IT context. This study confirmed the fact that there are both information and physical system aspects of IT. Al-Mamary and Aziati (2014) identified 11 desirable characteristics of an IS. These factors are capable of attracting or distracting potential users to adopt and use any database as their sources of information. Several studies that included system features as factors influencing utilisation of various IT and IS in different contexts were found to have significant relationships between the system factors and utilisation of the technologies and systems (Davis, Bagozzi & Warshaw, 1989, Davis, 1993, Hong et al, 2002, Rahim (2008) Tella, 2012, Lee & Park, 2013).

Individual, institutional and system factors influenced utilisation of various IT and IS at varied degrees. Harrison and Rainer (1992) findings indicate that individual difference variables accounted for 56% of the variance associated with computer skill to use IT in a Southern United States University. Venkatesh, Morris, Davis and Davis (2003) validated the UTAUT in a longitudinal study and found it to account for an impressive 70% of the variance in behavioural intention to use technology. Exploring behavioural intention and actual usage of Enterprise Resource Planning (ERP) implementation among manufacturing and service industry in Taiwan based on TAM, Shih and Huang (2009) found that total actual usage

variance was 0.25 or 25% of the model. In Scotland, Echeng and Usoro (2015) found perceived usefulness, motivation, performance expectancy, social factors, prior knowledge and facilitating conditions as predictors of Web 2.0 technology. In two Balqa Universities, Allahawiah and Tarawneh (2015) regression analysis showed that the skill of teacher in using ICT explained 36.3% variance of extent to which faculty members uses ICT. Investigating individual employee's adoption of innovation in Australia, Talukder (2012) result showed that 53.1% of the variance in usage was explained by organisational, individual and social factors. Fadare, Babatunde, Akomolafe and Lawal (2011) found that m-learning computer self-efficacy explain the highest (70%) of the variance in behavioural intention to use m-learning at Joseph Ayo Babalola University (JABU), Ikeji-Arakeji in Osun State, South-West, Nigeria.

It can be seen from the review that individual, institutional and system factors have their degrees of influence on utilisation of IT and IS in various contexts. This finding could have serious implication on utilisation of Research4Life databases especially in the NARIs. Therefore, investigating the relative contributions of these factors becomes imperative as it will reveal what factor to consider most when designing and implementing the use of the databases.

Methodology

This study adopted the descriptive survey research design of the correlational type. The study population consists of 1,205 research scientists in the 15 NARIs. Simple random and stratified random sampling techniques were used to select 13 of the 15 NARIs, and 744 research scientists which is 62% of the total population of scientists in NARIs respectively. The questionnaire was the instrument used and it consists of 105 questions arranged in five sections A – E. Section A dwelt on demographic information; section B on individual factors; section C centered on institutional factors while section D addressed the system factors. Section E covered the dependent factors which is utilisation of Research4Life databases. The questionnaire adopted the four point likert scale technique for answering questions. Each degree of agreement or disagreement is given a numerical value from four to one (strongly agreed (4), agreed (3), disagreed (2) and strongly disagreed (1). For the weighted means to be significant, the decision rule was based on the mean being more than or up to 2.5. The questionnaire was assessed for face and content validity by five experts and pre-tested using 30 lecturers in the Faculty of Agriculture, University of Benin, Benin City. The psychometric property or reliability of the questionnaire was assessed using the Cronbach Coefficient Alpha method. The reliability coefficient for the whole questionnaire was 0.99 alpha while the values obtained for individual, institutional and system factors were 0.97 alpha, 0.97 alpha and 0.94 alpha respectively and utilisation was 0.96. Simple percentage, mean, correlation, multiple regression and analysis of variance were used to analyse the data using SPSS 17.0.

Results and discussion

Research question 1: What is the level of utilisation of Research4Life databases by scientists in NARIs.

To ascertain the level of utilisation of Research4Life databases in NARIs, the scientists were asked to respond to six questions on their use of the databases. The result in Table 1 indicates that the six questions recorded a mean of 2.13 and a standard deviation of 1.14 indicating that the level of utilisation of Research4Life databases was not significant. The results further indicated that majority (60.4%) of the scientists were not using Research4Life databases while only 39.6% are using the databases. Therefore, the level of utilisation of Research4Life databases by NARIs scientists in Nigeria is low.

Table 1: Level of utilisation of Research4Life databases by scientists in NARIs

Items	SD	S	A	SA	Mea	S.D
I have downloaded articles from Research4Life database	218 43.9%	53 10.7%	122 24.5%	104 20.9	2.23	1.21
I use Research4Life databases regularly for my research	198 39.8%	84 17.0%	134 27.0%	81 16.2%	2.20	1.13
My intensity of using Research4Life databases is high	210 42.3%	72 14.15%	124 25.0%	91 18.3%	2.20	1.17
I spent at least 1 hour anytime I use Research4Life	225 45.3%	61 12.4%	119 24.0%	91 18.3%	2.15	1.18
I use most features in Research4Life databases regularly	225 45.3%	102 20.5%	107 21.5%	63 12.7%	2.02	1.08
I use Research4Life databases on a weekly basis	233 46.9%	122 24.5%	77 15.5%	65 13.1%	1.96	1.07
Total	218 43.9%	82 16.5%	114 22.9%	83 16.7%	2.13	1.14

SD: Strongly disagree; D: Disagree; A: Agree, SA: Strongly agree

This result agreed with various findings of Angello and Wema (2010); ITOCA (2014); Kwadzo (2015) and Okwilagwe and Ogbomo (2012) that utilisation level of Research4Life databases by livestock researchers in Tanzania; agricultural scientists in Nigeria; graduate students at the University of Ghana and university lecturers in Nigeria was low respectively. The problem of low utilisation of Research4life databases across universities and research institutes in developing countries will gradually disappear if the result of this study is implemented.

Research question 2: What are the individual, institutional and system factors influencing utilisation of Research4Life databases by scientists in NARIs.

Six individual factors were tested in this study. Result in Table 2 shows that there were significant relationships between intention to use, ($\beta = .519^{**}$, $P(.000) < .05$), task at hand, ($\beta = .567^{**}$, $P(.000) < .05$), computer anxiety, ($\beta = .651^{**}$, $P(.000) < .05$), prior ICT experience, ($\beta = .613^{**}$, $P(.000) < .05$), ICT searching skills, ($\beta = .629^{**}$, $P(.000) < .05$), computer/Internet self-efficacy, ($\beta = .644^{**}$, $P(.000) < .05$) and utilisation of Research4Life

databases. The result also showed a strong correlation between the individual factors and utilisation of Research4Life databases as their correlation value range from 0.519 to 0.651. This result means that all the individual factors were significant and thus influenced utilisation of Research4Life databases by scientists in NARIs.

Table 2: Correlation matrix showing the significant relationships between Individual factors and Utilisation of Research4Life databases by NARIs scientists in Nigeria

	Utilisation of Research4Life	Intention to use	Task at hand	Computer Anxiety	Prior ICT Experience	ICT Searching Skills	Computer/Internet Self Efficacy	Mean	S.D
Utilisation of Research4Life	1							34.16	19.07
Intention to use	.519** .000	1						28.95	14.85
Task at hand	.567** .000	.805** .000	1					26.45	12.84
Computer Anxiety	.651** .000	.659** .000	.772* *.000	1				30.59	15.28
Prior ICT Experience	.613** .000	.726** .000	.757* *.000	.829** .000	1			25.81	12.89
ICT Searching Skills	.629** .000	.688* .000	.718* *.000	.782** .000	.864** .000	1		25.93	13.58
Computer/Internet Self Efficacy	.644** .000	.719** .000	.735* *.000	.767** .000	.497** .000	.878** .000	1	27.11	14.28

Six institutional factors were also tested in this study. Results in Table 3 showed that there were significant relationships between accessibility, ($\beta = .718^{**}$, $P (.000) < .05$), availability of password, ($\beta = .684^{**}$, $P (.000) < .05$), fast Internet access, ($\beta = .684^{**}$, $P (.000) < .05$), adequate training, ($\beta = .652^{**}$, $P (.000) < .05$), adequate ICT infrastructure, ($\beta = .643^{**}$, $P (.000) < .05$), help/technical support services, ($\beta = .663^{**}$, $P (.000) < .05$) and utilisation of Research4life databases. The result also showed a strong correlation between the institutional factors and utilisation of Research4Life databases as their correlation value range from 0.643 to 0.718. The result implied that all the institutional factors were significant and influenced utilisation of Research4Life databases by scientists in NARIs.

Table 3: Correlation matrix showing the significant relationships between institutional factors and utilisation of Research4life databases by NARIs scientists in Nigeria

	Utilisation of Research4Life	Accessibility	Availability of Password	Fast Internet Access	Adequate Training	Adequate ICT Infrastructure	Help/Technical Support	Mean	S.D
Utilisation of Research4Life Databases	1							34.16	19.07
Accessibility	.718** .000	1						26.54	13.09
Availability of Password	.684** .000	.841** .000	1					22.68	12.03
Fast Internet Access	.684** .000	.843** .00	.764** .000	1				26.19	13.59
Adequate Training	.652** .000	.817** .000	.721** .000	.917* .000	1			26.36	13.96
Adequate ICT Infrastructure	.643** .000	.739** .000	.688** .000	.797* .000	.848** .000	1		23.23	12.61
Help/Technical Support	.663** .000	.840** .000	.731** .000	.848* .000	.875** .000	.877** .000	1	24.91	13.33

Ten system factors were tested in this study. Results in Table 4 revealed that there were significant relationships between availability of full-text articles, ($\beta = .718^{**}$, $P (.000) < .05$), quality of content, ($\beta = .717^{**}$, $P (.000) < .05$), currency of content, ($\beta = .729^{**}$, $P (.000) < .05$), free download of articles, ($\beta = .704^{**}$, $P (.000) < .05$), local journal content, ($\beta = .753^{**}$, $P (.000) < .05$), database design features, ($\beta = .750^{**}$, $P (.000) < .05$), quick access to journal articles, ($\beta = .730^{**}$, $P (.000) < .05$), databases compatibility, ($\beta = .703^{**}$, $P (.000) < .05$), perceived usefulness, ($\beta = .714^{**}$, $P (.000) < .05$), perceived ease of use, ($\beta = .734^{**}$, $P (.000) < .05$) and utilisation of Research4Life databases.

The result also showed a strong correlation between the system factors and utilisation of Research4Life databases as their correlation values range from 0.704 to 0.753. It therefore means that all ten system factors were significant as factors influencing utilisation of Research4Life databases by NARIs scientists in Nigeria.

Table 4: Correlation matrix showing the significant relationships between system factors and utilisation of Research4Life databases by NARIs scientists

	1	2	3	4	5	6	7	8	9	10	11	Mean	S.D
1	1											34.16	19.07
2	.748*	1										24.91	13.5

Relative Contributions of Individual, Institutional and System factors to Utilisation of Research4Life Databases in National Agricultural Research Institutes in Nigeria

	*												6
	.000												
3	.717*	.869*	1									25.60	14.65
	*.000	*.000											
4	.729*	.864*	.920*	1								25.17	14.54
	*.000	*.000	*.000										
5	.704*	.819*	.834*	.870*	1							24.68	12.68
	*.000	*.000	*.000	*.000									
6	.753*	.870*	.847*	.868*	.846*	1						24.62	13.49
	*.000	*.000	*.000	*.000	*.000								
7	.750*	.877*	.872*	.870*	.822*	.890*	1					31.08	17.49
	*.000	*.000	*.000	*.000	*.000	*.000							
8	.730*	.879*	.851*	.850*	.819*	.857*	.916*	1				24.31	13.85
	*.000	*.000	*.000	*.000	*.000	*.000	*.000						
9	.703*	.847*	.837*	.831*	.793*	.828*	.834*	.869*	1			25.91	14.82
	*.000	*.000	*.000	*.000	*.000	*.000	*.000	*.000					
10	.714*	.848*	.842*	.826*	.780*	.831*	.837*	.857*	.938*	1		33.65	19.00
	*.000	*.000	*.000	*.000	*.000	*.000	*.000	*.000	*.000				
11	.734*	.828*	.810*	.812*	.785*	.802*	.814*	.838*	.899*	.922*	1	31.03	18.70
	*.000	*.000	*.000	*.000	*.000	*.000	*.000	*.000	*.000	*.000			

Key: 1. Utilisation of Research4Life databases; 2. Availability of full-text Articles; 3. Quality of content; 4. Currency of content; 5. Free download of articles; 6. Local journal content; 7. Database design features; 8. Quick access to journal articles; 9. Databases compatibility; 10. Perceived usefulness; and 11. Perceived ease of use

The overall results indicated that the 22 individual, institutional and system factors were significant and thus influenced utilisation of Research4Life databases in NARIs. Individual, institutional and system factors are therefore very important to the utilisation of Research4Life databases. Daniel (2014) found the impact of individual, institutional and system factors on utilisation of e-learning in Divine Word University, Papua New Guinea. Miller and Khera (2010) also found that external (individual, institutional and system) factors influenced utilisation of The Essential Electronic Agricultural Library (TEEAL) in Kenya and Peru. Zabukovsek and Bobek (2013) findings also revealed that external factors of individual, institutional and system factors influenced ease of use, usefulness and work compatibility of Enterprise Resource Planning (ERP) users toward the ERP system.

Research question 3: What is the joint influence of individual, institutional and system factors on utilisation of Research4Life databases by scientists in NARIs.

To test research question 3, multiple regression analysis was performed on the mean scores of individual, institutional and system factors, and utilisation of Research4Life databases. Result in Table 5 showed that the joint effect of individual, institutional and system factors on utilisation of Research4Life databases was significant. The null hypothesis was therefore rejected. The table also shows a coefficient of multiple correlation ($R = .817$ and a multiple R^2 of $.668$). This implied that 66.8% of the variance was accounted for by the predictor variables when taken together. The significance of the composite contribution was tested at $P < .05$. The table also shows that the analysis of variance (ANOVA) for the regression yielded a F-ratio of 43.279 (significant at 0.05 level). This implies that the joint contribution of the independent variables to the dependent variable was significant and that other variables not included in this model may have accounted for the remaining variance. In Scotland, Echeng and Uoro (2015) found perceived usefulness, performance expectancy, prior knowledge and facilitating conditions as predictors of Web 2.0 technology usage.

Table 5: Correlation of individual, institutional and system factors and utilisation of Research4Life databases by ARIs scientists in Nigeria

R	R Square			Adjusted R Square	Std. Error of the Estimate	
.817	.668			.652	11.2475	
A N O V A						
Model	Sum of Squares	DF	Mean Square	F	Sig.	Remark
Regression	120449.6	22	5474.984	43.279	.000	Sig.
Residual	59963.486	474	126.505			
Total	180413.1	496				

Research question 4: What are the relative contributions of individual, institutional and system factors to utilisation of Research4Life databases by scientists in NARIs

Twenty two (22) factors investigated in this study were tested for their relative contributions to utilisation of Research4Life databases. Results obtained in Table 6 revealed the relative contributions of the independent variables to the dependent variable were expressed as beta weights. The results indicated that 5 out of 22 factors made significant relative contributions to utilisation of Research4Life databases in NARIs. Perceived ease of use, ($\beta = .295, P < .05$), made the highest contribution to utilisation of the databases followed by accessibility of databases, ($\beta = .204, P < .05$), computer anxiety, ($\beta = .154, P < .05$), database design features, ($\beta = .194, P < .05$), and local journal content, ($\beta = .100, P < .05$). Other factors, intention to use, ($\beta = -.034, P > .05$), task at hand, ($\beta = -.002, P > .05$), prior ICT experience, ($\beta = -.044, P > .05$), ICT searching skills, ($\beta = .022, P > .05$), computer/Internet Information Impact | Journal of Information and Knowledge Management

self-efficacy, ($\beta = .018, P >.05$), availability of password, ($\beta = .060, P >.05$), fast Internet access, ($\beta = -.121, P >.05$), adequate training, ($\beta = -.088, P >.05$), adequate ICT infrastructure, ($\beta = .056, P >.05$), help/technical support services, ($\beta = .045, P >.05$), availability of full-text articles, ($\beta = .117, P >.05$), quality of content, ($\beta = -.111, P >.05$), currency of content, ($\beta = .070, P >.05$), free download of articles, ($\beta = .000, P >.05$), quick access to journal articles, ($\beta = .045, P >.05$), databases compatibility, ($\beta = -.096, P >.05$), and perceived usefulness, ($\beta = -.036, P >.05$) made no significant relative contributions.

Table 6: Relative contribution of Individual, Institutional and System factors influencing Research4Life databases utilisation by NARIs scientists in Nigeria

Model	Unstandardized Coefficient		Stand. Coefficient	T	Sig.
	B	Std. Error	Beta Contribution		
(Constant)	2.866	1.304		2.198	.028
Intention to use Research4Life	-4.34E-02	.065	-.034	-.671	.502
Task at Hand	-2.60E-03	.082	-.002	-.032	.975
Computer Anxiety	.192	.072	.154	2.684	.008
Prior ICT Experience	-6.56E-02	.098	-.044	-.669	.504
ICT Searching Skills	3.054E-02	.092	.022	.331	.741
Computer /Internet Self Efficacy	2.465E-02	.089	.018	.278	.781
Accessibility	.297	.098	.204	3.039	.003
Availability of Password	9.559E-02	.087	.060	1.095	.274
Fast Internet Access	-.169	.118	-.121	-1.437	.152
Adequate Training	-.120	.112	-.088	-1.067	.286
Adequate ICT Infrastructure	8.501E-02	.094	.056	.904	.367
Help/Technical Support Services	6.434E-02	.100	.045	.640	.522
Availability of full text Articles	.165	.103	.117	1.597	.111
Quality of content	-.144	.105	-.111	-1.373	.170
Currency of Content	9.175E-02	.112	.070	.879	.413
Free download of articles	1.858E-05	.118	.000	.000	1.000
Local Journal Content	.212	.104	.100	2.035	.042
Database Design Features	.212	.092	.194	2.306	.022
Quick Access to Journal Articles	6.173E-02	.112	.045	.553	.580
Databases Compatibility	-.123	.110	-.096	-1.126	.261
Perceived Usefulness	-3.66E-02	.096	-.036	-3.380	.704
Perceived Ease of Use	.301	.076	.295	3.962	.000

The findings further revealed that individual factors contributed one factor (Computer anxiety); institutional factors contributed one factor (accessibility of databases); while system factors contributed three factors (perceived ease of use, database design features, and local journal content). It therefore implied that individual, institutional and system factors positively contributed to utilisation of Research4Life databases in NARIs in Nigeria. Findings from similar studies indicated that different factors influenced different IT and IS. For instance, Ayub, Tarmizi, Jaafar, Ali, and Luan (2010) investigated individual (students), portal system and university (institutional) factors - student's technology competence, Information Impact | Journal of Information and Knowledge Management

lecturers' role, portal accessibility, portal design and attitude towards usage of portal for learning calculus (POLCA) in a university in Malaysia. The study found that students' technology competence and design of POLCA were more significant than the others in the utilisation and perceived usefulness of the POLCA.

In Africa, Alison, Kiyingi and Baziraake (2012) revealed that utilisation of HINARI database was influenced by human (individual) and institutional factors only in Uganda. A study of paediatricians in the United States, Ducey (2013) indicated that organisational (subjective norm), and system factors (perceived usefulness, perceived ease of use, compatibility, reliability) collectively influence paediatricians' intention to adopt and use tablet computers in their medical practice. In two Indonesian public universities, Lee, Hsiao and Purnomo (2014) found that both individual and system characteristics significantly influence learners' perceived intention to use and acceptance behaviour of e-learning. Similarly, Fathema, Shannon and Ross (2015) revealed that system quality; perceived self-efficacy and facilitating conditions were significant predictors of faculty attitude and intention to use Learning Management Systems in higher education.

Conclusion

Based on the findings of this study, it can be concluded that individual, institutional and system factors made significant relative contributions to utilisation of Research4Life databases in NARIs in Nigeria with system factors contributing the highest followed by both individual and institutional factors. It therefore implied that for Research4Life databases to be maximally utilised and sustained in NARIs, computer anxiety, accessibility of databases, local journal content, database design features and perceived ease of use of Research4Life databases should be a matter of great concern to all stakeholders.

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