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Predicting factors of e-learning utilization among lecturers in the universities in the North-eastern Nigeria

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Abstract
Studies revealed that, there are various determinants of lecturers' e-learning use around the globe, among of them are: technology readiness, subjective norm, job relevance, perceived enjoyment, technology self-efficacy facilitating conditions, attitude towards use, behavioral intention and perceived usefulness, perceived ease of use. Despite the importance of e-learning in the academic environment, yet there are minimal studies on the predicting effects of e-learning in Nigerian context. The main thrust for this study is to determine the predicting factors of lecturers' e-learning usage among university lecturers, in North eastern Nigeria. The factors to be considered in this study are; technology readiness, subjective norm, perceived use fulness, perceived ease of use, behavioural intention. The study is quantitative survey research design; questionnaire was employed to collect the data. The population of this study is 273 whist the strata and proportional sampling technique was used in study. Sample size is 230 which were determined by using the Cochran formula. The theories involved in this research are; Theory of Reasoned Action; Theory of Planned Behavior; Technology Acceptance Model and Technology Readiness. Theories were used to provide a constructive based for the variables The instrument for data gathering used was survey.On the whole, the structural model of the investigation has explained about 58.9% of perceived usefulness, 29.3% of perceived ease of use, 30.8% of behavioral intention to use and 40.1% of the variation in the e-learning utilization acceptance of lecturer in tertiary universities of North-eastern Nigeria. The researcher recommended that there should be more support from the universities in providing the lecturers with sufficient tools and strong legal policy that assist the mechanism of using e-learning system.

Keywords: Studies, universities

Introduction

The use of technology has become the rave of the moment in world of social, economic and educational matters. In a world that is in a continually promising new Information Communication Technologies (ICT), internet technologies, computer based learning, web-based and electronic learning applications, in which they are offering unconventional methods of teaching and learning techniques which makes the process more useful and easier and much better understanding for both learned and learner. Therefore, it is momentous that every nation, organization, and institution irrespective of whether elevated or little wants to identify and embrace it (Abu-Shanab & Ababneh, 2015; Agbo, 2015; Grosseck, 2009) [1, 3, 7, 8]. However, as the increase becomes more relevant and it is widely spreading throughout university education globally (Mbengo, 2014) [36].

The United Nations Educational Scientific and Cultural Organization's (UNESCO) policy for change and development in higher education which urges higher education institutions to make greater use of the benefits been offered by the improvement in communication technology to increase the provision and quality of their education. Hence, universities were confronting with many changes in their external and internal environments. They are forced to respond swiftly to the emerging challenges so as to continue development in ICT (Bhuasiri, Xaymoungkhoun, Zo, Rho & Ciganek, 2012; Chang, 2016) [65, 9, 34]. Many universities around the globe are turning to the use of ICT, which is now universally referred to as the e-learning, as a complement to teacher/instructor-led tuition on campus (Ogunnowo, 2016).

Developed nations are gifted in the use of technology from the onset in the classroom as previous studies have focused on the labours essential to enhance e-learning in these nations (Yakubu & Salihu, 2018) [56]. For instance, according to Dias, Aires, and Moreira (2018) [20], in 2013, about 82% of European higher education institutions were accessible to online learning courses using technology, as a result of charitable increase to an educational support where different higher education institutions coexist with a variety of teaching methods and pedagogical models for e-learning courses (Gaebel, Kupriyanova, Morais & Colucci, 2014) [26]. This scenario is particularly important for distance learning universities, because it poses various questions about what is considered and understood to be e-learning. Technology plays an important in the development of quality education by providing different approach to improve information and knowledge content. Interactive and communicative technology may support the development of skills in students (so-called "21st Century Skills") such as decisive thinking and problem solving, communication, teamwork, and inventiveness as well as provides students' ICT skills (Chan & Holosko, 2016) [27].

Therefore, the UNESCO (2011) has realistically contended to that some parts of world has made their educational institutions to embrace highly integrated technology revolution that put together capable human resources utilizing technology to its standard in effective classrooms environment; while on the erstwhile countenance of the

coinage some parts are yet to start, the gap between the developed and developing countries of the world. For instance, places like Europe, America, Australia and most of Asia, lecturers have highly developed in using technology for teaching and learning (Acemoglu, Moscona & Robinson, 2016; Hur & Choo, 2017; Tondeur, Braak, Ertmer & Ottenbreit-Leftwich, 2017) [2, 29, 60].

Therefore, integrating technology into the classroom by lecturers provides them with diversity of opportunities that help to guide learners to the greater idea and expand useful mutual projects amongst them (Saadé, Morin & Thomas, 2012; Smaldino, 2011) [54, 55]. However, important position that needs to be painstaking is that the expansion of technology has reached a period everywhere it can create innovative concepts and terms in the area of education (e.g., e-learning learning, learning management system and web-based learning) which were not known hitherto (Folden, 2012; Wagner, Barbosa & Barbosa, 2014) [24, 70]. This requires educators' policy makers and curriculum planners to put together new technologies with curriculum for more advancement in technology integration into education.

However, despite the dominance of ICT in universities in the developed world and the role played by ICT in education development, in Nigeria it has been painfully moderate. Much as this is the report that no factual attempt has been made in ICT development both at the individual and corporate levels, and that most universities process results manually (Akuegwu, Ntukidem, Ntukidem & Jaja, 2011). Consequently, according to Garba, (2014) [57, 7], an instructors' proficiency toward the integration of ICT in their instructive practices is dependent relative on instructors' skills and tuition on one hand; and, instructors' educators on the other hand. For this reason, most instructors/lecturers in Nigeria are yet to obtain the pre-requisite for ICT abilities where opportunities exist for them to do such, they evade them in light of the fear they have created over the ICT (Onwuagboke, Singh & Fook, 2015; Chiedu, 2010) [18, 19, 50].

Furthermore, the outcomes are that if the lecturers themselves are uncomfortable regarding ICT then the tendency of producing incompetent graduates cannot be in doubt (Akuegwu, Ntukidem, Ntukidem & Jaja, 2011) [19]. Hence, lecturers can just pass on aptitudes and skills as well as ideas to their students in the event that they themselves are masters of their subjects (Adelabu & Adu, 2015) [3]. Integrating technology into educational process as the strategy in teaching and learning in Nigeria is viewed as an imperative and is one of the methodologies to make lecturers and instructors, as well as students meet the standards for business employment and confident in self-reliant (NPE 2004; Aluede, Idogho & Imonikhe, 2012) [56, 24]. In this manner, it is critical for each pre-service preparing instructor and lecturers to acquire ICT abilities to meet the specialized guidelines set by the national policy to upgrade his/her educating and learning process. Enemali, Aliyu and Bulama (2016) [10] recommended that it is compulsory for each lecturer and pre-service educators to be presented to at most one specific ICT subject to obtain aptitudes which will upgrade teaching quality in Nigerian educational system framework.

Literature Review

Undoubtedly, the implementation of e-learning systems in higher education has enabled a dramatic change in teaching and learning practice (Adelabu *et al*., 2014) [3]. However, this cannot be realistic without the idea and use of ICT in the space and domain of education. ICT in higher education has an impact on both the instructors/lecturers and students in acquiring information (Umunadi & Ololube, 2014) [62]. It helps in the achievement of educational objectives, benefits in decisive proficiency and innovative technology education among instructors/lecturers and students and to share technological assets of teaching and learning strategies.

Consequently, It makes teaching and learning extremely appealing to both the educators and the students, information gaining up for the lecturers and students and greater effects is on students as it expands the ability of students and adds worth to knowledge (Ololube, Kpolovie, Amaele, Amanchukwu & Briggs, 2013) [41]. For these reasons, therefore it is inevitable to integrate ICT into educational system and curricula (Richardson, 2008; Tezci, 2011a) [51]. In this context, it is assumed that in schools there is a significant amount of resources devoted to ICT investments (OECD, 2017; World Bank, 2010; Wren, 2017) [39].

Investments in ICT-related software and hardware in schools and classrooms provide teachers with easy access to such technologies. There are several ways and meanings given to ICT integration into educational system and most emphasis were directed towards assisting mostly students. However, researches have shown that teachers do not use ICT in the classroom to help students learn, and they cannot handle technology-based lessons (Ottenbreit-Leftwich, Ertmer & Tondeur, 2015; Palak & Walls, 2009; Tezci, 2011a; Ward & Parr, 2010) [46, 48]. This means that integrating technology into the classroom on the side of teachers depends on their views on approaches to educational technologies and curriculum needs (Roblyer & Doering, 2010) [52].

Although curriculum development work has been carried out for the effective integration of ICT into curriculum, the presence of ICT in curricula does not mean that the teachers will effectively use these tools in the teaching and learning process (Kervan & Tezci, 2018). Because of the growth of technology, different approaches to educational technology have emerged such as technology as a media and audiovisual communication which became popular in the 1930s (Smaldino *et al*., 2011; Roblyer & Doering, 2010) [52]. At that time, using instructional slides and films to support teaching and learning became popular in academic settings. Thus, media (Roblyer & Doering, 2010) [52] captured the concept of educational technology.

Nigeria started implementing its e-learning policy in April 2001 with the formation of the National Information Technology Development Agency (NITDA). Although the adoption of e-learning started with the tertiary institutions and Universities in Nigeria, but the question is to what extent was it accepted as a learning medium of teaching and learning. However, it appears that the thought towards e-learning and abilities remain challenges for the adoption and utilization of technology proficiently in the classroom in Nigeria (Osuafor & Emeji, 2015; Kocaleva *et al*., 2014; Oye, Iahad, *et al*., 2011; Chiedu, 2010) [5, 60, 33].

The development of internet facilities has indicated a challenge by fixing costs and expanding information exchange capacity limit to energize the classroom and extended use of e-learning in teaching and learning in the higher education institution structure in Nigeria, thereby

making educational an open door that was impracticable to an enormous number of students (Kasse & Balunywa, 2013; Boitshwarelo, Reedy & Billany, 2017) [30, 14]. Adopting e-learning is not just willingly but necessary in Nigeria education, because it has come as a mediated type of guidance and has all the features, qualities, characteristics and fundamental quality in defeating a portion of the grave difficulties being faced by the Nigerian educational sector. For instance, in Nigeria, over a million applicants have consistently applied for entrance into various higher institutions in the nation. However, just a few of them get accepted due to inadequate or deficient accessible spaces (Aluede *et al*., 2012; Adetunji & Ademola, 2014; Omotayo & Tiamiyu, 2017) [9, 4, 42].

Nevertheless, e-learning has become a veritable tool to be used in achieving proper educational objectives in the school setting. Olutola *et al*. (2018) and Umah and Nwokike (2018) [61], posits that the roles of e-learning in the teaching and learning process cannot be overestimated, especially in Nigeria where emphasis is being placed on technological development. Considering integrating it in teaching as changing educators 'or instructors' job in the classroom is reasonable of practice for students to get lifetime educational training (Akinde & Adetimirin, 2017; Alabi & Mutula, 2017) [6, 8].

Though, studies by Ezeugbo and Asiegbu (2011) [23] and Nwana (2012) [38] have established that utilizing e-learning in higher institutions in Nigeria has issues and hindrances to its successful implementation and usage of facilities for educational curriculum and modules in educational organizations in Nigeria. Otsuka (2011) [45] share the same viewssaying that computer proficiency in Nigeria is still at its most minimal fade tide. Especially, since e-learning is still confronted with an array of difficulties and challenges, some of which incorporate deficient e-learning facilities, absence of skilled labour to deal with the current resources, lacking subsidizing of higher education and unwillingness inability with respect to the lecturers / instructors to completely coordinate new technology in their instructive projects (Anene, Imam & Odumuh, 2014) [10].

The theories used in this study are Theory Reasoned Action, Theory of Planned Behaviour, Technology Acceptance Model 1,2 and 3, and Technology Readiness. The essence is to provide a base and supporting pillar for the variables theoretically. The theoretical structure of this study is formed from literatures reviewed by the researcher who finds it imperative to complete the model with exogenous and endogenous factors that would in turn help in explain the difference. In this manner, the researcher chose to select factors from different models (TRA, TPB, TAM, TAM2, and TAM3& TR). The following variables were selected for the study. Exogenous (SN, TSE, PE, JR, FC TR) and endogenous (PU, PEU, ATT, BI & e-learning Usage) (Davis, 1989; Venkatesh, Brown, Maruping & Bala, 2008; Venkatesh & Davis, 2000) [66].

Diagram represents the structure of the conceptual framework consisting variables from each of the theories involved in the study:

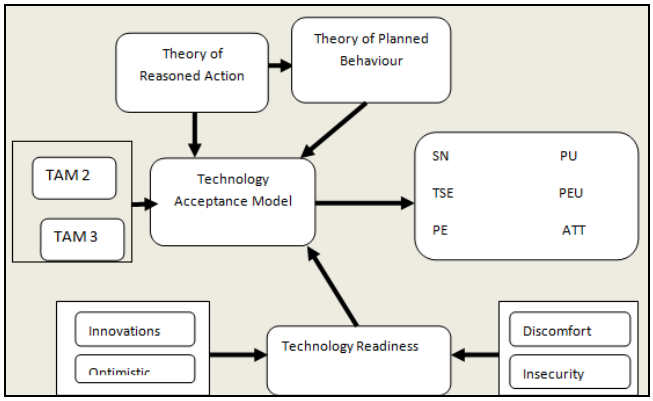

Fig 1: Theoretical Framework

PU: Perceived Usefulness; PEU: Perceived Ease of Use; PE: Perceived Enjoyment; Use; SN: Subjective Norm; JR: Job Relevance; TSE: Technology Self-efficacy; FC: Facilitating Conditions; ATT: Attitude towards; BI: Behavioural Intention to Use; AB: Actual Behaviour; e-L: e-learning Utilization

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Methodology

Predicting factors of e-learning among lecturers in the universities in the North-eastern Nigeria, methodology comprises of the research design, population of the study, sample size and instrumentation. The research design of this study is quantitative, survey non experimental research; where questionnaire served as the means of collecting the data. The questionnaire of this study is made up of three parts, namely the demographic factors which was measured with seven items, the independent variables which are, technology readiness was measured with 12 items, subjective norms is measured with six items, behavioral intention was measured seven items, perceived usefulness was measured with six items and perceived ease of use was measured by nine items, while the dependent variable is e-learning usage was measured with 12 items. The population of this study is 1381; sample size is 312 and strata sampling technique was used in the study.

Data Analysis and Discussion of the Findings

The reason for this section is to interpret the standardized regression weight (β) with its CR and level of significance, which was used to addresses hypothesis and coefficients of assurance which predict the exogenous factors over the endogenous factors. The exogenous factors are: technology readiness, subjective norm, the endogenous factors are: perceived usefulness, perceived ease of use, attitude towards use, behavioral intention and e-learning usage behaviour.

The results of the standardized regression weight (β) with its CR and level of significance, which was used to address the extent at which each factor predicts e-learning use in the North-eastern part of Nigerian Universities. The results revealed that, technology readiness was found to exhibit a significant relationship with e-learning utilization (β =. 570, p=.000). This implies that university lecturer is optimistic of finding technology capable of using e-learning in their classroom teaching and learning activities. It is the strongest predictor for e-learning use.

Subjective norm was found to have a positive and significant relationship with behavioral intention towards e-learning utilization (β=.520, p=.000). This result indicated that university lecturer is influenced by important people around him/her to use e-learning, this in turns implies that expectations of people around a lecturer can influence his/her behavior to use e-learning for classroom activities. Therefore, a strong indicator can predict e-learning use.

Perceived usefulness of e-learning resources was found to have a positive and significant relationship with e-learning utilization (β=.223, p=.000). In this study, this result shows that lecturers perceived using e-learning is significantly useful in their classroom activities. It is found to be a strong predictor for e-learning use.

Perceived ease of use was found to demonstrate no significant relationship with the perceived usefulness of e-learning (p=.761). This indicated that, the variable do not have influence on the e-learning in the North-eastern Nigerian Universities.

Behavioral intention was found to demonstrate no significant relationship with e-learning utilization (p=.538). This indicated that, behavioural intention do not have influence on the e-learning in the North-eastern Nigerian Universities as perceived by the lecturers. Below is the table showing the predicting effect of each variable on the e-learning in North-eastern Nigerian Universities.

Table 1

Hypotheses path			b	β	S.E.	C.R.	P	Hypothesis
ELU	<---	TR	.591	.560	.104	5.683	***	Supported
BI	<---	SN	.289	.370	.051	5.701	***	Supported
PU	<---	PEU	-.031	-.037	.063	-488	.625	Not Supported
ELU	<---	PU	.289	.212	.106	2.276	.005	Supported
ELU	<---	BI	-.086	-.061	.104	-.823	.410	Not Supported

The result of the finding revealed that technology readiness is related to e-learning use and as postulated, the relationship was found to be significantly supported. This empirical result coincides with the findings of previous studies that argue technology readiness has a predicting effect on e-learning use such as Azimi, (2013) [11] and Eslaminejad, Masood and Ngah, (2010) [22]. For instance, finding of study by Godoe and Johansen (2012) [27] revealed that both technology readiness and system specified dimensions are major predictors when using new technology. This result also was in cognizance with other previous researchers such as Parasuraman and Colby (2015) which revealed that TRI have a direct effect on system use. Again study conducted by Rojas-Méndez, Parasuraman, and Papadopoulos (2017) indicated that TR has a significant effect on the system use and it is regarded as significant predictor to system use. It was established that Swedish users of technology, found that TR was a useful tool for user's attitudes and behaviours and again in the context of e-learning, it confirms that lecturers with a high TR are greatly inspired to use e-learning as reflected by the measure and value of new ideas found in the technology utilization (Mathing *et al*., 2006). Therefore, in view of the university lecturers in this study, the result revealed that the more lecturers is innovative ready and optimistic in using new technology it is more likely easier and interesting for them to use it in their teaching and the more the use of e-learning is enhanced in the classroom activities. Again the finding of this study is revealing a lecturer believes in new technology may likely use it to teach in his/her classroom.

The result revealed that subjective norm has a optimistic and significant relationship with lecturer's behavioural intention towards e-learning. This finding shows that subjective norm predicts lecturer's behavioral intention toward e-learning in the university in Nigeria. This finding is in line with the earlier findings in the study by Teo (2015) and Venkatesh and Davis (2000). For example, study by Teo (2015) revealed that perceived usefulness, perceived ease of use, subjective norm were eminent to be strong determinants of students' behavioural intentions towards e-learning system. Similarly, the result of this study is in confirmity with most of the previous studies that revealed a significant direct effect of subjective norm on behavioral intention (Usoro & Echeng, 2014; Oye, Salleh & Iahad, 2011). This outcome showed that university lecturers in Northeastern Nigeria valued listening to their closed relations, colleagues and authorities on taking a decision in their teaching jobs. Hence, their choice and intention to listen to the important people around them and motivation to use e-learning system for their teaching jobs will be more encouraged and technologically enhanced.

Perceived ease of use was found no significant relationship on university lecturers perceived usefulness of e-learning, This finding was not consistent with previous studies by Davis, 1989 and Venkatesh and Bala, (2008). Similarly, the result of this finding contradicts the result of the study by Venkatesh and Morris (2000) which found the correlation between perceived ease of use and perceived usefulness. However, it is also consistent with the finding of studies by Merhi (2015) and Isiyaku Dansarki (2015) [19] that confirmed perceived ease of use did not predict perceive usefulness. The result of this finding however, implies that university lecturers in North-eastern Nigeria has responded to the fact that the usefulness of using e-learning system is not easy to use and is not free from stress as well as time consuming to them. Therefore, the authorities of higher institutions in Nigeria will use this finding to organize some training and workshops to acquaint lecturers with the new technology to use e-learning system in classroom activities

Perceived usefulness ofe-learning use was found to have a positive and significant predictor on e-learning utilization. This result has made a claim that the lecturers in Nigeria higher education have decided to have a reason to use technology because they feel it is useful to upgrade and improve their teaching jobs. Despite the fact that in the original TAM, Davis (1989) equally PU and PEU has indirect effects on system use. This finding also is in agreement with the previous studies. For instance Svendsen *et al*. (2013) in investigating technology acceptance among Norwegian users established that both PEU and PU had a considerable effect on system use. Similarly, in an empirical research focusing on Malaysian student teachers' acceptance of computer technology in a foremost research

university, Echeng *et al*. (2013) and Teo and Wong (2013) [59] using Malaysian student teachers for this study and found that perceived usefulness of computer technology, perceived ease of use and attitude towards computer use to be considerable determinants of ITU system use. Furthermore, the result of the study discovered that PEU considerably influenced PU; both PU and PEU considerably influenced ATCU, and both PU and ATCU considerably influenced ITU. The significant of this construct in this study is that the lecturers in North-eastern Nigerian higher education has showed that using e-learning system is useful in improving and enhancing their teaching efficiency as well in learning process. It is therefore in order for lecturers in Nigeria who has not made up their minds to use e-learning system in their teaching to know that it is useful for the user to enhance and improve his/her job or studies.

The result of the finding also revealed that behavioral intention was found to have indicated no significant influence on e-learning utilization. This finding contradicts the earlier findings by Chang *et al*. (2017) and Teo, Milutinović, Zhou, and Banković (2017) that revealed that behavioral intentions to use e-learning is strong on the utilization of the e-learning system. But, the institutionalized negative beta coefficient meant that lecturers' behavioural intention to utilize e-learning has anticipated a decline in their use of e-learning for classroom teaching purposes. Perpetually, while their expectation to utilize e-learning in the classroom was high, their self meticulous actual utilization was low. This is obvious in the illustrative descriptive analyses of constructs in this study, where behavioural intention had the highest mean rating while use was the least.

Yet, this finding negates with Davis *et al*. (1989) who proposed that individuals' computer use can be anticipated sensibly well from their expectations and Kim (2018) Lievens and Mahr (2011) [34] who found critical positive connections between's behavioural intention and actual utilization of a smart phone exist yet, it is reliable with meditation. For example, Bagozzi (2007) [12] and Pynoo and van Braak (2014) [50] found that there were weak or no relationships exist between behavioural intention and utilization performance. Actually, Bagozzi (2007) [12] argued that the intentional performance relationship is likely the most uncritically acknowledged feelings in sociological research work. In master's thesis Isiyaku Dansarki (2015) [19] the finding revealed that behavioural intention to use has no significant effect on system use. In fact, this finding is suggesting that the authorities of universities in Nigeria should have the advantage of provide the more motivational factors to increase the intention of university lecturer to use of e-learning system among them in their respective institutions. By this it will create more chances for e-learning utilization to increase and enhanced.

Conclusion and Recommandation

Based on the findings in this study, indicated that majority of the variables positively and significantly predict e-learning as perceived by the lecturers in North-eastern Nigerian Universities.However there are still some variable that insignificantly predict the e-learning in North-eastern Nigerian Universities. There are need to provide a major in other to make those variables to serve actively in the prediction effect on the e-learning in the North-eastern Nigerian Universities. In this study not many external variables were considered in this analytical predictive factor. We suggest further research could include more relevance external variables for predicting technology use and would allow an ever more complete assessment of the applicability of factors in explanation or predicted factors for e-learning technology among lecturers. A vital input of this study is the use of a most excellent e-learning use-based model in an educational perspective, which differs significantly from the commerce and industrial organizations normally studied in prior research.

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