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Determining the Relationship between Factors Influencing e-Learning System Utilization among Academics of Higher Education Institutions in Nigeria

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Abstract: *This study offers an empirical appraisal of an expansion of Technology Acceptance Model (TAM), its looks at how university lecturer's technology adoption could impact their intention to utilize e-learning under a non-mandatory condition in higher education institutions of Nigeria. However, chances are that e-learning could fail to deliver the needed capacity of influence in education when lecturers struggle to adapt due to inherent technical issues. Computer literacy and self-motivation are common factors that affects the e-learning progression in the academic environment. The information was gathered from 312 sample size of lecturers from six selected universities in north-eastern Nigeria. These data have been analysed with Structural Equation Model to test the relationship between the factors of the proposed model. The result revealed that out of a total of six external factors, all were discovered supportive and critical indicators of e-learning utilization directly/indirectly among the university lecturers. In the past, the researchers have affirmed the validity of the expanded technology acceptance model in deciding the levels of acceptance to utilize innovation. The study grasped closely the implications of the outcome of researchers and professionals as regards e-learning adoption in teaching and learning, in addition the study provides an archive for formulating educational policies easily accessed by administrators of higher education institutions.*

Key words: *E-learning, Academic lecturer, usage, technology acceptance model, structural equation modelling.*

1. Introduction:

The education sector is one of the areas where innovation has made a considerable impact. The processes required from when a student applies for admission until graduation can be caught and stored by computer applications of the modern time. The web facilitates these procedures independent of geographical location. Student's utilization of online learning and the internet network have guaranteed that educationists change the conventional

methods used in teaching and learning (Deepshikha 2018). Modern research on teaching and learning have changed due to the utilization of e-learning management system, the web contains learning resources with no limitations and boundaries of time or area (Al-Samarraie, *et al.*, 2016). Development of e-learning by information and communication technology (ICT) has emerged as an innovative move towards the facilitation of learning liberty in higher education. Al-Samarraie et al (2017) stated that e-learning gives an alternative to traditional classroom instruction, more so, it empowers students to suitably enjoy taking courses in succession without time confinements or geographical constraints (Al-Samarraie *et al.*, 2017).

E-learning technology has reshaped other tertiary educational practice in terms of improving academic learning and will be more feasible in the future (Stanislava and Lambri 2016). Hussain (2012) reported that the internet and its usage in higher education have improved educational development and the research has encouraged virtual interactions for sharing research findings.

For decades researchers have searched for different ways and methods for improving effectiveness of education and increasing the value that comes with it (Tulinayo *et al.,* 2018). E-learning is a remedy to such a need (Alone, 2017). In recent decades, rapid development of engineering and technology has led to the emergence of entirely new classes of electronic devices (Frisnoiry et al., 2018), their capabilities are continuously growing, and their prices fell sharply. As a consequence, they are widespread and they have been gradually included in the educational learning process worldwide. The use of electronic devices in education has led to some changes of the training methods, to completely new and unprecedented pedagogical and didactic approach.

E-learning is performed with willingness to disseminate information by tutors, and the readiness to perform the tasks by learners, because this form of learning permits choosing the topic, the preferred time and place for the learners, these supposes their positive attitudes to e-learning. The satisfaction from the implemented tasks and received feedback in e-learning contributes to further organization of time and efforts put by the learner, and to characterize such attributes that correspond to one's values (Stanislava and Lambri 2016). E-learning provides intelligence acquisition, and advances the participation and thought sharing among students and the lecturers. It is well known that digital materials, often OPEN EDUCATIONAL RESOURCES improves the quality of education and at affordable cost, these are some of the reasons behind the needs to implement e-learning in Nigerian universities education system. (Kimwise et al., 2019)

More so, e-learning provides advance participation and thought sharing among students and lecturers (Al-Samarraie et al., 2016; Alsabawyet al., 2016). Therefore, e-learning seems to advance current learning and teaching practices by giving more productive and viable learning encounters, hence, it is basic to guarantee that e-learning system effectively integrates qualities that guarantees long-term utilization of innovation or small piece of information technology following its underlying acceptance in both higher education and other fields of non-mandatory situations (Abersek and Abersek, 2011; Dolenc and Abersek, 2015).

Regrettably, introducing ICT into the learning practice and adopting online programs and courses do not warrant a reception in e-learning (Chen 2011; Oberiri and Timothy 2018). Conventional teaching and e-learning vary in how students take delivery of instruction, how instructors transmit teachings, on how they correspond with their students, how students take rights of the learning method, how the learning resources are accessible, and who is the key supplier of information. For instance, in e-learning system, someone can reside in a distant part of the world and still have right to the usage of an educational platform, which reduces the cost of learning and provides access to those who do not have such prior opportunities (Chang, 2016). E-learning is flexible in the way that it offers an online learning environment that is accepting, suitable, and remote (Doculan 2016).

In the e-learning system a lecturers/instructors do not have total and complete authority over the use of the materials and speed of conveying instructions to students. Conversely, students are contributors to the learning process and not lifeless members of the virtual environment (Bahhouth, et. al., 2011). Consequently, some of the lecturer's analysis of e-learning require additional work and time on their part, besides, an instructor-centred setting is desirable, since it is economically cautious (Bair and Bair, 2011). In toting up, e-learning provides for independent learning and bridges that covers the gap by being cost-effective, geographic convinience, and collective boundaries (Mtebe, *et al.,* 2016).

According to a study conducted by Obaseki (2017), the requirement for lecturing have been greater than before since lecturers play a key role in the online learning situation (Obaseki, 2017). Online instruction is a new experience for the majority of virtual schoolteachers and "not everyone is enthusiastic about the growth of technology-mediated teaching" (Bacow, et al., 2012). This is the reason why most academic lecturers tend to have a low recognition rate of e-learning systems (Seaman, et al, 2018).While e-learning offers various supporting features for teaching-learning processes, most universities in Nigeria have made a considerable investment in e-learning that are not used by the faculty members to their fullest capabilities (Siddiquah and Zeema 2017).

E-Learning Africa (2015) conducted a continent-wide survey of education and ICT professionals, the survey design used nine countries it confirmed that 95% of respondents viewed e-learning/ICT as the key to improving education, the report was consequent to which the population of the Commonwealth Certificate for Teacher ICT/E-learning Integration (CCTI) Programmed was established (Aishah and Zeema 2017). There have been insufficient awareness in many schools, colleges, universities, institutions and government departments of the benefits e-learning provides. It was recommended that governments, international organizations, and institutions should harness the potentials of the technology to improve education and the economy of Africa (Faria and Mariam 2017). Digital materials, often open educational resources (OER) improves the quality of education and provides it at less cost.

Olutola et al, (2015) examined the challenges of e-learning technologies in Nigerian University education and concluded this is a challenge that requires awareness. Education is the foundation of innovation and development, and the role of e-learning in the teaching and learning process cannot be overemphasized. E-learning is one of the most efficient tools for advancing knowledge, skills, and development in any nation. It is necessary for

quality education in Nigerian tertiary institutions. This paper reviews the concepts, benefits, and challenges facing e-learning education in selected north-eastern Nigerian universities. The paper recommends that government at all levels; non-governmental organizations and private sectors should assist to equip universities e-learning centre's with model equipment for effective delivery of instructions from lectures to students through e-learning technologies (Ivanna and Atik 2019)

Jaschik and Lederman (2014), posited that the evaluation of academic staff attitudes on advance innovation, demonstrated that the greater number of staff showed their intention to use an e-learning. However, with slim interest in this perspective: posting course syllabus, and recording grades, just a couple of academic staff revealed that using the e-learning is the most proficient method to record their lecture at campuses. While the advance part of higher educational organizations that have e-learning set up, at the portion of the academic staff reported that using such frameworks at all time while most of the academic staff do not exploit propelled e-learning ability to enhance the students' learning outcomes. In this way, more inquiries about these are required to understand a superior comprehension of the factors that influence academic staff e-learning usage (Mtebe *et al.,* 2016). The structure adapted for a faculty-led inventiveness to develop a community to practice a form of enlightened and advance education, used a mixed-method procedure of a faculty-developed, electronic survey to evaluate 72 faculty members exposed on the positive position toward technology in the classroom and the normal faculty member used about six technological tools in their courses. One discovery of worry is that faculty are scared that technology causes trouncing of humanistic perspective in education. These discoveries demonstrate the confirmation of extended usage of e-learning by the scholarly teachers, more research is essential to grow better and robust elements that impact scholastic instructors' utilization (Thomas, 2014). The principal reasons for this paper are: To identify the factors that impact academic education to utilize e-learning and to decide the very basic level of causal relations between the variables (Alone *et al.,* 2019). The research questions proposed for the study are;

1. Does technology readiness (TR), subjective norm (SN), technology self-efficacy (TSE), perceived enjoyment (PE), attitude towards use (ATT), perceived usefulness (PU), behavioural intention (BI), job relevance (JR), and facilitating condition (FC) have positive effect on E-leraning utilization?
2. What is the predictive variation of Perceived usefulness (PU) and behavioural intention (BI) on E-learning utilization?

Consequently, this paper used Davis' (1989) Technology Acceptance Model (TAM) extended as a normal model to predict instructors' belief and utilization of e-learning in higher education institutions. Furthermore, this paper anticipated expansion of the first TAM by including six external factors: technology readiness, subjective values, technology self-efficacy, perceived enjoyment, job relevance, and facilitating conditions in it and inspected its legality in descriptive academic staffs' utilization behaviour (Mthethwa and Munyaka 2018). Through directing empirical research among university academic instructors. The assessment offered the basic outcome relating to academic staffs' state of mind under a situation of non-obligatory utilization of e-learning framework. In light of the

outcomes, the significant determinants of e-learning utilization defines the key factors which was established as to make academic lecturers' intent users of e-learning systems. With the rapid growth of e-learning, particularly in higher education institutions Mohamed et al., (2019) and several other researchers, successful discussed e-learning usage by investigating various studies, from different perspectives, and in different contexts (Bhuasiri et al. 2012; Al-Samarraie et al, 2017).

2. Literature Review

E-learning is a system based on technology, organization, and management which bestows upon the students, the ability to learn via internet from an instructor, this form of learning is a robust and dynamic process which facilitates and enhances learning.

E-learning makes use of telecommunications technology to get information to achieve the teaching and learning objectives, in other words e-learning is the acquisition of disseminated knowledge using electronic devices. it can be said that e-learning refers to the use of systems of electronic education such as computer, internet, multimedia disks, electronic magazines, virtual newscasts, and much more, whose purposes are to reduce time and expenses to achieve better, faster, and easier learning (Birgit and Mario 2017).

Employment of information and communication technologies in education has created a new mode of learning which does not require physical attendance; hence, learning has been made possible in environments other than classrooms. Extensive application of new technologies, such as the Internet, social networks and mobile phones, affects the processes of education at universities. Technology has a significant impact on university education, creating better contacts and the achievement of the latest information systems, functional for learning and teaching (Bedrule-Grigoruta and Rusua, 2014). There are systems which maintain personality learning, mutual learning, learning content management, learning action management, proper learning, casual learning, and office learning (Aishah and Zeema 2017). One of the most widespread educational systems, which are supported by information technology, is e-learning (Urha, et al., 2015).

The effective use of e-learning technology system resources has the great potential to make students to become interested in in availing themselves for educational activity in modern educational processes and to increase teaching level and quality (Geladze, 2015).

An e-learning technology solves distance problem and involve people who have a direct connection with the current educational activities, for example, colleagues from other schools, representatives of scientific circles and those working on a similar problems (Titie et al., 2018). It allows the educational process in time and space to go beyond the limits of the classroom and become maximally open (Sellina and Dave 2017).

By e-learning provides the possibilities of online group chats and discussions, documents (lecture materials, homework, and assignments etc.), power points, video clips uploading, grading and course evaluations to support teaching and learning are very possible and made easy. Because, e-learning has evolved in a complex way in terms of educational contents, technological resources, and interaction possibilities; there is an increasing concern in regard to the quality of the interface and the ways in which tasks are accomplished in these systems (Freire et al., 2012). Consequently, Oyelere, et al., (2016)

and Freire, et.al (2012) stated that the definition of the term "e-learning usability" varies according to the area in which it is being studied. In the viewpoint of ergonomics, the term "usability" can be defined as "the capacity a system has to offer to the user in carrying out of his tasks, in an effective, efficient and satisfactory manner". They contended to evaluate the e-learning' usability, to be a systems perspective to look at critically rather than the via users' perspective. However, this is in terms of system usability (Kin-yuen and Yiu-chi 2017).

According to Jaschik et al. (2014) a lots of studies have been carried out in the e-learning domain in diverse instructions. Researchers have looked at a variety of dimensions of the usefulness of e-learning, as varied course content, technology, techniques on one hand and the people aspect on the other hand. Despite this comprehensive coverage, some gaps exist in the research, past research addresses each issue in the usefulness of e-learning as a separate topic - treating e-learning either as a technology affair or as a people problem. There is a strong case for treating e-learning as a socio- technology system rather than a social system considering only the people aspect or technology system considering only the standards and processes aspects (Flanagan, 2016).

Reality today proves the fact that, e-learning technologies are more and more often used in the higher education system. It is apparent that nowadays they are used not only as additional tools in the educational sphere, but it represents new functional rules and priorities of institutional structure in the process of higher educational development (Darejan, 2015).

Nowadays, e-learning technologies have penetrated into almost all spheres of educational fields. This fact is connected with a permanent widening of abilities of World Wide Web on the one hand, and makes it possible to place any important information concerning education on its vast majority of servers. On the other hand the usage of modern means of telecommunications by students/pupils in the learning process, results in creation of new forms of teaching, without which it is impossible to solve the ever increasing range of educational tasks (Steven, 2016).

Review of studies conducted in the field of e-learning application and its impact on learning and creativity suggests that the use of this teaching method in the teaching-learning process can lead to the effectiveness of training. Emergence of new theories of teaching and learning has made the education sector to shift from being teacher-oriented to being student oriented. Moreover, development and evolution of new communication devices has enabled modern man to use modern methods of teaching and learning and solves the constraints of time and space barriers (Hosseini et al., 2015).

The use of electronic technologies has led to the development of educational opportunities and helps students develop their skills. According to studies, the evidence shows that e-learning can have a profound and positive impact on learners' involvement, positive attitudes of teachers, personalized learning, and learners' creativity (Zare et al., 2016)

Similarly, Panda and Mishra (2007) established that the major barriers for e-learning adoption as perceived by academic lecturers were: poor access to the internet, lack of training, than institutional strategy on an instructional plan for e-learning. They established individual interest to use technology; intellectual challenge and sufficient condition for technology infrastructure were the imperative motivators in e-learning acceptance by the academic community (Fathema et al, 2015).

However, according to several research, e-learning and online teaching usually would require changes in beliefs and philosophical orientations of lecturers on one hand, and the acquisition of new technological proficiency changes in instructional design methods and changes in attitudes, among others, on the other hand, lecturers are changed specialists in our educational organizations (Ghavifekr, 2015; Sarfo and Yidana, 2016; Seok, 2008; Osguthorpe and Graham, 2003).

More observations have been made that accepting new technology is not just easy when it is newly introduced or when it finds itself in the educational system (Teo, et al., 2015; Huang and Liaw 2005; Rana 2012). However, lecturers and students are the key drivers, they assume essential participants in technology integration in the university and classrooms. In his submission, Rana (2012), challenged researchers to discover a way of finding solutions to the barriers and challenges of not easily accepting the adoption of new technology in education.

In a similar contribution Teo and Su Luan, (2013) Assessing e-learning acceptance by university students as well as using the e-learning acceptance measure, among the user domains, age and perceived competence correlated significantly with the factors in ElAM. Using MIMIC modelling, students' e-learning acceptance was found to be significantly different by age and perceived competence (Abdelmoiz and Xiaohui 2018).

Subsequently, Ahmad, et al., (2010) examined the Cross-validation of an expanded model on Faculty's acceptance of the PC based innovation. In their investigation, they cross-approved hypotheses and models which endeavour to foresee and clarify the acceptance and reception of PC based innovation proliferation. They managed three principal issues: first of these issues concerns the paradigm estimates utilized in the past TAM, second issue in the TAM written literature concerns the simplification of the model crosswise over user sample and thirdly TAM is viewed as a standout amongst the most powerful bases to depict innovation acceptance, for this situation the exact confirmation gathered from different TAM considerations, yielded blended signs. In light of these issues, they approved a broadened technology acceptance model (TAME) on the information obtained from the staff of a university in a continuous, computer interceded work setting (Salomao et al., 2016).

The technology acceptance model posited by Davis (1989) examined the relationships among three important variables, namely perceived usefulness, ease of use, attitudes, and intentions towards adoption. Davis et al., (1989) and Park (2009), states that the expected utilization of e-learning is affected in the meantime by the attitude towards behaviour and by relational impacts, as well as perceived usefulness and intention to mediate the utilization of e-learning system. Similarly, Jović, et al., (2017) conducted a study on

perceived e-learning satisfaction, it was found to be a key factor affecting instructors' cognitive perceptions, such as perceived self-efficacy and perceived usefulness of e-learning while previously, it was found that some external factors as technology self-efficacy, subjective norm, perceived enjoyment, and job relevance are exceptionally strong factors and determinants of beliefs. Perceived usefulness together responds with perceived ease of use on attitude toward the utilization of e-learning. Equally, Rym, et al., (2013), revealed that e-learning self-efficacy and subjective norm plays an important role in affecting attitude (students) towards e-learning and behavioural intention to use e-learning (Huynh et al., 2018).

TAM research has a great impact on staff and student's choice of online techniques for their courses. It concentrates on utilizing Knowledge of teachers in a way that academic courses can be delivered anywhere and anytime. As time passes, there will be growth of knowledge imposed by new requirements for a better use of this asset. The approved model of TAM gives a focal point for the insight and the assessment of the academic staff and view of the use of technology for online delivery (Himanshu and Pandey 2017).

The online method of learning is best suited for everyone. This digital revolution has led to remarkable changes in how the content is accessed, consumed, discussed, and shared. Online educational courses can be taken up by office goers and housewives, at any time that suits them. Depending on their availability and comfort, many people choose to learn at weekends or evenings (Mohammad et al., 2016).

Unlike classroom teaching, with online learning you can access the content an unlimited number of times. This is especially required at the time of revision when preparing for an exam. In traditional form of learning, if you cannot attend the lecture, then you have to prepare for that topic on your own; in e-learning, you can attend the lectures whenever you want with ease. More so, prime benefit of learning online is that it makes sure that you are in synchronization with modern learners. This enables the learner to access updated content whenever they want it.

E-learning is a way to provide quick delivery of lessons, as compared to traditional classroom teaching method, this mode has relatively quick delivery cycles. This indicates that the time required to learn is reduced to 25%-60% of what is required in traditional learning process. E-learning helps in creating and communicating new training, policies, concepts, and ideas. Whether it is for formal education or entertainment, e-learning is very quick way of learning. E-learning enables educators to get a higher degree of coverage to communicate the message in a consistent way for their target audience. This ensures that all learners receive the same type of training with a uniform learning mode (Homavazir, 2015). E-learning is cost effective as compared to traditional forms of learning. The reason for this price reduction is because learning through this mode happens quickly and easily. A lot of training time is reduced with respect to trainers, travel, course materials, and accommodation. This cost effectiveness also helps in enhancing the profitability of an organization for acquiring further education for staff. Also, when you are studying at your own place, you are relieved from paying for travel expenses (e.g. accommodation) when training happens in another city/state, there is less expenses on external learning materials (Kiani, 2016).

As e-learning is a paperless way of learning, it protects the environment to a lot of extent. As per a study done on e-learning courses, it has been found that distance-based learning programs consumed around 90% less power and generated 85% less amount of CO_2 emissions as compared to traditional campus-based educational courses. With e-learning, there is no need to cut trees for obtaining paper. Thus, e-learning is highly eco-friendly way of learning (Atiquil, 2014).

2.1 Technology Acceptance Model (TAM)

Technology Acceptance Model is based on Ajzen and Fishbein's (1980) theory of reasoned action (TRA). According to TRA, an individual's intention to perform behaviour is a function of his/her attitude toward performance behaviour and social norms. An individual's attitude predicts his/her intention and intention shapes the actual behaviour (Ajzen and Fishbein 1980).

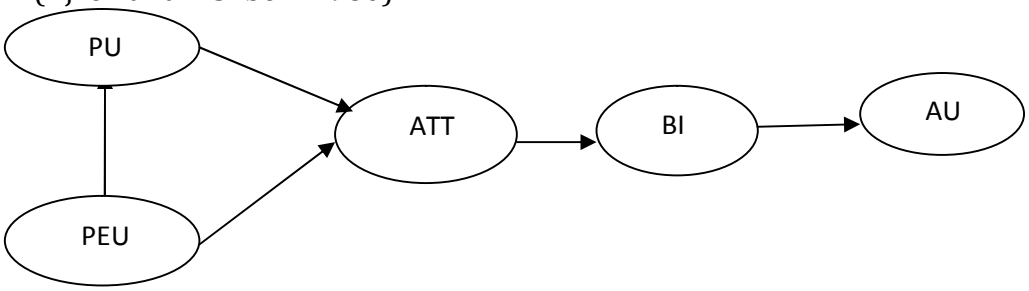

Fig.1: Technology Acceptance Model (Davis, 1989)

The two fundamental determinants of user acceptance of technology as claimed by Davis (1989) are the two strong beliefs (Perceived Ease of Use and Perceived Usefulness (PEU and PU)) which he defined them as "the degree to which a person believes that using a particular technology would be free from effort" and "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989).

Accordingly, he suggests that PU will be prejudiced by PEU, when users' discover a technology is "easy to use", then they perceive the technology as a "useful entity". Similarly, TAM also offers the causal relationships of these two fundamental beliefs (PEU and PU) with three other constructs "attitude toward using (ATT)", "behavioural intention to use (BI)" and "actual use (AU)". ATT is referred to as "an individual's positive or negative thoughts about performing the art of behaviour (Fishbein and Ajzen 1975). By TAM, both PEU and PU control the users' attitude toward using technology. It still claimed that if users discover a technology useful and easy to use than they expect a positive attitude towards this technology (Umar and Abdullahi 2017). Another construct is "Behavioural Intention (BI)", which is referred to as the degree to which an individual has formulated a mindful strategy to execute or not carry out some particular potential behaviour (Davis, 1989). TAM also claimed that PU and ATT directly control BI. On condition users find a specific technology as a useful one (PU), then they extend a positive intention of using it.

Similarly, users' positive attitude toward a specific technology leads them to develop an intention to use this technology. TAM suggests that users' behavioural intention (BI)

shapes their actual use of the technology (AU). If users have the intention to use a specific technology than they use it. TAM is chosen in this study because prior research has found TAM as the most influential, commonly employed, and highly predictive model for IT adoption (Adams, et al., 1992; Davis, etal., 1989; Venkatesh and Davis, 2000; Venkatesh and Bala, 2008). But in the final model, Davis et al. (1989) excluded attitudes toward use, because as a mediator, this construct has a weak influence on beliefs PU and PEU and BI use. Final model BI has a mediator role to play in PU, PEU and actual system use (Davis 1989). Though TAM was designed to study technology acceptance decisions across different organizational settings and users' population, research on TAM's application in education was limited in past (Teo, et al., 2009). Recently, adopting TAM as an explanatory tool in investigating e-learning processes has become a trend (Dharel and Mark 2016).

This paper delved more deeply into TAM research by applying it in the education sector. By so doing some external variables were added: Technology Readiness (TR), Subjective norms (SN), Technology self-efficacy (TSE), perceived enjoyment (PE), Job relevance (JR), and facilitating conditions (FC) which contributed to the TAM literature by proposing an extension of the original TAM framework. This paper examined the effects of six external variables on the four original TAM constructs. In order to provide a better understanding to the exploration of e-learning acceptance amongst academic lecturer's six factors "TR, SN, TSE, PE, JR and FC" were incorporated as external variables in the original TAM as earlier stated.

According to Parasuraman, (2000), Parasuraman and Colby, (2015) TR represents mental motivators and inhibitors that collectively determine a person's predisposition to use new technologies (Parasuraman 2000). The construct comprising four dimensions: *Optimism* is a positive view of technology and a trust that offers people improved control, flexibility, and effectiveness in their lives. *Innovativeness* is a propensity to be a technology initiative and ideology ruler. *Discomfort* is a perceived lack of control over technology and a feeling of being besieged by it (Aishah 2017). *Insecurity* is distrust of technology, stemming from scepticism about its ability to work properly and concerns about its potentially harmful consequences. Of the four dimensions, *optimism* and *innovativeness* are 'motivators,'' contributing to TR, whereas *discomfort* and *insecurity* ''inhibitors,'' detracting from it. Moreover, the four dimensions are relatively distinct, meaning that an individual can possess different combinations of technology-related traits, sometimes leading to a paradoxical state that consists of a strong motivations tempered by strong inhibitions. Thus, TRI 1.0 provides dimension-specific as well as overall measures of TR.

TR is not an individual-level characteristic that does not vary in the short term nor does it change suddenly in response to a stimulus. Higher TR levels are correlated with higher acceptance rates of cutting-edge technology and more intense behavioural intention to use of e-learning technology, and greater perceived useful in doing so, (Lin and Chang 2011; Massey et al., 2007). In view of this assertion, we hypnotized thus:

H_1 Technology readiness has a significant relationship with perceived usefulness to use e-learning

H_2 Technology readiness has a significant relationship with behavioural intentions of e-learning utilization

Technology Self-efficacy, (TSE) in the standpoint of TAM focuses almost fully on beliefs about the technology and the outcomes of using it, whereas social cognitive theory (SCT) includes other beliefs that might control behaviour, self-sufficient of perceived outcomes. Technology self-efficacy is the belief that one has the capability to perform a particular behaviour, and it is an important concept in SCT (Holden and Rada, 2011). Technology self-efficacy refers to individuals' decision of their capabilities to use technology in different situations (Comer, 2018; McDonald and Siegall, 1992). Previously, IT acceptance research results have established the significant role that technology Self-efficacy plays in accepting individual responses to information technology (Wang, et al, 2015; Williams, et al., 2017). Persons with a weak sense of technology Self-Efficacy will be aggravated more easily by obstacles to their performance and will respond by lowering their perceptions of their capability of using a computer or information technology (Xuan and Kim 2015).

Conversely, individuals with a strong sense of technology self-efficacy will not be deterred easily by complex troubles and will keep on with their efforts, with the result that they are more likely to prevail over whatsoever impediment that they face (Compeau and Higgins, 1995). Gong et al. (2004) establish that technology self-efficacy showed a strong positive effect on perceived ease of use about web-based learning systems.

H_3. Technology self-efficacy has a significant relationship with perceived usefulness of e-learning utilization

As a built-in motivational standpoint, the behaviour is evoked by the feeling of delight, joyfulness and entertainment. Perceived enjoyment is referred to as 'the extent to which the action of using a computer technology is perceived to be enjoyable in its own, separately apart from any cost that may be anticipated'. Consequently, if a university lecturer perceives the use of the e-learning instrument as enjoyable, he or she is more likely to have a favourable feeling towards the e-learning tool and a higher degree of intention to use it (Downes, 2017).

Herein, the result of PE on a PEU of e-learning technology was predictable to be positive. According to self-efficacy theory, ease of use influences intrinsic motivation (Junfeng and Kinshuk 2017). So, if a lecturer has a higher degree of self-competence and thus perceives it as easy to use, he/she is more likely to have an enjoyable feeling towards using it. Thus:

H_4. Perceived enjoyment have a significant relationship with perceived usefulness of e-learning utilization

One key factor of the similar process discussed above is a potential user's decision of JR, which we define as an individual's perception regarding the degree to which the aiming system is appropriate to his or her job. In added terms, job relevance is a utility for its significance within one's job and set of tasks the system is able to sustain (Venkatesh and Davis 2000). Thus in e-learning, JR is the perception of lecturers towards their teaching job which determined their acceptance to use technology and how it affects their methods of teaching. It indicates the level to which the proposed system is relevant to the individual's

job. The absence of job relevance will make the sign of one's job irrelevance as such the set of activities of the system incompetent in sustaining his/ her job. Many studies show that job relevance is strongly related to e-learning utilization (Venkatesh and Davis 2000; Al-Gahtani, 2016). The least threshold value of perceived job relevance would be screened from further acceptance consideration (Stylianos et al., 2017)

H_5. Job relevance has a significant relationship with perceived usefulness of e-learning utilization

H_6 Job relevance has a significant relationship with behavioural intention of e-learning utilization

Facilitating conditions (FC); according to Teo, (2010), Venkatesh and Bala (2008) there are factors that can be stated as "perceived enablers or barriers in the situation that influence a person's perception of ease or complexity of performing a task", they are related to individuals' control beliefs regarding the accessibility of governmental resources and support structures to facilitate the use of a system". At this point in an e-learning context, FC indicates the accessibility of the interconnected resources i.e. technological help, internet infrastructure, hardware, software, training, online help. Previous study on teachers' acceptance of various technologies have reported that FC is a key belief that influences user adoption of technology (Teo, 2010). Again, Teo, et al (2008) revealed FC' significant effect on perceived ease of use in terms of pre-service teachers' computing technology acceptance behaviour (Mohamed and Koutheair 2017).

Therefore, the current study proposed one hypothesis to examine the effect of FC on the PEU of e-learning.

H_7. Facilitating Conditions have a significant relationship with behavioural intention of use e-learning system.

According to Fishbein and Ajzen (1975), Subjective Norms (SN) mean a person's knowledge that most people who are vital to them believe they should or should not carry out the behaviour in question. People will usually plan to carry out behaviour when they have an optimistic attitude toward it and when they believe that vital individuals think they should do so (Ajzen, 1991).

Subjective norms and image are significant determinants of behavioural intentions because they replicate the control of others and the significance of having others thinks optimistically of them. If reliable personalities think that significant others believe that technology should be used, they will form stronger intentions to use the technology (Stephen et al., 2017). The theory of reasoned action also proposes that attitudes and Subjective Norms are predisposed by more distal factors such as personality traits (Ajzen, 1991). Subjective Norm refers to a person's perception of normative beliefs (e.g., perceived pressures and motivation to pursue) and how most people who are important to him/her think he/she should or should not perform the behaviour in question (Fishbein et al. 1975).

According to TRA, a person's performance of a specified behaviour is determined by his or her Behavioral Intention (BI) to perform the behaviour, and BI is jointly determined by the

person's Attitude towards using and Subjective Norm concerning the behaviour in question. A meta-analysis by Schepers and Wetzels (2007) found large effect sizes for the correlation between Subjective Norms and Behavioral Intention. If a lecturer thinks his/her relations and associates accept and value him/her attractive in e-learning, he or she is likely to support it (Sie et al., 2017).

H_8. Subjective Norm has a significant relationship with perceived usefulness of e-learning utilization

H_9. Subjective Norm has a significant relationship with behavioural intention to use e-learning utilization

The four original TAM constructs have the following related Hypotheses

Having seen the point of view claimed by TAM (Davis, 1989) as regards the technology acceptance behaviour and bearing in mind the previous TAM based research result; the following hypotheses for e-learning usage by academic lecturer were examined in the present study.

H_{10}. Perceived usefulness of e-learning have a significant relationship with e-learning utilization

H_{11}. Behavioural intentions to use have a direct significant relationship with e-learning utilization.

The proposed model (as depicted in Figure 2) was used to explore the effects of the proposed external variables on faculty members' e-learning usage behaviour.

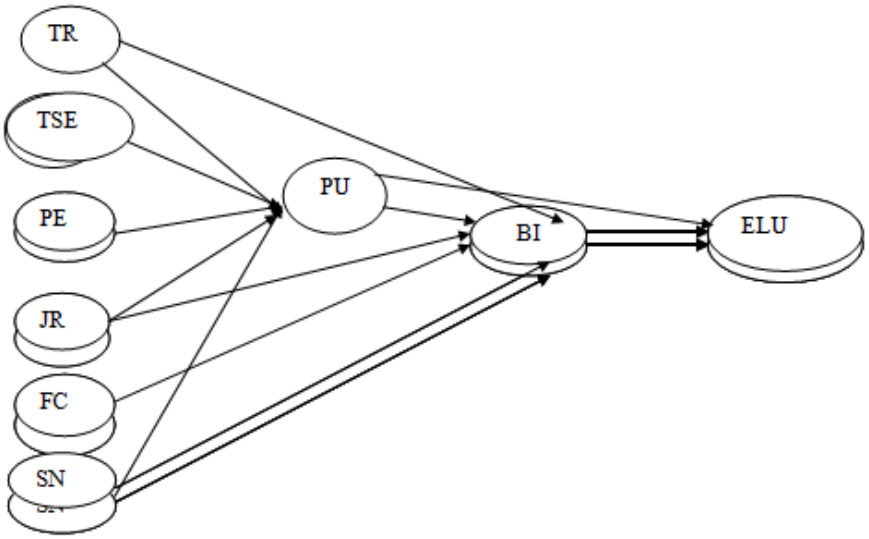

Figure 2: A Proposed Research Model for Academic Lecturers' Acceptance of E-learning
KEYNOTE: TR= Technology Readiness, TSE= Technology Self-efficacy, PE= Perceived Enjoyment, FC= Facilitating Conditions, SN= Subjective Norm, PU= Perceived Usefulness, PEU= Perceived Ease of Use, BI= Behavioural Intention and ELU= E-learning Usage.

3. Method

3.1 Participants and procedure

The respective universities were selected randomly after cluster it into six sets according states of the Northeast Nigeria, so the six selected and target universities that participated in this study representations are from each of the six states. Thus. 1. Modibbo Adama University of Technology Yola, Adamawa State, 2. Abubakar Tafawa Balewa University Bauchi, Bauchi State, 3. University of Maiduguri, Borno State, 4. Gombe, State University Dundu-wada, Gombe State, 5. Taraba State University Jalingo, Taraba State, 6.Yobe State University Damaturu, Yobe State
The academic staff that responded to questionnaires understood every measure of the factors that built our research model. A total of 312 usable polls were gathered.

Participants were university lecturers in north-eastern Nigeria. Six universities were selected randomly to participate in the survey. A quantitative survey technique of Self-administered questionnaires were used in this study which was distributed to all participants and followed by the research assistants. Among the participants 242, 77.6% were male lecturers and 70, 24.4% female lecturers, 71, 22.8% professors and others, 241, 77.2%. Average mean 41.15 (SD=8.34) years. The main length of teaching service among the participants was 14.38 (SD=8.56) years. Nearly all the participants owned a computer at home (96.2%) and 91% of them has knowledge on the e-learning system and the mean years of computer usage was 73.3%. On average, participants have attended e-learning workshop at 49.3% and only 21.5% responded that using the e-learning system is mandatory in their universities.

3.2 Measures

This study, data collection started in the month of February 2018 after conducting the pilot test. To be precise the data collection took place between the periods of February, 2018 to May, 2018. The data was collected through a personally administered questionnaire. The nature of the e-learning utilization in Universities in Nigeria made it compulsory for this study to use the personally-administered method in order to achieve the required number of responses. Therefore, this will ensure non-response bias does not affect the results. Sekaran and Bougie (2016) contended that personal-administered questionnaires give the researcher has an opportunity to be closer to the respondents when introducing the survey. It also serves as one way of making the respondents directly assessable to the researcher and the research assistant. By this, the research assistant have instant responses since the collection of the questionnaires is immediate.

The study used a proportional stratified with 373 questionnaires that were distributed/administered to lecturers in six universities at the end, 348 were retrieved/returned, showing a response rate 93%. Out of the 348 returned questionnaires, 17 were discarded as they failed to conform to the required standards. Many of the discarded ones had incomplete data and others had more than one options selected. 11 were randomly removed by SPSS during the process so as to maintain proportionality and 312 were valid and used for the actual sample.

The use of self-report data collection and questionnaire for this study aims to compare responses across different diagnoses. Questionnaires are frequently used to assess symptoms before and after treatment. Self-report instruments are also typically administered as part of a comprehensive assessment. The responses can be used to assist an author in the initial evaluation by providing a guide as to the probability of a particular problem and as a tool for quantifying individuals and providing their demographic information along with participants responses. Self-report data collection is important because of the systematic response.

To obtain demographic information, participants responded to 72 items on Technology Readiness (12 items), Technology Self-efficacy (8 items), Perceived Enjoyment (6 items), Job Relevance (7 items), Facilitating Conditions (8 items), Subjective Norm (6 items),

Perceived Usefulness (6 items), Behavioural Intention to Use (7 items)and E-learning Usage (12 items) These items were rated on a five-point Liker scale, ranging from 1 – strongly disagree to 5 – strongly agree. All items were presented in English language.

The items used in this study were adopted and amended from published sources (Davis et al. 1989; Taylor and Todd 1995; Teo 2010). Majority of these items have been used in previous studies on pre-school teachers, teachers and lecturers in both secondary and post-secondary institutions as well as from information technology and educational areas of which most were found to be reliable and valid (Zabadi and Al-Alawi, 2016; Davis, 1989; Davis et al. 2000; Bagozzi, 1992).

3.3 Data Analysis

In this study, data were analysed using the structural equation modelling (SEM) approach. In addition to testing for data normality, a variance-covariance matrix was used to test a proposed model that represents the relationships among the ten variables in this study (behavioural intention (BI), perceived usefulness (PU), and perceived ease of use (PEU), subjective norm (SN), and facilitating conditions (FC)). All parameters in the model were estimated and evaluated for statistical significance. Structural equations modelling (SEM) was employed for its ability to analyse relationships between latent and observed variables. Additionally, SEM models for random errors as observed variables were considered for more precise measurements. Another affordance of SEM includes the measurement of each latent variable by multiple indicators (Spector 2017; Bollen 2018).

In the measurement model, it is very necessary to check validity of both convergent and discriminate variables. The indicators of every constructs were in correlation with theory of the study. This implies the extent to which the indicators of a factor that are theoretically related should correlate highly. This accounts to convergent validity. All factor loadings exceeded .70, which gives chance for 50 percent of variation. Considering the sample size of the study, these scores are significant at a .05 significance level at a power level of 80 percent. While confirming correlation among the factors we use discriminate validity for

this examination process (Ronghuai et al., 2017). As a rule of thumb, a .85 correlation or larger indicates poor discriminate validity in structural equation modelling (David, 1998).

The correlations result has met the requirement since none of the report is above .85. The finding suggests an acceptable discriminate validity of the dimension. Reliability tests were carried out to secure accuracy and consistency. Measure of reliability calculated was the variance extracted measure (commonly used threshold value for acceptable composite reliability is .70). According to the rule recommend, a construct variance extracted value can exceed .50. Meanwhile all measures have fulfilled the suggested levels with composite reliability ranges from .76 to .94 and variance extracted value ranges from .63 to .82. Tables 1, 2, 3 and 4 shows the descriptive statistics results of normality, mean, and standard deviation, overall fit index, a confirmatory factor analysis and reliability test and a summary of the hypotheses testing results respectively. Figures 3 and 4 describe a path model and path of the parsimonious structural model showing the hypothetical relationships between constructs and observed indicators (Sara et al., 2017).

Using the standard two-step approach to SEM (Kline, 2015; Hair, 2014; Schumacker and Lomax, 2010), the first phase involves estimating the measurement model for all latent variables in the model. The measurement model, also known as the confirmatory factor analysis (CFA) model, describes how well the observed indicators measure the unobserved (latent) variables. In the second step, the structural part of the SEM is estimated. This part specifies the relationships among the exogenous and endogenous latent variables. In addition, Hoelter's critical N, which refers to the sample size for which one would accept the hypothesis that the proposed research model is correct at the .05 level of significance, was examined. The Hoelter's critical N for the model in this study are factors influencing teachers' intention to use e-learning technology and, given that the sample size of this study is 312, it is considered adequate for the purpose of structural equation modelling.

4. Results

4.1 Descriptive Statistics

All mean scores, apart from e-learning use factor were over the mid-point of 3.0 and they demonstrated a general positive reaction to the factors in the model. The standard deviations mirror a genuinely limited spread of members' reactions, successively from 0.59 to 0.92. Skewness and kurtosis indices were little and well within the prescribed level, (Kline, 2015)

Table 1: Normality Test for Each Construct

Items	Mean	Standard Deviation	Skewness	Kurtosis
Perceived use	3.37	0.74	-.387	.689
Perceived ease of use	3.20	0.60	-.766	1.046
Subjective norms	3.26	0.65	-.261	.059
Facilitating conditions	3.10	0.61	-.022	-.139
Technology readiness	3.44	0.65	-.567	.220

Job relevance	3.34	0.65	-.049	-.159
Perceived enjoyment	3.33	0.68	-.393	.135
Behavioral intention	3.29	0.60	-.606	.604
Tech. self-efficacy	3.36	0.59	-.667	1.075
E-learning utilization	2.95	0.92	-.199	-.717

In summary, Skewness and kurtosis values of all the eleven constructs shown in Table 1. meets the requirement of normality. They fall within the acceptance region recommended by Pallant (2012) and do not violate the rule of skewness and kurtosis. It, therefore, implies that all the items under perceived usefulness, perceived ease of use, subjective norms, facilitating conditions, technological readiness, job relevance, perceived enjoyment, attitude towards use, behavioural intention, technological self-efficacy and e-learning utilization are normally distributed.

4.2 Evaluation of the Measurement Model

This section presents an evaluation of the model fit. It aims at measuring the fitness of the model. This was done using the confirmatory factor analysis. With this, the researcher can confirm model fitness.

4.2.1 Model Fit

The researcher used the model in figure 2 to obtain the model at figure 3, in other to check the authenticity of study. From the diagram of the model (Fig 3), it is evident that the loading of all the items under each construct are greater than .50. This, therefore, implies that all the items in this model were above the required .50. A close look at the p-value (Fig 3) shows that the value of the p-value is .000 (.000 > .05). This is statistically significant and aligns with the suggestion proposed by Awang (2015) as contained in Table 4. In addition, the result of the RMSEA in the model is .043. This is less than 0.08 proposed by Awang (2015). The implication of this is that the model meets with the requirement of absolute fit. Next, the researcher went further to check the CFI result. Considering the value of CFI in the diagram, it is found that the value is .932 which can be approximated to .93. From the suggestion of Awang (2015), it is clear that this model passes the incremental fit as the value falls within the acceptable region. Also, the value of the chi-square of the model is 472.474. This shows that it is above the suggested value for the parsimonious fit. It concludes that the model is fit.

Measurement model

Before examining the structural model, the fitness of the measurement model was evaluated by maximum likelihood. As seen in Table 1 all fitness indexes of the measurement model seemed desirable [chi-square =472.474. P-value =000. CFI = .932. RMSEA =.043. GFI = .902 while the degree of freedom (DF) = 301]. All factor-loading values of the items of each latent variable, ranging from .55 to .93, were acceptable.

Table 2: Overall Fit Index

Table. Results of examination of fitness of the structural model*χ2*	χ2		χ2/DF	GFI	CFI	RMSEA (90% Confidence Interval)		P-value
Structural model	472.474		301	.902	.932	.043		000
Fit criteria	-	-	> .80	< .90	> .90	< .08		< .05

The overall fit indexes for TR, SN, TSE, PE, JR, and FC model is presented in table 2

Table 2: shows the overall fit index for the model. From the table 2, the value of the chi-square which is 472.474. P-value is 000. CFI is .932. RMSEA is .043. GFI is .902 while the degree of freedom (DF) is 301. Table 1 explicitly indicates that all these items are acceptable and considered fit for the model.

4.3 Evaluation of the Structural Model

Structural equation modelling was used for data analysis. The testing of data normality, a variance-covariance matrix was used in the test proposed model that represents the connection among the variables in this study (behavioural intention, perceived usefulness, and perceived ease of use, subjective norm, and facilitating conditions). At the same time, all free parameters in the model were estimated and evaluated for statistical significance (Ebba et al., 2017).

In structural equation modelling (SEM), the match between a specific model and the information is surveyed by using the goodness-of-fit files and indices. Notwithstanding the utilization of the chi-square test, which is exceedingly sensitive to sample size, the ratio of the chi-square to its degrees of freedom and other fit indices records are likewise considered when choosing model fit (Martin et al, 2016). Following the recommendations by Hu and Bentler (1999), the root means square error of approximation (RMSEA) and Standardized Root Mean Residual (SRMR) were used as measures of absolute fit and the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI) as indices of incremental fit. From the literature (e.g., Hair et al., 2010), values of .90 or more for the CFI and GFI, and values of .08 or less for RMSEA are reflective of a good fit. From the results, the proposed research model has a good fit [χ2=446.810; χ2/DF=1.288; P=.000; CFI=.959; RMSEA=.030; GFI=.912; DF=347].

Structural model and hypothesis testing

As the measurement model satisfied the fitness index criteria and structural model's estimate possibility was theoretically confirmed, the study employed maximum likelihood estimations to estimate the initial research model's fitness. As shown in Table 3 the initial

structural model provided a good fit to the data [χ2=446.810; χ2/DF=1.288; P=.000; CFI=.959; RMSEA=.030; GFI=.912; DF=347].

Table 3 Structural model and hypothesis testing

Results of examination of fitness of the structural model*χ2*	χ2		χ2/DF	GFI	CFI	RMSEA (90% Confidence Interval)		P-value
Structural model	446.810		347	.912	.959	.030		000
Fit criteria	-	-	> .80	< .90	> .90	< .08		< .05

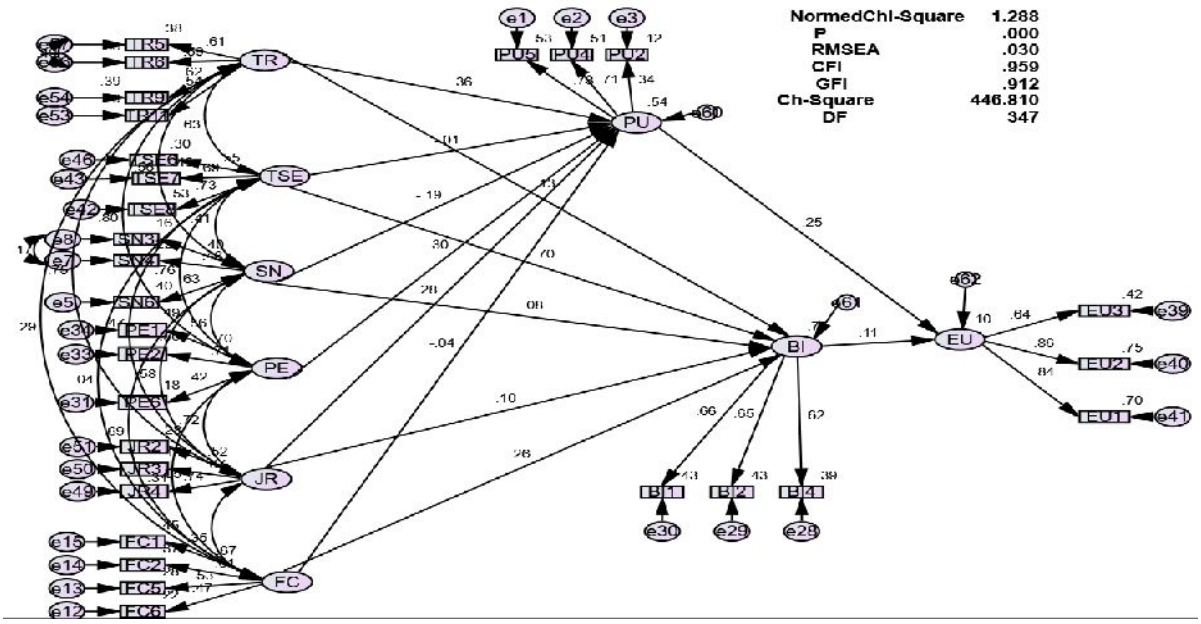

Fig. 3: Revised Path model

4.4 Testing of Hypotheses

The result of structural model testing hypotheses revealed that nine out of eleven hypotheses were supported by the data. These hypotheses are: (H1, 2, 3, 6, 7, 8, 9, 10 and H11) there is a support relationship among the factors and is accepted in this study. The hypotheses that were not upheld are (H4, and H5) they are rejected from the constructs

impacting academic staffs' belief to utilize e-learning system. Three endogenous factors (behavioural intention to utilize and perceived usefulness) were adapted in the model. The e-learning system utilized, was clarified by every single accepted factor that upheld the hypothesis. TR and BI with β=.160 ρ< .004; TR and PU with β=.225 ρ<.011. PU and ELU β=.554 ρ<.000, JR and BI β=.181 ρ<.015, PE and PU β=.493 ρ< .000, SN and BI β=1.251 ρ<.017, FCand BI β=.727 ρ< .000, JR and PU β=1.679 ρ<.008, and BI and ELU β=.199 ρ<.021.

Table 4: A Summary of the Hypotheses Testing Results

Hypothesis Statement	Estimate	P-Value	Result
TR → BI	.160	.004	Supported
TR → PU	.225	.011	Supported
PU → ELU	.554	.000	Supported
TSE → PU	.473	.259	Not Supported
SN → PU	-251	.371	Not Supported
PE → PU	.493	.000	Supported
SN → BI	1.251	.017	Supported
FC → BI	.727	.000	Supported
JR → PU	1.679	.008	Supported
JR → BI	.181	.015	Supported
BI → ELU	.199	.021	Supported

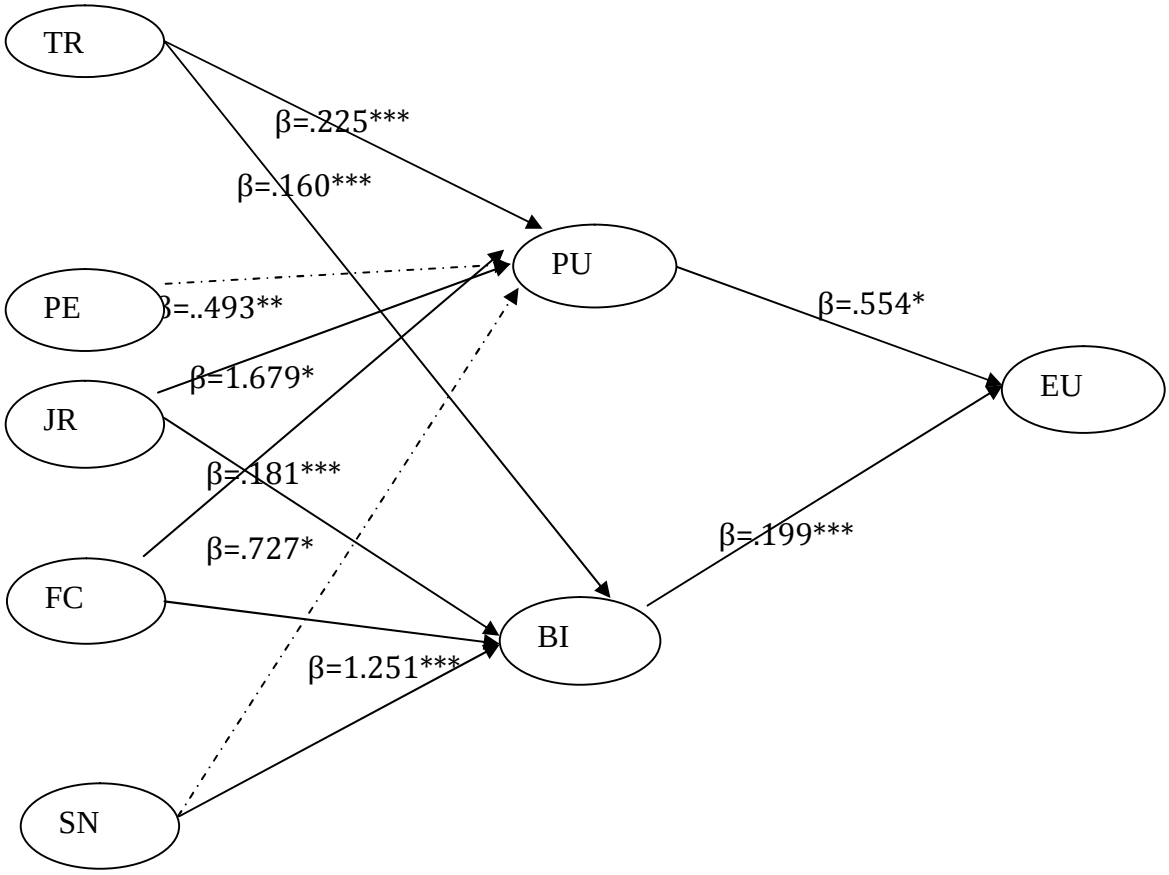

Fig. 4 Paths of the Parsimonious Structural Model

****Significant at .01%, **Significant at 1%, * Significant at 5%* ⟶ *Significant paths* - - - - - - -> *Non-significant paths*

5. Discussion

The aim of this study is to develop and test a model that will explain the intention to use e-learning system among university lecturers. Overall, the data in this study provide empirical support to the selected five variables being capable of explaining more than 42% of variance in the e-learning usage among university lecturers. The results also suggested that the proposed model has a good fit and serves as an adequate depiction of relationships among the factors that influenced lecturers' intention to use technology. From the outcomes, perceived usefulness, and the behavioural intention has a direct relationship with e-learning utilization. This result is consistent with the previous study (Davis, 1989; Venkatesh et al., 2003).Consequently, it is important to note that subjective norm and job relevance has impact on e-learning use in an indirect mode through behavioural intention to utilization and as well as keeping perceived usefulness to act adequately. During the model and structural analysis, perceived ease of use was removed due to insufficient support and contribution. On the other hand, subjective norm under the social

manipulative factor pertains to behaviours that are occupied in answering in respect of other individuals (Sonia et al., 2017).

According to the result of this study, lecturers may accept new technology because they think it is helpful and beneficiary to their job. Obviously, they will use the system to improve proficiency in their job as well as to respect the opinion of very important people around them. This means that their ambition to utilize the new technology will be significantly expanded. More importantly, positive intention additionally has practical and expressive control on e-learning use. This result is in agreement with Teo et al, (2010) and Epelboin, (2017) and in consonance with the relationships explained in previous models (Ajzen, 1991).

However, the result of the endogenous variables, neither perceived usefulness or perceived ease of use had a significant direct relationship with behavioural intention to use e-learning. This result is contrary to TAM originality that hypothesized that perceived usefulness has direct relationship with intention to use and of course perceived ease of use is not hypothesized to have direct relationship with intention to use.

In this study, most of the findings are in line with the earlier investigations, while few are not in consistent with the previous studies. This may be as result of either theoretical or environmental and cultural reasons. For instance, at the present time, learning to use the Internet is normally considered easy and the benefits from learning through Internet are already well known to lecturers in developed world and could be contrary in the developing world. Since many university lecturers in the developed world gained sufficient knowledge in e-learning through the government during their day today teaching and research works, the result of such will be different. Consequently, equally cognitive constructs could not directly affect the university lecturers' intention to use e-learning in this circumstance but to a certain extent, it should through mediation effect so as to affect intention to use.

According to Davis et al. (1989) and Venkatesh et al., (2003), they suggests that when a lecturer has positive intention towards the utilization of e-learning, the more likelihood to use it in their classroom activities. This approach reinforces their aims to utilize e-learning system. Imperatively, the truth is that e-learning use is impressively impacted on perceived usefulness and behavioural intentions to utilize. This suggests that when the utilization of the e-learning system is seen to be an alteration to one's output and is relative to helpful effort then it is acceptable. Academic lecturers have conceivably, an idealistic behaviour towards utilization of e-learning system (Darco et al., 2017; Devaraj, et al., 2008). Constructs impacting instructors' intend to utilize e-learning system, perceived ease of use did not affect academic staffs' intent to utilize e-learning. From the outcome of this study, job relevance played a critical effect on behavioural intention and this shows university lecturers activity as pertinent and satisfying when utilizing e-learning system to perform their teaching duties. However, it should be encouraged by the authorities so as to enhance enjoyment of the teaching activities in the classroom.

Meanwhile, the result of this study also revealed a weak or no positive effect of facilitating conditions on perceived usefulness of e-learning technology. It could be possible that

lecturers had developed a plan of perceiving usefulness of e-learning use if adequately facilitated (i.e., adequate guidance on e-learning use, personal/ group assistance, specialized instructions concerning e-learning use) (Nenad and danijela 2017). Additional possible reason why the result is weak could be that e-learning value is really high and lecturers have high self-efficacy and therefore they do not care much about the need for the accessibility and usefulness of facilitating conditions (facilities, teaching etc.) for using e-learning. However, the result of this study is in line with the outcry of several researchers in Nigeria (Eze Asogwa, 2013; Kolawole et al., 2015; Ololube, et al., 2014) who stressed that acute insufficient and inadequate facilities bedevilling education sector in Nigeria is a shortcoming to e-learning utilization.

Also, the current findings aligns with Panda et al (2007) findings that indicated insufficient FC is one of the most important barriers of e-learning usage by faculty members. It was also possible that the lecturers in this study had moved beyond confidence on the mandate from their university heads to e-learning use technology (Nelson et al., 2017). The benefit of using structural equation modelling is that it allows variables to act as both an exogenous (independent) and endogenous (dependent) variable in the model. For example, we could evaluate the influence of technology readiness, technology self-efficacy, subjective norm, perceived enjoyment, job relevance, and facilitating conditions (as an exogenous variable) on e-learning use technology and at the same time, measure the influence of other variables on e-learning use (as an endogenous variable), this signifies that the variables in the research model interrelate with each other in ways that directly or not directly control lecturers' purpose to use e-learning technology (Francis et al., 2017).

6. Conclusion and future research

This study suggests the need to introduce e-learning in Nigerian universities. This will increase flexibility in course offerings and to enhance student-learning experiences. Nigeria universities and education management have to consider introducing the e-learning technologies. With the introduction of e-learning technology, it can support higher-order thinking by engaging students in authentic and complex tasks; e-learning model seeks to understand the individual's background and perceptions that may be essential to student education. We are now at a point where almost all higher education institutions are operating at least one virtual learning environment.

Lack of e-learning system has created many limitations in area of research in Nigerian Universities. This study recommends that government at all levels; non-governmental organizations and private sectors should assist to equip universities with e-learning centres and model equipment for effective delivery of lectures to students via e-learning technologies.

The result of this study demonstrated that some TAM constructs had a direct and indirect effect on university lecturers' behavioral intention to use e-learning system. For this reason therefore, it has a potential and a practical relevance in the expansion and administration of e-learning in the universities in Nigeria.

The managers and policymakers should make sufficient effort in boosting the morale of the university lecturers so that they can be e-learning self-efficacy all round. Supplying of internet facilities for online and offline support of e-learning self-efficacy should be adequately provided by the university. The university should attach more importance to e-learning workshops for staff and by making it mandatory in general curriculum and make compulsory to students to offer e-learning courses in the school. As for the constructs that have no significance on university lecturers' intention to use e-learning, these constructs were related to the attitudes toward e-learning attitudes was excluded. Nevertheless they should not be overlooked because it could have detrimental effects on the user's acceptance of information technology. As a thriving experience direct to optimistic sensation towards e-learning technology use, university management could supervise the teaching environment in ways that lecturers would experience support in basics of technological and individual resources to offer teaching and supervision on e-learning technology usage.

The results of this study revealed that the proposed model has a good fit to the information. Nonetheless, all models ought to be legally responsible to validation and to reinforce its prescient capacity and descriptive powers in order to be valid and helpful under different settings. In this way it would contribute its usefulness to researchers. The result of our study would be explicit to the policymakers, university administrators and educators for planning and design of educational programs for extension purposes. Integrating e-learning innovation use into education, comparative investigations across the nations or societies could be possibly conducted to recognize the way of life invariant factors that could impact on lecturers'/instructors' motivation to utilize e-learning innovation in teaching and learning activities. Lastly, this type of study needs to be replicated in other e-learning situation or infrastructures, given that the result of the research was limited to only asynchronous e-learning conditions.

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