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Acceptance of E-Learning by Students of Federal University of WUKARI, Nigeria Using Unified Theory of Acceptance and Use of Technology

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Abstract
The research surveyed the influence of Performance Expectancy and Effort Expectancy on the acceptance of e-learning by students of Federal University of Wukari (FUW). Two research questions were raised and two hypotheses were formulated and a mixed method research approach involving concurrent quantitative and qualitative data collection techniques was utilised. A simple random sampling technique was used to select three hundred and twenty-two (322) students. Data were obtained using a structured questionnaire and interview schedule. The instruments used for data collection were validated by experts in the field of Information Systems and Information Science. Collected data from the questionnaire were analysed using frequency distribution and Pearson Product Moment Correlation while interview responses were transcribed and analysed thematically. Findings of the research questions revealed that Performance Expectancy (PE) and Effort Expectancy (EE) positively influence the use of ICT for learning among the students. These two results were supported by the outcome of test of hypotheses which revealed in favour of the research questions that Performance Expectancy significant (2-tailed) value arrived when PE was correlated with Behavioural Intention (BI) was 0.000. This indicated the positive significant relationship and contributed to students' intention to use ICT for learning, where (r=.552, P<0.05). Effort Expectancy significant (2-tailed) value arrived when EE was correlated with BI was 0.000. This indicated the positive significant relationship and contributed to students' intention to use ICT for learning, where (r=.626, P<0.05). Based on the findings, recommendations were proffered.

Keywords: *Performance Expectancy, Effort Expectancy, Information and Communication Technology, Electronic learning, Federal University Wukari, Nigeria.*

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I. Introduction

Information and Communication Technology (ICT), a cornerstone in the 21st Century has ushered in unlimited opportunities in teaching and learning. ICT has become a significant part of our daily life. Consequently, the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavour including the education. In some contexts, ICT has also become integral to the teaching-learning interactions, through such approaches as replacing chalkboards with interactive digital whiteboards, using students' own smartphones or other devices for learning during class time and the "flipped classroom" model where students watch lectures at home on the computer and use classroom time for more interactive exercises (Learning Portal, 2021). Students and teachers use ICT tools to communicate, create, disseminate, store and manage information. Furthermore, the educational sector has significantly thrived with the applications of ICT in learning. Worthy of note is the use of ICT in the educational sector during the COVID 19 lockdown. The critical global incident generated by the pandemic forced most teachers to assume virtual teaching where they had to use digital technologies, sometimes for the first time to facilitate their students' learning, (Juan-Ignacio, María-Puy, Beatriz and Daniel, 2021). The use of ICT in learning has not only transformed teaching; but also the learning processes. The transformation increased learning gains for students and also provided learners with opportunities to develop creativity, communication skills, and other thinking skills. Thus, the role of ICT in education is becoming more and more important and this importance will continue to grow and develop in the 21st century. In line with this, Mwila (2018) ICT as dynamite that has the potential of changing the teaching and

learning processes in schools. This has given rise to the quality of academic performance of students; and as well, teachers have a positive attitude towards the integration of ICT in teaching. Also, an investigation in some selected colleges in Tanzania indicated that majority of respondents (about 83.2%) used the Internet and Computers for academic purposes. The authors noted also that only 12.5% of the respondents use the Internet and computers on a daily basis. This trend has in one way or the other improved the quality of teaching and learning (Chirwa, 2018).

Nigerian Universities are designed to create a quality workforce by growing, training, and attracting the finest talents; support current business and industry, improve learning and teaching from pre-school through graduate schools; take strong and visible roles in regional initiatives, disseminate research and employ a diverse workforce (Myamoto, 2010) as cited in Mark and Nguzan (2019). The use of Information and Communication Technology in educational settings will act as a catalyst for change in this domain. ICTs by their very nature are tools that encourage and support independent learning. Students using ICTs for learning purposes usually become immersed in the process of learning and use computers as information sources and cognitive tools (Reeves and Jonassen, 2006) cited in Mark and Nguzan (2019). Over the years, Nigeria has been known to use ICTs in tertiary institutions and has experienced some measure of impact in the educational sector (Njoku and Alphonsus, 2019). Undoubtedly, ICT has impacted the quality and quantity of teaching, learning and research in tertiary Educational institutions in Nigeria. Although, the use of ICT in e-learning is a catalyst for innovation in the educational sector, its successful integration in teaching and learning depends, largely, on the availability of the infrastructure; teachers' and students' adoption and embracing of ICT in education (Mndzebele, Dludlu, and Mndebele, 2018). This study, therefore, investigates the constructs of Unified Theory of Acceptance and Use of Technology: Performance Expectancy, Effort Expectancy influence acceptance of e-learning by students of FUW, Taraba State, Nigeria. The following research questions and hypotheses were formulated and tested at 0.05 level of significance:

Research questions

1. How does Performance Expectancy influence e-learning by students of Federal University, Wukari?
2. How does Effort Expectancy influence e-learning by students of Federal University, Wukari?

Statement of hypotheses

$H_0$1: Performance Expectancy (PE) has no significant influence on the Behavioural Intentions (BIs) to use ICT for learning among students of Federal University, Wukari.

$H_0$2: Effort Expectancy (EE) has no significant influence on the Behavioural Intentions (BIs) to use ICT for learning among students of in Federal University, Wukari

II. Literature Review And Theoretical Underpinning

In this section, a review of related literature is presented with the theory adapted to drive the study.

Concept of e-Learning

E- Learning is a system based on formalised teaching, aided with electronic resources. The use of computers and the Internet forms the major component of e-learning. E-learning can also be termed as a network enabled transfer of skills and knowledge, and the delivery of education is made to a large number of recipients at the same or different times. Technology has advanced so much that the geographical gap is bridged with the use of tools that make the transfer of knowledge easy within or outside the classrooms. Thus, e-learning offers the ability to share material in all kinds of formats such as videos, slideshows, word documents and PDFs. Conducting webinars (live online classes) and communicating with Lecturers or Professors via chat and message forums is also an option available to teachers and students. E-learning has proved to be the best means in the corporate and educational sector, especially during the Covid-19 pandemic when physical contacts were minimal and training programs had to go on between teachers, students and professionals across the globe. Consequently, new knowledge can be transferred, existing knowledge modified, new skills and values learned through e-learning (Epignosis LLC 2014; The Economic Times, 2021).

ICT as a tool for learning in Nigerian universities

The advantages of ICT in Nigerian Universities are so great. It is dynamic and far enriching. Educational instruction through the use ICT is gradually becoming pertinent in Nigeria tertiary institutions of learning Gordon and Gabriel, (2021). This is because ICT makes learning more interactive and easier for both students and teachers; Gordon and Gabriel, (2021). Noor-Ul-Amin (2013), envisaged as far back as 2013 that the role of ICT in education will be more and more important and this importance will continue to grow and develop in this 21st century. This assertion was supported by Azmi, (2017) who stated that the use of Info-Tech in the classroom improved and enhanced students' language acquisition and substantially motivated them to continue their learning and stimulate their creativity and passion. Information Technology today is a driving and

a motivating factor in teaching and learning. When learners engaged with ICT, blended with passion, then the pick of their academic pursuit could only be imagined.

An investigation was carried out to evaluate undergraduate students' perception on how effective and efficient ICT use is in improving learning in Nigeria, it was discovered that mobile phones are embedded with functionalities that are capable of motivating students to learn. This includes several functionalities such as easy access to interactive forums which supports collaboration, among others; Onyema, Ogechukwu and Anthonia, (2019). These made ICT usage among students very essential. Again in 2020, learning utilising Google Classroom Platform was observed as an effective way to influence students' academic success positively during the pandemic in Nigeria; Oyarinde and Komolafe, (2020). This was seen as an avenue of engaging students and keeping them busy while at home and knowledge is being impacted to them as well. With this, time is not lost at all. With this great potential and the quest for national development, the need for the development of ICT use in Nigeria universities to aid learning for the students becomes imperative because ICT culture has come to stay in all higher institutions. Information Technology is now the modern means of improving teaching and learning, especially in the University system as it opens up new horizons leading to advancement and exchange of information, the source of knowledge Kommers, (2022).

A review of studies on Teaching and Learning using ICT facilities in Nigerian Universities from the period 2004 to 2018 also indicated that, even though some facilities are visible for teaching and learning in Universities and there is an increase in studies on integration and application of ICT in teaching and learning in Nigeria, there is a slow rate of ICT integration in the educational system (Yushau and Audu, 2018). The worst hit region in Nigeria is the Northwest with none presence, followed by Northeast with 1.6% of visibility of ICT research in teaching and learning, which translates to the ICT presence in the region. This research sought to investigate ICT acceptance in North-East Nigeria based on the preposition of UTAUT. An investigation in 2019, by Yakubu and Dasuki, (2019) based on the proposal of UTAUT in factors affecting the adoption of e-learning technologies among higher education students in Nigeria determined that performance expectancy and effort expectancy were significant factors in influencing the behavioural intention to use Canvas. The results from the data obtained support the UTAUT's ability to explain the factors responsible for the acceptance of educational technology in developing countries like Nigeria.

Unified Theory of Acceptance and Use of Technology and E-Learning

The Unified Theory of Acceptance and Use of Technology (UTAUT) proposed by Venkatesh, Morris, Davis, and Davis, (2003), with four major determinants of intention and usage of technology. The theory has four (4) constructs namely; performance expectancy, effort expectancy, social influence, and facilitating conditions. The reason for using UTAUT is to find out acceptance and usage behaviour on technology as depicted in Figure 1. It was discovered that UTAUT provides a refined view of how the determinants of intention and behaviour evolve, and it is significant to state that most of the key relationships in the model are moderated (Luhamya, Bakkabulindi and Muyinda, 2017). Studies conducted provided information on the acceptance, adoption and use of ICT in learning among students in higher institutions using UTAUT model that was proposed by Venkatesh, Morris, Davis and Davis, (2003). In determining the factors that affect the uses of the Mobile Cloud Learning (MCL) platform Blackboard - a modification of the UTAUT model by Sultana, (2020), performance expectancy and effort expectancy were found to be significant factors in determining the behavioural intention to use MCL platform. Furthermore, Williams, Saunderson and Dhoest, (2021) found that in Students' Perceptions of the Adoption and Use of Social Media in Academic Libraries, the adoption of social media is positively influenced by effort expectancy and performance expectancy. In a related investigation by Nahla-Aljojo, (2020), effort expectancy influences Behavioural Intention to Use Mobile Learning; the outcome indicated that effort expectancy was significant and directly influenced students' behavioural intention to use mobile learning. Also, an investigation in India on M-learning adoption of management students, analysis revealed that effort expectancy showed the highest normalized importance (100%); followed by performance expectancy (97.2%) in elucidating the m-learning adoption.

Most of the studies indicated that all the constructs have some degree of influence with one factor having the highest prevalence. These findings will enable those who are involved in the formulation and implementation of ICT in teaching and learning in schools to develop better services that are relevant and acceptable to learners and instructors in higher education based on those prevailing constructs with better and higher influence. Towards understanding the students' acceptance of Massive Open student's courses (MOOCs): a unified theory of acceptance and use of technology (UTAUT) by Altalhi, (2021) shows that acceptance of the MOOCs was substantially affected by its performance expectancy and effort expectancy; Ikhsan, Prabowo and Simamora (2021) were in tune with Altalhi, (2021), where the study confirmed that performance expectancy, effort expectancy positively influences behavioural intention.

It is thus, becoming increasingly difficult to ignore the values of ICT in enhancing teaching and learning in higher education. There is, therefore, a need to determine factors that contribute towards learners'

acceptance of ICT in education in order to facilitate its adoption and subsequent usage in teaching. The empirical findings of such studies add substantially to our understanding on specific factors that affect intention to adopt and use ICT in higher education.

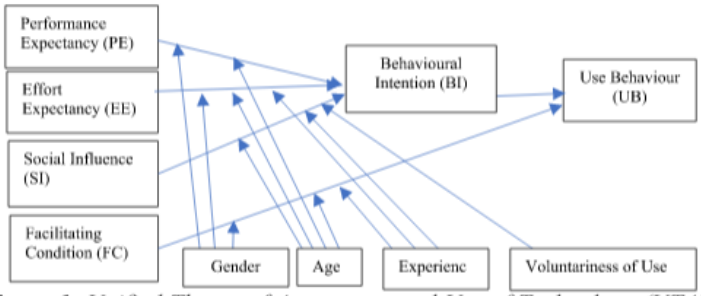

Figure 1: *Unified Theory of Acceptance and Use of Technology (UTAUT)* (Source: Luhamya, et al., 2017; pp 30)

For the purpose of this study, the moderating variables namely Gender, Age, Experience and Voluntariness of use were excluded. Consequently, the study adopts PE and EE for the research (Fig 2).

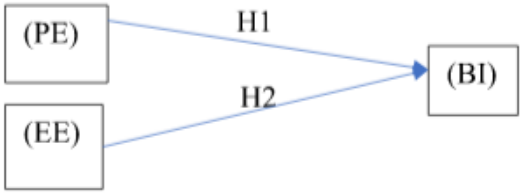

Figure 2. Unified Theory of Acceptance and Use of Technology (UTAUT) Adopted for the study.

Performance Expectancy: Performance expectancy is the degree in which an individual is said to believe that using a given technology will improve the user's ability to perform his or her duties. **Effort Expectancy:** Effort expectancy is seen as the degree of ease accompanying the use of a given technology.

The purpose for adopting UTAUT model is to enable the researchers find out the strength of Performance Expectancy (PE) and Effort Expectancy (EE) on student's intention to accept and use ICT for learning. According to Venkatesh, et al. (2003) UTAUT model can clarify technology acceptance behaviour of students in learning. The illuminating capacity of UTAUT is higher as it evolved using the content of about eight (8) other models (Luhamya, et al. 2017; Yogesh et al., 2017).

III. Methodology

The study adopted descriptive survey design due to the advantages such as flexible nature of surveys and can be used alongside other methods such as interview. The research location was FUW, Taraba State, Nigeria. The population comprised of students of the university, from which a sample of 322 was selected. Data was collected with a structured questionnaire and interview scheduled between the months of March and May, 2021. The questionnaire was subdivided into Parts A and B which collected demographic profiles of the respondents and data on how Performance Expectancy and Effort Expectancy influenced e-learning amongst the students respectively. The questionnaire was validated by experts in Information Systems and Information Science in the University of Ibadan. Reliability test was conducted using Cronbach's Alpha test of reliability which returned coefficients of 0.710 and 0.756 for Performance Expectancy and Effort Expectancy respectively. Collected quantitative data were subjected to frequency and percentage distribution and Pearson Product Moment correlation while interview data were analyzed thematically with the aid of NVivo version 12.

In all the three hundred and twenty-two (322) respondents involved in the study, 161 (50%) of them were males, 153 (47.52%) were females, while the remaining 8 (2.48%) did not indicate their sex. Also, 272 (84.5%) of them were between age range of 16 – 30years, 28 (8.7%) were between 31 – 40years, 4 (1.2%) were between 41 – 50years, 1 (0.3%) was between 51 – 60years, while the remaining 17(5.3%) did not also indicate their age group. For their level of study, 68 (21.1%) were in 100 level, 88 (27.3%) were in 200 level, 73 (22.7%) were in 300 level, 70 (21.7%) were in 400 level while 4 (1.2%) were in 500 level while 19(6.0%) did not indicate their level. Likewise, 46 (14.3%) of the respondents were in faculty of Agriculture and Life Science, 183 (56.8%) were from the faculty of Humanities and Management while 93 (28.9%) were in the faculty of Pure and Applied Science.

IV. Presentation Of Results

Results of the findings are presented below.

Frequency distribution of Influence of Performance Expectancy on Learning

The different responses in regard to how performance expectancy influence learning among the students in FUW are presented in Table 1.

Table 1: How Performance Expectancy Influence learning

Performance Expectancy	Strongly Agree (%)	Agree (%)	Undecided (%)	Disagree (%)	Strongly Disagree (%)	Mean	Std. Dev.
I would find e-learning resources useful in learning	133 (42.2)	126 (40.0)	36 (11.4)	15 (4.8)	5 (1.6)	4.17	0.919
Using e-learning will enable me to accomplish learning activities more quickly	119 (38.1)	130 (41.7)	42 (13.5)	16 (5.1)	5 (1.6)	4.10	0.927
Using e-learning will improve my learning	113 (36.8)	136 (44.3)	46 (15.0)	9 (2.9)	3 (1.0)	4.13	0.842
use of e-learning will allow me to have access to more information about my courses	124 (39.6)	161 (51.4)	14 (4.5)	9 (2.9)	5 (1.6)	4.25	0.801
Behavioural Intention							
I intend to use e-learning applications in the future	110 (35.0)	129 (41.1)	54 (17.2)	13 (4.1)	8 (2.5)	4.02	0.959
I predict I would use e-learning applications in the future	101 (32.2)	121 (38.5)	63 (20.1)	20 (6.4)	9 (2.9)	3.91	1.015
I plan to use e-learning applications in the future	104 (33.3)	131 (42.0)	51 (16.3)	14 (4.5)	12 (3.8)	3.96	1.012

From Table 1, 259 (82.2%) of the respondents agreed that they would find e-learning resources useful in learning, 36 (11.4%) were undecided while 20 (6.4%) disagreed. Using e-learning will enable me accomplish learning activities, 249 (79.8%) agreed to that, 42 (13.5%) were undecided while 21 (6.7%) disagreed. Again, 285 (91%) of the respondents agreed that the use of e-learning will allow them to have access to more information about their courses, 14 (4.5%) were undecided while 14 (4.5%) disagreed. Furthermore, 249 (81.1%) agreed that using e-learning will improve their learning, 46 (15%) were undecided while 12 (3.9%) disagreed. These results show that majority of the respondents agreed that performance expectancy of ICT infrastructures influence learning in FUW.

Probing further, responses from the interview session also showed how performance expectancy influence learning. The thematic analysis and responses for each of the nodes are presented below in Figure 3. which presents the word cloud that identifies the themes from participants' responses. When participants were asked if the use of ICT have any benefit to their learning, the themes identified were; "yes", "learning easier", "help education", "beneficial"

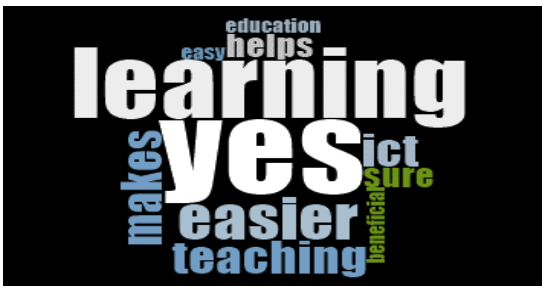

Figure 3: Word Cloud on Performance Expectancy on the Use of ICT for Learning

The result in figure 3 shows that many of the participants agreed that performance expectancy of the use of ICT influences their learning. Many of the participants believe that it makes them achieve the goals of learning easily. Below is one of the responses given by the respondents when asked if the use of ICT has any benefit to their academic pursuit;

"Yes, it makes teaching easy and enhances learning, without the stress in checking for books in the library. You just browse, google and you get your information for assignment and research work" (Female/100 Level/Pure and Applied Science)

The word cloud analysis is in line with the assertion laid earlier that performance expectancy influence the behavioural intention to use ICT for learning, as indicated by the word cloud shown in figure 3.

Frequency distribution of Influence of Effort Expectancy on Learning

The different responses in regards to how effort expectancy influence learning among students in FUW are presented in Table 2.

Table 2: How Effort Expectancy Influence Learning

Effort Expectancy	Strongly Agree (%)	Agree (%)	Undecided (%)	Disagree (%)	Strongly Disagree (%)	Mean	Std. Dev.
My interaction with e-learning applications would be clear and understandable	83 (26.7)	176 (56.6)	40 (12.9)	11 (3.5)	1 (0.3)	4.06	0.751
It would be easy for me to become skillful at using e-learning resources	92 (29.5)	172 (55.1)	34 (10.9)	10 (3.2)	4 (1.3)	4.08	0.802
I would find e-learning resources easy to use	75 (24.8)	144 (47.5)	65 (21.5)	13 (4.3)	6 (1.9)	3.89	0.896
Learning to operate e-learning applications is going to be easy for me	82 (26.8)	142 (46.4)	67 (21.9)	13 (4.2)	2 (0.7)	3.94	0.846
Behavioural Intention							
I intend to use e-learning applications in the future	110 (35.0)	129 (41.1)	54 (17.2)	13 (4.1)	8 (2.5)	4.02	0.959
I predict I would use e-learning applications in the future	101 (32.2)	121 (38.5)	63 (20.1)	20 (6.4)	9 (2.9)	3.91	1.015
I plan to use e-learning applications in the future	104 (33.3)	131 (42.0)	51 (16.3)	14 (4.5)	12 (3.8)	3.96	1.012

Table 2 above shows the analysis of how effort expectancy influences learning among students in FUW. It was revealed that, 259 (83.3%) of the respondents agreed that their interaction with e-learning applications would be clear and understandable, 40 (12.9%) were undecided while 12 (3.8%) disagreed. Again, it was revealed that 219 (72.3%) of the respondents agreed that they would find e-learning resources easy to use, 65 (21.5%) were undecided while 19 (6.2%) disagreed. Also, 224 (73.2%) of the respondents agreed that learning to operate e-learning applications is going to be easy for them, 67 (21.9%) were undecided while 15 (4.9%) disagreed.

These results show that majority of the respondents agreed that effort expectancy of ICT infrastructures influence learning in FUW. The outcome of behavioural intention suggested that effort expectancy influence the behavioural intention to use ICT for learning, as indicated by respondents.

Test of hypotheses

The results of the test of the two hypotheses formulated are presented in this section.

Hypothesis 1:

$H_0$1: Performance Expectancy (PE) has no significant influence on the Behavioural Intentions (BI) to use ICT for Learning by students of Federal University, Wukari

To test for this hypothesis, Pearson's correlation analysis was performed on performance expectancy (PE) and behavioural intentions (BI) to use ICT for learning. Table 3 presents the results obtained from the analysis.

Table 3: Relationship between Performance Expectancy (PE) and Behavioural Intentions (BI) to use ICT for Learning.

Variables	Performance Expectancy (PE)	
Behavioural Intentions (BI) to use ICT for Learning	Pearson Correlation	**.552**
	Sig. (2-tailed)	**.000**
	N	**322**

From the Table, the significant (2-tailed) value arrived at when performance expectancy was correlated with behavioural intentions to use ICT for learning is .000. This indicates that there is a significant positive relationship between performance expectancy and behavioural intentions to use ICT for learning among students in FUW, where ($r=.552$, $p<.05$). Therefore, the null hypothesis is rejected. This result implies that as performance expectancy increases, the behavioural intentions to use ICT for learning among students will also increase.

Hypothesis 2:

$H_0$2: Effort Expectancy (EE) has no significant influence on the Behavioural Intentions (BIs) to use ICT for Learning by students of Federal University, Wukari

To test for this hypothesis, Pearson's correlation analysis was performed on effort expectancy (EE) and behavioural intentions (BI) to use ICT for learning. Table 4 presents the results obtained from the analysis.

Table 4: Relationship between Effort Expectancy (EE) and Behavioural Intentions (BI) to use ICT for Learning.

Variables	Effort Expectancy (EE)	
Behavioural Intentions (BI) to use ICT for Learning	Pearson Correlation	**.626**
	Sig. (2-tailed)	**.000**
	N	**322**

From the Table, the significant (2-tailed) value arrived at when effort expectancy was correlated with behavioural intentions to use ICT for learning is .000. This indicates that there is a significant positive relationship between effort expectancy and behavioural intentions to use ICT for learning among students in FUW, where ($r=.626$, $p<.05$). Therefore, the null hypothesis is rejected. This result implies that as effort expectancy goes up, the behavioural intentions to use ICT for learning among students in FUW will also increase.

V. Discussion Of Findings

Performance expectancy and learning among students in FUW. The findings on how performance expectancy influences e-learning among students of FUW revealed a positive influence of performance expectancy on learning among students. This is seen from the high percentage of responses of the participants who said they found e-resources useful in learning and that using e-learning enables them to accomplish learning activities quickly as well as improve their learning. The above findings corroborated the results from the interview which also shows a positive influence of performance expectancy on learning as depicted in Figure 3. Some of the respondents (Students) have these to say …*"it (ICT) makes teaching easy and enhances learning, without the stress in checking for books in the library. You just browse, Google and you get your information for assignment and research work";*

"…it (ICT) makes you to have access to resources and increase your knowledge… exposes you to the wider world"; "…this is because we use ICT not just for education pursuits alone, but it helps us generally in life" ….

The results showed that majority of the respondents agreed that the performance expectancy of ICT infrastructures influence learning at FUW. These results imply that as performance expectancy increases, the behavioural intentions to use ICT for learning among students also increase in the university. This shows that ICT products like computers, laptops, Smartphones have aided e-learning as they ensure that university students get access to, and retrieve information from the Internet in different electronic formats wherever they are. In fact, within the Nigerian context, circumstantial evidence reveals a prevalence of ICT facility use among students, which could increase their chances of engaging in e-learning, (Yushau and Nannim, 2020). Also, there is a high likelihood that students in Nigeria will engage in e-learning, as ICT facilities are more readily available and accessible; with alternative ways of powering them that has reduced reliance on the unsatisfactory electric power supply (Eze, Chinedu-Eze, Okike and Bello, 2020). Again, the result of a study carried out by Tor, Gora, and Ahmed, (2021) revealed a high use of ICT tools by graduating students to improve different areas of their project research. The ICT tools used include Internet network, Flash drives/Hard disk/CD, Desktops, Printers, Laptops, E-mail facility, Scanners, Projectors and Digital cameras. Furthermore, the results of this research agree with the findings of Chao, (2019) who investigated factors that determine the Behavioural Intention to use mobile learning. The findings revealed that Behavioural Intention to use mobile learning technology was

significantly and positively influenced by performance expectancy. Also, an article by Tandon, (2021) revealed that performance expectancy was significant and had a positive impact on behavioural intention to adopt online teaching. In addition, a study carried out by Fatima and Ibrahim, (2021) revealed that performance expectancy has a positive influence on behavioural intention to use Learning Management System (LMS) in Ahmadu Bello University, Distance Learning Centre. The implication of this finding is that there is an appreciable level of availability of ICT tools among Nigerian students, and also that most Nigerian student's use ICT for learning. ICT tools would enhance students' research experiences if they are put to use in practical e-learning processes, classroom/research contexts. The resulting exponential use of ICT facilities has already transformed the way we live and work (Papagiannidis and Marikyan, 2020) as cited in Ko, Kim and Kim, (2021). This is as vital as all works of life is leaning toward the use of ICT for better productivity and a wide variety of smart devices such as laptops, tablets and smartphones, fuelled by advanced information technology infrastructure, are increasingly mobile, portable and accessible, which allow more work to be done from anywhere at any time (Kim et al., 2018) as cited in Ko, Kim and Kim, (2021). This, therefore, highlights the need for the university to sustain efforts in deploying emerging ICT infrastructures suitable for creating a more technology-driven research environment. Within the context of the Sustainable Development Goal, students' perception of the use of ICT is high and of great value. There is, therefore, every tendency for them to use it to learn anytime, anywhere and at their pace for personal development and Societal growth.

Effort Expectancy Influence learning among the students

Findings from this study revealed a positive influence of effort expectancy on learning among students in FUW. This is seen from the high percentage of responses of the participants who said they find interaction with e-learning applications clear and understandable; and that it is easy for them to become skilful at using e-learning resources; i.e. there is high degree of ease associated with the use of ICT facilities. The result also implies that as effort expectancy increases, students' behavioural intention to use ICT for learning also increases. This finding is consistent with that of researchers who have applied the UTAUT to learning. Asanka, Junainah, Ali and Ferdous, (2018) established in a study that effort expectancy predicts behavioural intention to use Virtual Learning Environment (VLE) Technology. Also, a study by Onaolapo and Oyewole (2018) shows that effort expectancy has a direct link to the use of smartphones for mobile learning by postgraduate students. This is because the use of smartphones for mobile learning by postgraduate students is likely to be influenced by how easy or complex it is to retrieve relevant information with smartphones within the shortest time possible. Hence, if postgraduate students realize that it is very easy to use their smartphones for mobile learning, they would not refrain from using them. However, the study by Fatima and Ibrahim, (2021) revealed on the contrary that effort expectancy has negative influence on behavioural intention to use Learning Management System (LMS) in Ahmadu Bello University Distance Learning Centre. Also, the research by Kosiba, Odoom, Boateng, Twum and Abdul-Hamid, (2022) shows that effort expectancy as a predictor has no positive influence on behavioural intention to use e-learning. There are several factors that might have mediated this; such as the COVID 19 pandemic when physical contacts were minimal and training programmes were suspended in all Nigeria schools.

VI. Conclusion

ICT is far becoming integral to the teaching-learning interaction. Its introduction in today's academic system comes with so much gain, even though there are challenges in its application. Not only has ICT reshaped the learning and teaching process of our society, it has also dictated the future of our knowledge world, hence the need for institutions of learning in Nigeria, particularly, North Eastern parts, to facilitate the acquisition of ICT facilities in higher Institutions, enhance teacher's and student's basic skills for effective and efficient utilization. This study, therefore, concludes that FUW is among the institutions that have embraced the use of ICT and so the need to establish through empirical studies how performance expectancy and effort expectancy influence the behavioural intention to use ICT for learning among students. Finally, this study revealed that there is a positive significant relationship between performance expectancy, effort expectancy and behavioural intention to use of ICT in learning by students. This is because the benefits that students derive from the use of ICT will motivate them to use them for academic activities; particularly, for learning and research. Students will not want to waste their time on any activity that will not add value to their academic pursuits. Therefore, performance expectancy and effort expectancy are strong determinants of the use of ICT in learning at FUW. Based on the foregoing, the government, management of the university, and other stakeholders should ensure policies are formulated and followed, to enable the provision and improvement of user-friendly ICT environment and tools to encourage more use of ICT facilities in the school for learning.

Recommendations and contributions to knowledge

Based on the findings of this study, the following recommendations are made:

1. The management of FUW should develop a robust ICT policy that will fully adopt and integrate ICT into teaching and learning processes for efficiency, effectiveness, reduced stress, more user friendly and flexible learning.
2. Government and the university management should put more funds to complement what is already available, to advance the course of application of ICT for learning and research.

The study has been able to contribute to body of knowledge in the area of ICT application by providing empirical evidence that Performance Expectancy influences learning in FUW. The study also indicated that Effort Expectancy influences the application of ICT in learning at FUW. Finally, the study could be used for further studies by researchers, thereby increasing the body of literature.

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