

Determinants of Adoption and Use of E-Learning for Teaching Techno-Vocational Skills in Tertiary Institutions in Rivers State during COVID-19 Pandemic in Nigeria

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Abstract

The study investigated the determinants of adoption and use of e-learning for teaching techno-vocational skills in tertiary institutions during covid-19 pandemic in Nigeria. It sought to find out the relationships that exist between the factors related to instructors and the adoption and implementation of e-learning. Five research questions were posed and five null hypotheses formulated which guided the study. The correlation survey design was adopted for the study. The study population was 205, which comprised all academic staff in Faculties/Schools of technical and vocational education in three tertiary institutions in Rivers State. The entire population was used without sampling because it is of manageable size. Two sets of instruments were used for data collection, namely: Determinants Factors of Instructors' Scale and Adoption of E-learning Inventory Scale. The instruments were structured on 5-point rating scale. The instruments were face validated by three experts in the Faculty of Education in Rivers State University. The instrument was pilot-tested on a representative sample of 30 respondents from faculty of engineering in Rivers State University, which are not part of the study population. The response of thirty (30) representatives were used to estimate the reliability coefficient of the instrument, which was established using the Cronbach Alpha reliability coefficient formula and it yielded a reliability index of 0.87 and 0.93 for instruments 1 & 2 respectively. The data collected were analyzed using Pearson Product Moment Correlation and t-test to test the stated null hypotheses at 0.05 level of significance. Findings of the study revealed that there is a high positive relationship between behavioral intentions, performance expectancy, effort expectancy and social influences of instructors and adoption of e-learning for teaching in technical and vocational education in tertiary institutions in Nigeria. Also, there was low but positive relationship between facilitating conditions of the institutions and adoption of e-learning. The study concluded among other things that the determinant factors that are related to instructors have positive relationship with adoption of e-learning. Also, that lack of administrative and institutional support often results in instructors falling short of incorporating technology in learning institutions. It therefore, recommended regular training and workshops on e-learning to encourage instructors and increase their interest towards adoption of e-learning. Management of technical and vocational institutions should invest heavily in technology to improve its availability and subsequent use by staff in institutions for teaching and learning. Also, special recognitions for instructors who use e-learning in teaching to promote their social status in the school community; and support for academic staff by provision of necessary Information and Communication Technologies and e-learning facilities.

Key words: Tertiary Institutions, E-learning, COVID-19, Technical and Vocational Education, ICTs, Adoption

Introduction

There is panic as the world continues to battle the escalating corona virus (COVID-19) pandemic. The global economic impact of this pandemic cannot be underestimated as many economies around the globe witnessed reduced economic activities. In the education sectors, UNESCO (2020) exclaimed the adverse consequence of the pandemic as far reaching on education as most governments around the world temporarily closed educational institutions in an attempt to contain the spread of the diseases. These nationwide closures of schools are impacting on over 60% of the world's student population. UNESCO further expressed worries that the resulting disruptions may exacerbate already existing disparities within the education system and also in other aspects of our lives. These include: interrupted learning; poor nutrition of pupils; confusion and stress among teachers; parents were unprepared for distance and home schooling; challenges creating, maintaining, and improving distance learning; gaps in childcare; high economic costs; unintended strain on health-care systems; increased pressure on schools systems to go online; rise in dropout rates; increased exposure to violence and exploitation; social isolation; challenges measuring and validating learning outcome. It is obvious that school closures have enormous social and economic implication for people across communities. However the consequences that befall the education system, the world today encourage the use of technology-enhanced teaching and learning tools for education delivery especially in the tertiary institutions. Thereby have moving instruction delivery from a local classroom to global/digital innovations through the use of e-learning technologies.

E-learning technologies are very vital tool in this digital age and it comprises of an extensive array of digitization approaches, components and delivery methods. According to Selwyn (2011) e-learning is the systematic integration of modern technologies and equipment, telecommunication and ICT resources to create experiences that seek to improve human beings.

“E-learning unites two main areas, learning and technology; Learning is a cognitive process for achieving knowledge, and technology is an enabler of the learning process, meaning that technology is used like any other tool in the education praxis, as a pencil or a notebook” (Aparicio, Bacao & Oliveira, 2016: 292).

Furthermore, while Anowor (2011) described e-learning as encompasses learning at all levels (formal, semiformal and informal) that uses ICT and instructional media in form of hardware and software technologies in the development and transformation of skills and concept-based knowledge. E-learning could be seen as an integral aspect of ICT that is making wave in the education sector. It could further be understood as a multi-layered and multi-faceted approach to teaching and learning that has attracted much attention and prominence in recent time. Similarly, Mohammad (2014:498) noted that:

“The gradual transition of the learning systems and e-learning provides the students more flexibility in accessing the information. That the students now becomes able to attend only part of the classes (Blended learning) or never attend the classes (Distance learning) due to the technological facilities that permits learners; 1) to download the slides (containing summary of the materials presented in the text book); 2) to attend the lecture (tutor explanation of the slides) online from anywhere through real-time video streaming; and 3) at any-time through recorded video streaming”.

In fact, e-learning is gradually pushing-out and taking over the place of traditional (face-to-face) system of teaching and learning; because the new technologies have better advantages than the former, and allows for more flexibility in learning and a wider reach for education world-wide (Nwabufu, Umoru & Olukotun, 2012). These innovations in ICTs have made tremendous contribution to the performance of the roles of the lecturers at the tertiary institution levels and for the teaching of technical and vocational skills in formal, semi-formal and informal settings. According to Salawudeen (2010) it has become imperative for learners in the 21st century to have access to education and training at their convenience such that distance and time should no longer be barriers for people to acquire skills and knowledge necessary to perform as functioning members of the society. Hence the adoption and use of e-learning in our tertiary institutions is however not supplementary to the conventional learning methods; rather it is complementary to the conventional system.

Adoption of e-learning tools entails the use of different ICT facilities as instructional means for teaching and learning. Unfortunately, the adoption of e-learning for teaching in technical and vocational education programs in tertiary institutions seems to have been influenced by some factors. According to Elgort (2005:1), "adoption of e-learning in the university context is influenced by a number of factors, including organizational, socio-cultural, intra-and-interpersonal factors, to mention a few". Furthermore, Brinkeroff (2006) observed that teachers often fail to build on technology's instructional potentials due to barriers such as institutional and administrative support, training and experience, attitudinal or personality factors and resources. In same vein, other researchers who investigated determinants of e-learning have identified the factors hindering the effective adoption of e-learning technologies in tertiary institutions to include among others: inadequate ICTs and e-learning infrastructure; individual characteristics such as the lack of interest and commitment amongst the teaching staff to use e-learning in teaching and learning session (Anderson & Gronhund, 2009; Bappa-Aliyu, 2012; Anene, Imam & Odumuh, 2014; Tarus, Gichoya & Muumbo, 2015). These authors further explained that the individual characteristic are inherent and they are what motivate one to either use or not use a particular technology. In order words these are intrinsic and extrinsic motivational factors; that relate to Instructors/Lecturers in technical and vocational tertiary institutions. They includes; behavioural intention, performance expectancy, effort expectancy, social influence and facilitating conditions (Venkatesh, Moris, Davis & Davis, 2003; Brinkeroff, 2006; Ali, Kate & Xiaohui, 2013; Umrani-Khan & Iyer, 2009; and Khan, Hassan & Clement, 2012). These motivational factors are believed to having influencing effect on individuals' decision to adopt the use of e-learning technology in tertiary institutions. They play important role in adoption of e-learning technology in the tertiary institutions. Because the way instructors perceive the ICTs and the attitudes they exhibits towards e-learning affects their adoption and use in teaching and learning process.

Behavioural intention is defined as an individuals' perceived likelihood or subjective probability that he or she will engage in a given behavior (Venkatesh & Bala, 2008). That is to say, the individuals' possible use of the e-learning will to some extent base on personal choice or decision. Of course, the way people perceive new technology informs their interest and subsequent use of such technology. Researchers like Oye, A. Lahad, Madar & Ab.Rahim (2012) found in their study that perceived use of e-learning has a significant relationship with students' attitude and use of e-learning. It also found out that perceived ease of use increases students behavioural intention and using e-learning technologies. Similarly, Lau & woods (2008) stated that behavioural intention to use e-learning is the strongest predictor of actual use of e-learning technologies. Behavioral intention in other words, is what predicts whether an individual will or not engage in an action; and it is a more appropriate measure for e-learning than the actual use (Teo, Luan, & Sing, 2008). Therefore, adoption of e-learning in technical and vocational education is likely to be related to the behavioural intentions of instructors. Though, in tertiary institutions in Nigeria, other factors such as resource availability may intervene between the intention to use a technology and the actual use of the technology.

Performance expectancy has been defined as the extent to which an individual believes that using a particular system will help him or her to attain gains in job performance (Venkatesh, Moris, Davis & Davis, 2003). That is the degree to which the instructors believe that using e-learning technologies in teaching the learners would result in improvement in the teaching process.

Studies by Brinkerhoff (2006) also revealed that performance expectancy is a very strong predictor of user's intension to use a technology, and it was significant in both voluntary and mandatory settings. In a similar study by Nanchang (2009) it was also revealed that performance expectancy have significant influence on behavioral intention. Interactivity of the e-learning technologies is one of the key qualities that makes it a stimulating learning process, making it less frustrating, more interactive and engaging, the users should be able to adjust the time, location, content, and speed of learning according to their own personal schedules (Umrani-Khan & Iyer, 2009). Another construct which necessitate performance expectancy is its flexibility. Accordingly, Umrani-Khan & Iyer (2009) flexibility refers to the extent to which e-learning tools and content accommodate the preference of students and teachers. Such that they can choose topics in the order of their interest, self-paced learning or teaching, convenience (any time-any place) and adaptability to preferred learning style of students or teaching style of teachers. Researchers like Namisiko, Munialo & Nyongesa (2014) found performance expectancy as a major factor having strong influence on the deployment and adoption of e-learning. Other factors such as perceived usefulness and perceived ease of use were found to have strong influence in determining whether e-learning are to be adopted or not by users. In a similar study, Maina & Nzuki (2015) found that performance expectancy, effort expectancy and social influence have a positive correlation with behavioural intention which directly influences the adoption and implementation of e-learning management system. Similar studies by Al-alak & Alnawas (2011) found that there was positive influence of perceived usefulness, perceived ease of use and behavioral intention of academic staff to e-learning system.

Effort expectancy is the extent to which prospective users believes that the e-learning tool requires no effort (Venkatesh, Moris, Davis & Davis, 2003). It is the expected degree of ease associated with the use of a technology.

Subsequently, studies have shown that the manner in which the individual perceived technology use impacts its adoption (Veiga, Floyd & Dechant, 2001; Davis, 1989; Wu, Change & Guo, 2008 and O'Neil, Singh & O'Donoghue, 2004). Similarly, Maqableh, Masa'deh & Mohammed (2015) found perceived playfulness as having a direct effect on computer based assessment CBA use, while perceived ease of use, perceived usefulness, computer self efficacy, social influence, facilitating conditions, content and goal expectancy were reported to have only indirect effect on CBA use.

Social influence is the extent to which the students and teachers perceive a social pressure to use e-learning technologies (Venkatesh, Moris, Davis & Davis, 2003). In other words, it refers to the extent to which an individual perceives that other people believe that he or she should use the technology (Umrani-Khan & Iyer, 2009). Social influences are factors that affect the adoption of e-learning in tertiary institutions. Nanchang (2009) found among other things that social influence has significant influence on behavior intention. Furthermore, in the study by Fishbein & Ajzen (1975) social influence were stressed as one of the key indicators along with image. E-learning implementation is not simply a technological solution, rather a process of many different factors such as social and behavioral contexts (Ali, Kate & Xiaohui, 2013).

Facilitating condition is the degree to which an individual believes that organizational and technical infrastructure exists that supports the use of the system (Venkatesh, Moris, Davis & Davis, 2003). This specifically refers to the extent of availability of external resources such as (time, money and effort) and also the physical technological infrastructures (PCs, broadband, etc) that are needed to enhance the performance of a particular task. Facilitating conditions of the institutions could be a determinant factor in the adoption of e-learning in TVE. According to a research study conducted by Maina & Nzuki (2015) reported among other things that facilitating conditions directly influences actual adoption of EMS. Similarly, Kosgei (2015) reported among other things that availability of ICT infrastructures are significant factors influencing e-learning adoption in TVET. Also, in another study by Alahmari & Kyei-Blankson (2016) found among other things that factors such as teacher professional development, time for training, and Internet access as challenges to the adoption and implementation of Classera in all K-12 schools across Saudi Arabia.

It is therefore pertinent to note that in a tertiary institutions settings like ours, it is not just putting computers in classroom and wiring up schools that create exciting new learning situations that are about changing the ethos of classrooms and the culture of institutions, but lack of administrative and institutional support, lack of training and experience, and limitations resulting from personality or attitudinal factors often result in teachers falling short when attempting to incorporate e-learning technology in teaching. Other factors like lack of equipment, unreliability of equipment, lack of technical support and other resource-related issues do affect the adoption of e-learning management system must be taken cognizance of (Brinkerhoff, 2006; Khan, Hasan, & Clement, 2012). Hence, Finally, educational realities especially during the global COVID-19 pandemic support the need for technology-based instruction; and technical and vocational educators must continue to explore the incorporation of technology in instruction delivery. Based on the background of the above situation the researcher holds the conviction that the motivational factors (intrinsic & extrinsic) related to instructors may play a key role in relation to adoption of e-learning technologies in technical and vocational education in tertiary institutions in Nigeria.

Statement of the Problem

Education globally has embraced a new trend that uses e-learning technologies for teaching and learning, which provide students with flexible access to learning content. In Nigerian education system, this new trend has been recognized and inscribed in the national policy on education, which states the goals of e-learning as to include among other things: to provide access to quality education and equity in educational opportunities for those who otherwise would have been denied; to encourage internationalization especially of tertiary education curricula; ameliorate the effect of internal and external brain drain in tertiary institutions by utilizing experts as teachers regardless of their locations or places of work (FRN, 2013). Hence, it is hoped that integration of ICTs and e-learning in the arena of technical and vocational education will lead to enhanced quality of the products that will perform effectively in the workplace and business environment of the current era (Ekesionye & Okolo, 2011; and Olojo, Adewumi & Ajisola, 2012).

Unfortunately the adoption of e-learning in the Nigerian tertiary institutions seems to be largely unexplored; especially in technical and vocational education in tertiary institutions. It was observed by Ezenwafor, Okeke & Okoye (2014) that instructors in technical and vocational education tertiary institutions in Nigeria utilize e-learning at a low extent. Others reported that there is low rate of adoption of ICTs and E-learning technologies which results to low rate of usage in teaching and learning (Ajadi, Salawu & Adeoye, 2008; Eke, 2011; Azih & Nwasu, 2012; Nwabufu, Umoru & Olukotun, 2012; Thomas & Amaechi, 2015; Omoni & Ifeanyichukwu, 2015; and Freda, 2016). Consequently, the situation in e-learning adoption in Nigerian tertiary institutions is posing serious concern, and it is

largely blamed on some institutional and motivational factors that are related to instructors, which influences academic teachers' adoption of e-learning technology (Brinkeroff, 2006; Ali, Kate & Xiaohui, 2013; and Khan, Hasan & Clement, 2012).

The problem of the study is what are the relationships between the determinant factors of instructors and adoption of e-learning for teaching in technical and vocational education programs in tertiary institutions in Nigeria? This gap in knowledge underscore the need for an inquiry on the determinant factors of adoption of e-learning by instructors teaching in technical and vocational education tertiary institutions in Nigeria.

Purpose of the study

The study sought to investigate the relationships between the determinant factors of instructors and adoption of e-learning in technical and vocational education in tertiary institutions in Rivers State. To this end the study specifically sought to:

- 1 Determine the relationship between behavioral intentions of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.
- 2 Find out the relationship between performance expectancy of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.
- 3 Find out the relationship between effort expectancy of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.
- 4 Determine the relationship between social influences on instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.
- 5 Determine the relationship between facilitating conditions of the institutions and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.

Research questions

The following research questions were raised to guide the study:

1. What is the relationship between behavioral intentions of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria?
2. What is the relationship between performance expectancy of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria?
3. What is the relationship between effort expectancy of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria?
4. What is the relationship between social influence on instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria?
5. What is the relationship between facilitating conditions of the institutions and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria?

Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance.

1. There is no significant relationship between behavioral intentions of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.
2. There is no significant relationship between performance expectancy of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.
3. There is no significant relationship between effort expectancy of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.
4. There is no significant relationship between social influence on instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.
5. There is no significant relationship between facilitating conditions of the institutions and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.

Methods and Materials

The study adopted the correlation survey. Correlation design enables one to ascertain the degree to which variance in one variable are associated with variance in another variable (Maduabum, 2007). The study was carried out in Rivers State, located in the South-South Geo-political zone of Nigeria. The state houses eight tertiary institutions from which, three tertiary institutions offering Technical and Vocational Education programs were used for the study; these are: Federal College of Education (Tech), Omoku; Ignatius Ajuru University of Education, Port

Harcourt; and Rivers State University, Port Harcourt. These institutions have trained academic staff teaching with the e-learning and other ICT tools so they informed the study on the information sought.

The study population was 205, comprising of all academic staff teaching in Faculties/Schools of Technical and Vocational education, in the three tertiary institutions in Rivers State. The entire population of 205 was used as respondents for the study. The researchers considered the population to be of manageable size since they are expected to supply information to the study about the determinants factors and adoption of e-learning technologies in their respective institutions.

Two instruments were used for the study; they include the Determinant Factors of Instructors' Scale (DEFIS) and Adoption of E-learning Inventory Scale (ADEIS). The items of Determinants Factors of Instructors Scale (DEFIS) were adapted from Venkatesh, Morris, Davis, & Davis (2003) and Umrani-Khan, & Iyer (2009) used to access the independent variables in relation to adoption of e-learning. The instrument consists of five (5) sections; A, B, C, D and E. the instrument contains 23 items responses. While, items of Adoption of E-learning Inventory Scale (ADEIS) were adapted from Kotrlík & Redmann (2009), designed to assess the varying levels of e-learning adoption by instructors in technical and vocational education. The instrument had one section with 12 items used to measure the dependent variable.

The instruments were face validated by three specialists from the Faculty of Education, Rivers State University, Port Harcourt. The instrument was pilot-tested on a representative sample of 30 respondents in the Faculty of Engineering in Rivers State University, which are not part of the study population. The response of thirty (30) representatives were used to estimate the reliability coefficient of the instrument, which was established using the Cronbach Alpha reliability coefficient formula and it yielded a reliability index of 0.87 and 0.93 for instruments 1 & 2 respectively which was considered sufficient for the study. Based on Okoli (2012) who affirmed that a reliability coefficient of 0.70 and above is desirable.

The researchers visited the institutions and administered a total of 205 copies of the instrument on face to face to the respondents on the first visit. After a period of two weeks 185 completed copies of the questionnaire were retrieved, which account for 92.5% return rate. Then 8 copies were found not useable due to either incompleteness, multiple ticking of item response, etc. then 179 were correctly filled which represent 89.5% of all the instrument was useable and considered adequate for the analysis.

The scoring of the various sections of "Determinants Factors of Instructors' Scale (DEFIS)" were first weighted on 5-point rating scale of 5= very high extent, 4 = high extent, 3= moderate extent, 2= low extent & 1= very low extent for positively keyed items and the reverse order for the negative items. Based on the assigned weights the score for each respondent were obtained for each subsection of the instrument. Finally the total scores of each respondent on each section of Determinants Factors of Instructors' Scale (DEFIS) were correlated with their total score on Adoption of E-learning Inventory Scale (ADEIS).

The Pearson's Product Moment Correlation (PPMC) was used to compute the respondents' scores on each section of DEFIS with their respective scores on ADEIS to obtain the r-value which tells the magnitude and direction of the relationship between the two variables in question. The t-test statistic was used for test of significance of the correlation coefficient r obtained at 0.05 significant levels. For each hypothesis, all the appropriate data obtained were substituted into the t-test formula; the value obtained was compared with the critical value to find out whether the obtained r-value is significant.

As a rule the null hypotheses were accepted when the calculated tr-value is less than the critical tr-value at 0.05 probability level, otherwise it is rejected. The choice of t-test rather than z-test for this study when the sample size increases; the t closely approximates the z distribution, hence having same value.

Results and Discussion

Research Question 1

What is the relationship between behavioral intentions of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria?

Hypothesis 1

There is no significant relationship between behavioral intentions of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.

Table 1: Pearson's (r) for Test of Significant Relationship between Behavioral Intention of Instructors and Adoption of E-learning

Variables	Sum of Scores	Sum of Scores square	ΣXY	N	Df	R	Tr-cal.	T-crit	Decision
Adoption of e-learning (Y)	ΣY 4270	ΣY^2 103705	86816	179	177	0.53	8.368	1.960	Rejected
Behavioral Intentions (X)	ΣX 3612	ΣX^2 73695							

Table 1 shows a correlation coefficient r-value (0.53). The result is that there is a positive relationship between behavioral intentions of instructors and adoption of e-learning. Furthermore, since the trcal (8.368) is greater than the critical t-value (1.960) at df of 177 and 0.05 level of significance for a two-tailed test, the result is statistically significant, we therefore reject the null hypotheses. This means that there is a significant positive relationship between behavioral intentions of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.

Research question 2

What is the relationship between performance expectancy of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria?

Hypothesis 2

There is no significant relationship between performance expectancy of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.

Table 2: Pearson's (r) for Test of Significant Relationship between Performance Expectancy of Instructors on Adoption of E-learning

Variables	Sum of Scores	Sum of Scores square	ΣXY	N	Df	R	Tr-cal.	T-crit	Decision
Adoption of e-learning (Y)	ΣY 4270	ΣY^2 103705	92456	179	177	0.45	6.694	1.960	Rejected
Performance expectancy (X)	ΣX 3854	ΣX^2 83696							

Table 2 shows a correlation coefficient r-value (0.45). The result is that there is a positive relationship between performance expectancy of instructors and adoption of e-learning. Furthermore, since the trcal (6.694) is greater than the critical t-value (1.960) at df of 177 and 0.05 level of significance for a two-tailed test, the result is statistically significant, we therefore reject the null hypotheses. This means that there is a significant positive relationship between performance expectancy of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.

Research question 3

What is the relationship between effort expectancy of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria?

Hypothesis 3

There is no significant relationship between effort expectancy of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.

Table 3: Pearson's (r) for Test of Significant Relationship between Effort Expectancy of Instructors and Adoption of E-learning

Variables	Sum of Scores	Sum of Scores square	ΣXY	N	Df	R	Tr-cal.	T-crit	Decision
Adoption of e-learning (Y)	ΣY 4270	ΣY^2 103705	83761	179	177	0.12	1.608	1.960	Accepted
Effort expectancy (X)	ΣX 3504	ΣX^2 69713							

Table 3 shows a correlation coefficient r-value (0.12). The result is that there is a positive relationship between effort expectancy of instructors and adoption of e-learning. Furthermore, since the trcal (1.608) is less than the critical t-value (1.960) at df of 177 and 0.05 level of significance for a two-tailed test, the result is not statistically significant, we therefore accept the null hypothesis. This implied that there is positive but no significant relationship between effort expectancy of instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.

Research question 4

What is the relationship between social influence on instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria?

Hypothesis 4

There is no significant relationship between social influence on instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.

Table 4: Pearson's (r) for Test of Significant Relationship between Social influences on Instructors and Adoption of E-learning

Variables	Sum of Scores	Sum of Scores square	ΣXY	N	Df	R	Tr-cal.	T-crit	Decision
Adoption of e-learning (Y)	ΣY 4270	ΣY^2 103705	81950	179	177	0.15	2.019	1.960	Rejected
Social influences (X)	ΣX 3428	ΣX^2 66362							

Table 4 shows a correlation coefficient r-value (0.15). The result is that there is a positive relationship between social influences on instructors and adoption of e-learning. Furthermore, since the trcal (2.019) is greater than the critical t-value (1.960) at df of 177 and 0.05 level of significance for a two-tailed test, the result is statistically significant; hence the null hypothesis is rejected. This means that there is a significant positive relationship between social influences on instructors and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.

Research question 5

What is the extent of relationship between facilitating conditions of the institutions and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria?

Hypothesis 5

There is no significant relationship between facilitating conditions of the institutions and adoption of e-learning for teaching in technical and vocational education in tertiary institutions in Rivers State.

Table 5: Pearson's (r) for Test of Significant Relationship between Facilitating Conditions of the Institutions on the Adoption of E-learning

Variables	Sum of Scores	Sum of Scores square	ΣXY	N	Df	R	Tr-cal.	T- crit	Decision
Adoption of e-learning (Y)	ΣY 4270	ΣY^2 103705	68778	179	177	0.18	2.434	1.960	Rejected
Facilitating Conditions (X)	ΣX 2869	ΣX^2 73695							

Table 5 shows a correlation coefficient r-value (0.18). The result is that there is a positive relationship between facilitating conditions of the institutions and adoption of e-learning. Furthermore, since the trcal (2.434) is greater than the critical t-value (1.960) at df of 177 and 0.05 level of significance for a two-tailed test, the result is statistically significant; hence the null hypothesis is rejected. This means that there is a significant positive relationship between facilitating conditions of the institutions and adoption of e-learning for teaching technical and vocational skills in tertiary institutions in Nigeria.

Discussion of Major Findings

The result in table 1 indicates that there is high relationship between behavioral intentions of instructors and adoption of e-learning. Which is statistically significant at 0.05 probability level. The result therefore shows that there is a significant high positive relationship between behavioral intentions of instructors and adoption of e-learning for teaching in technical and vocational education programs in tertiary institutions in Rivers State. The findings of this present study is in agreement with Lau & woods (2008) who also found out that behavioural intentions to use e-learning is the strongest predictor of actual use of e-learning technologies. It also agreed to the findings reported by Oye, A.Lahad, Madar & Ab.Rahim (2012) who in their study found out that significant relationship exist in behavioral intentions of students and using e-learning technologies.

The result in table 2 indicates a high relationship between performance expectancy of instructors and adoption of e-learning. Which is statistically significant at 0.05 probability level. The result therefore shows that there is a significant high positive relationship between performance expectancy of instructors and adoption of e-learning technologies for teaching in technical and vocational education in tertiary institutions in Rivers State. The findings of the present study is in agreement with the findings by Namisiko, Munialo & Nyongesa (2014) which found performance expectancy as a major factor having strong relationship with the deployment on adoption of e-learning. It also agrees with the findings of the study by Maina & Nzuki (2015) who found that performance expectancy, effort expectancy and social influence as having positive correlation with behavioural intention which in turn directly influences the adoption and implementation of EMS. Also supports the findings of Al-alak & Alnawas (2011) who revealed a positive relationship exist between perceived usefulness, perceived ease of use and behavioral intention of academic staff to e-learning system.

The result in table 3 indicates a high relationship between effort expectancy of instructors and adoption of e-learning, which was statistically not significant at 0.05 level of probability. The result therefore is that there is a high positive but not significant relationship between effort expectancy of instructors and adoption of e-learning technologies in technical and vocational education in tertiary institutions in Rivers State. The findings of the study is in agreement with the UTAUT that perceived ease of use, ease of learning and perceived efficacy beliefs are important factors or indicators influenced effort expectancy. It also agreed to the findings of the study conducted by Maqableh, Masa'deh & Mohammed (2015) whose results indicate that Perceived Playfulness has a direct effect on CBA use. Perceived Ease of Use, Perceived Usefulness, Computer Self Efficacy, Social Influence, Facilitating Conditions, Content and Goal Expectancy have only indirect effects.

The result in table 4 indicates a high positive relationship between social influences on instructors and adoption of e-learning, which was statistically significant at 0.05 probability level. The result therefore is that there is a significant high positive relationship between social influence on instructors and adoption of e-learning technologies in technical and vocational education in tertiary institutions in Rivers State. This finding is in line with a study by Nanchang (2009) who found that social influence has significant relationship with behavior intention and adoption of e-learning.

The result in table 5 indicates that there is a low facilitating condition of the institutions towards adoption of e-learning, which was found to be statistically significant at 0.05 probability level. The result therefore is that there is a significant low positive relationship between facilitating conditions of the institutions and adoption of e-learning technologies in technical and vocational education in tertiary institutions in Rivers State. This finding is supported by studies of Maina & Nzuki (2015) who found that facilitating conditions directly correlates with the actual adoption of EMS and finally attributes the low rate of EMS use to facilitating condition and facility availability.

Conclusion

The researchers concludes that the determinant factors that are related to instructors which include behavioral intentions, performance expectancy, effort expectancy, social influence on instructors and facilitating conditions of institution all have influencing effect on the adoption of e-learning. Therefore, these determinant factors related to the instructors that significantly relates to adoption of e-learning are as well predictors of e-learning for teaching in technical and vocational education programs in tertiary institutions in Rivers State.

The facilitating conditions of the institutions have low but significant relationship with adoption of e-learning for teaching in technical and vocational education programs in tertiary institutions in Rivers State. The lack of administrative and institutional support often results in instructors falling short of incorporating technology in learning institutions. There is an unclearly stated institutional policy on ICTs use and e-learning in technical and vocational institutions which works against the adoption of e-learning in our tertiary institutions.

The lack of support and training on e-learning use or lack of awareness of the availability of the training and support for the institutions shows the need of training and support as one of facilitating conditions for adoption of e-learning.

Recommendations

The researchers therefore recommend that:

1. There should be regular training and workshops on e-learning use to encourage instructors and increase their interest towards adoption of e-learning technologies in technical and vocational education in tertiary institutions in Rivers State.
2. The management of technical and vocational institutions should invest heavily in technological innovations to improve its availability and subsequent use by staff in institutions for teaching and learning.
3. Incentives should be given to staff that incorporate e-learning tools in their lessons to encourage using innovative technologies among staff.
4. There should be special incentives given to instructors who use e-learning in teaching, to promote their social status in the school community.
5. There should be support for academic staff by provision of necessary ICT and e-learning facilities. Also the management should collaborate and communicate with instructors in order to reduce their fear and unwillingness to adopt e-learning systems.
6. To make e-learning use a success in our tertiary institutions, e-learning use by staff should be synchronized with the departmental systems to ably grow and sustain the culture of e-learning use among staff.

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