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Correlation between Motivating Factors and the Adoption of E-Learning Technologies for Practical Skill Training Programs in Technical and Vocational Institutions in Nigeria

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ABSTRACT

The study aimed to explore the correlations between motivating factors and the adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions. A total of 205 academic staff from three tertiary institutions in Rivers State was included in the study. Two instruments were used for data collection: Determinants Factors Scale and Adoption of E-learning Inventory Scale. The instruments were validated by three experts and pilot-tested on a representative sample of 30 respondents. The reliability of the instruments was established using the Cronbach Alpha reliability coefficient formula. The data was analyzed using descriptive statistics and Pearson Product Moment Correlation and t-test. The study found a high positive relationship between behavioral intentions, performance expectancy, effort expectancy, and social influences and the adoption of e-learning in technical and vocational education. However, there was a low positive relationship between facilitating conditions and e-learning adoption. The study recommends regular training and workshops on e-learning to encourage instructors and increase their interest in adopting e-learning. Management should invest heavily in technology to improve its availability and use by staff.

Keywords: e-learning, technical education, vocational education, adoption**,** practical skill training

Introduction

The introduction of information communications technologies (ICTs) in education has led to the concept of e-learning, which is a systematic integration of modern technologies, equipment, telecommunication, and ICT resources to create experiences that aim to improve human beings (Akudolu, 2012; and Okiki, 2017; Selwyn, 2017). E-learning encompasses learning at all levels (formal, semiformal, and informal) and uses hardware and software technologies in the development and transformation of skills and concept-based knowledge (Aparicio et al., 2016; Anowor, 2017). The gradual transition of learning systems and e-learning provides students more flexibility in accessing information, allowing them to attend only part of classes (blend learning) or never attend classes (distance learning) (Mohammad, 2014). These advancements in ICTs have made teachers' responsibilities more complicated, as they are expected to be more of content experts, technology specialists, motivators, cooperative and collaborative learning advocates, and monitors of students' progress (Nwabufo et al, 2012; Awoleye et al, 2018).

The adoption of e-learning in tertiary institutions is not supplementary to conventional learning methods, but rather complements them. The National University Commission (NUC) prescribes personal computer ownership in tertiary institutions, with one personal computer per lecturer, one personal computer per senior lecturer, one personal computer per four students, and one note book per professor/reader (Sheltima, 2015; Salawudeen, 2018). This is to enable teachers to emphasize the use of e-learning as a learning tool in the classroom or laboratory, design and give students learning activities that involve using e-learning tools to enable them to become self-directed and develop higher-level quality. By incorporating e-learning in their teaching, teachers and instructors become more of a facilitator of learning than a source of information to the students (Kotrlik & Redmann, 2019). However, adoption of e-learning in technical and vocational education programs in tertiary institutions is influenced by various factors, including organizational, socio-cultural, intra-and-interpersonal, and institutional and administrative barriers (Elgort, 2015). Teachers in this sector often fail to build on technology's instructional potential due to barriers such as inadequate ICTs and e-learning infrastructure, as well as individual characteristics such as lack of interest and commitment among teaching staff (Brinkeroff, 2016).

Various theoretical frameworks, including TAM, TRA, TPB, and IDT, tried to understand and gain insight into what motivational factors that influence teachers' willingness to use or not use a technology. But this study adopts the Unified Theory of Acceptance and Use of Technology (UTAUT) constructs (Nanayakkara, 2017; Yuen & Ma, 2018; and Masrom, 2017) which are the behavioral intentions, performance expectancy, effort expectancy, social

influence, and facilitating conditions, as the basis to analyzing adoption of e-learning technologies in technology and vocational education in tertiary institutions. Previous researches also support these theories to explain that these constructs are both intrinsic and extrinsic elements that are related to users of technologies and are what influences the adoption of e-learning and use for practical skills training in tertiary institutions. They include behavioral intention, performance expectancy, effort expectancy, social influence, and facilitating conditions (Anderson & Gronhund, 2019; Bappa-Aliyu, 2012; Anene et al, 2014; Tarus et al, 2015; Venkatesh et al, 2013; Brinkeroff, 2016; Ali et al, 2013; Umrani-Khan & Iyer, 2009; and Khan et al, 2012).

Adoption of e-learning is the ability to accept and utilize these technologies, which can be a determinant factor in the application of e-learning in technical and vocational education programs. Behavioral intention refers to an individual's perceived likelihood of engaging in a given behavior. According to Oye et al., (2012) behavioral intention is the strongest predictor of actual use, but other factors like resource availability may also influence adoption.

Performance expectancy refers to the extent to which an individual believes using a particular technology will help them attain gains in job performance. Performance expectancy is a strong predictor of user intentions to use a technology, and it is significant in both voluntary and mandatory settings (Nanchang, 2019). According to Maina & Nzuki (2015) performance expectancy, effort expectancy, and social influence have a positive correlation with behavioral intention, directly influencing the adoption and implementation of EMS. To them, the low rate of EMS use is attributed to facilitating conditions and facility availability. Al-alak & Alnawas (2011) also explained that perceived usefulness, perceived ease of use, and behavioral intentions of academic staff positively influence their adoption of e-learning systems. Effort expectancy is the extent to which an individual believes that e-learning technology requires no effort, making it easy to use and user-friendly. Research shows that individuals perceived technology use impacts adoption of e-learning in technical and vocational education programs (Veiga et al, 2011; Wu et al, 2018 and O'Neil et al, 2014). According to Maqableh et al., (2015) perceived playfulness directly affects computer-based assessment (CBA) use, while perceived ease of use, usefulness, and goal expectancy indirectly affect CBA use. To them a system is more likely to be used by students or teachers if it is playful, and CBA is more likely to be playful when it is easy to use and useful. Social influence is the extent to which an individual perceives that other people believe they should use e-learning technology. In other words, social influence refers to the perceived pressure to use e-learning technologies by students and teacher. According to Khan et al, (2012) in developing countries, low social status of women is a significant social factor influencing the adoption of ICT. Nanchang (2019) maintained that social influence significantly influences behavior intention in students' acceptance of web-based learning systems. He explain social influence as it relates to the adoption of e-learning, that e-learning implementation is not just a technological solution but also involves social and behavioral contexts, which are often overlooked in developing countries (Ali et al, 2013).

Facilitating conditions refer to the extent to which an organization has provided physical infrastructure and technical support to enhance the performance of a task. Facilitating conditions refers to the belief that an individual believes that organizational and technical infrastructure supports the use of e-learning. These conditions can be a determinant factor in the adoption of e-learning in TVE. According to Maina & Nzuki (2015) and Kosgei (2015) the availability of ICT infrastructures is a significant factor influencing e-learning adoption in TVET. The technical and vocational education institutions should seek external and internal assistance in providing e-learning facilities for students and teachers. Alahmari & Kyei-Blankson (2016) further emphasized that factors such as teacher professional development, time for training, and internet access were challenges to the adoption and implementation of e-learning in technical and vocational education institutions.

In tertiary institutions, the adoption of technology in education is not solely dependent on the introduction of computers. Factors such as lack of administrative support, training, and experience can hinder teachers' ability to incorporate technology. Other issues like equipment unreliability and technical support also impact the adoption of e-learning management systems. Administrative support is crucial for successful implementation of e-learning systems. Teachers should be encouraged to use technology to support educational objectives, such as information search, assessment, cooperation, communication, and problem-solving. The Unified Theory of Acceptance and Use of Technology (UTAUT) and Technology Acceptance Model (TAM) are useful models for explaining technology acceptance in educational contexts. However, empirical studies on factors determining e-learning adoption in Nigerian tertiary institutions are scarce.

Based on the above premised, it's obvious that educational realities support the need for technology-based instruction, and technology educators must continue to explore the incorporation of technology in instruction. The motivational factors related to users may play a key role in relation to the adoption of e-learning technologies in technology and vocational education in Nigeria. This study aims to address technology education teachers' use of technology in their instruction delivering.

Statement of the Problem

The Nigerian education system recognized the importance of e-learning technologies for teaching and learning in the national policy on education, aiming to provide quality education, equity, internationalization, and mitigate brain drain (FRN, 2013). However, the adoption of e-learning in Nigerian tertiary institutions is largely unexplored, particularly in technical and vocational education. Ezenwafor et al., (2014) lamented those teachers in Nigerian tertiary institutions use e-learning at a low extent. Other researchers have also reported low rate of adoption of ICTs and e-learning technologies (Ajadi et al, 2008; Eke, 2011; Ezeugbor & Nwachukwu, 2011; Azih & Nwasu, 2012; Nwabufo et al, 2012; Thomas & Amaechi, 2015; Omoni & Ifeanyichukwu, 2015; and Freda, 2016).

This worrisome situation is largely attributed to institutional and motivational factors influencing teachers' adoption of e-learning technology (Collins et al, 2012; Brinkeroff, 2016; Ali et al, 2013; and Khan et al, 2012). This necessitates the need for an inquiry on the motivational factors of adoption of e-learning in tertiary institutions.

Therefore, the problem of this study is to investigate the relationships that exist between these factors and the adoption and use of e-learning for practical skill training in technology and vocational education programs in Nigeria. The study highlights the benefits of e-learning technologies in technology and vocational education programs. While encouraging educators to develop skills and competencies in e-learning, it would be improving teaching and learning abilities in tertiary institutions.

Purpose of the study

The study aimed to explore the correlations between motivating factors and the adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions. To this end the study specifically sought to:

1 Verify the extent of relationship between behavioral intentions and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions.

2 Find out the extent of relationship between performance expectancy and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions.

3 Find out the extent of relationship between effort expectancy and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions.

4 Examine the extent of relationship between social influences and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions.

5 Investigate the extent of relationship between facilitating conditions and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions.

Methods and materials

The study design was the correlation survey. It was conducted in Rivers State, Nigeria, a state with a population of over 5,185,400. The study used 205 academic staff teaching in Faculties/Schools of Technical and Vocational education at three tertiary institutions. Two instruments were used for data collection: the Determinant Factors Scale (DEFS) and Adoption of E-learning Inventory Scale (ADEIS). The DEFIS was adapted from Venkatesh et al, (2013) and Umrani-Khan, & Iyer (2009) to access independent variables related to e-learning adoption. The instrument consists of five sections, each with five items to elicit information on respondents' behavioral intentions, performance expectancy, effort expectancy, social influence, and facilitating conditions.

The instruments were face validated by three specialists from the Faculty of Technical and Science Education, Rivers State University, Port Harcourt. A representative sample of 30 respondents from the Faculty of Engineering in Rivers State University was used to estimate the reliability coefficient of the instrument, using the Cronbach Alpha reliability coefficient formula and it yielded a reliability index of .87 and .93 for instruments 1 & 2

A total of 205 copies of the questionnaire were administered to the respondents, with a two-week period for administering and retrieval. The total scores of each respondent on each section of DEFS were correlated with their total score on ADEIS. The descriptive statistic mean was used to answer the five research questions, and the Pearson's correlation coefficient formula was used to compute the respondents' scores on each section of DEFS with their respective scores on ADEIS using the PPMC method. The t-test statistic was used for the test of significance of the correlation coefficient at .05 significant levels.

Results

Research Question 1

To what extent is the behavioral intension towards adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions?

Table 1: Respondents Mean on Behavior Intentions towards Adoption of E-learning

s/n	Item Statements	N	Mean	Remark
1	I intend to use e-learning technologies in teaching practical lessons in next semester.	179	4.06	High extent
2	I predict that I would use e-learning technologies in the next semester.	179	3.58	High extent
3	I plan to use e-learning technologies in the next semester.	179	4.03	High extent
	Grand mean	**179**	**3.89**	**High extent**

Source: Field Survey, 2023

The data in table 1 respondents had grand mean (M = 3.89) which is higher than the cut off mean of 3.50. This indicates high extent behavioral intentions towards e-learning adoption in technical and vocational education programs in tertiary institutions.

Research question 2

What is the level of performance expectancy and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions?

Table 2: Respondents Mean on Performance Expectancy towards Adoption of E-learning

s/n	Item statements	N	Mean	Remark
4	E-learning enables me to teach anytime from any place.	179	4.62	High extent
5	Using e-learning in teaching enables me to accomplish task (eg. Teach topics, assess assignments) more quickly.	179	4.28	High extent
6	Using e-learning in teaching increases the number of topics I can teach per day.	179	4.32	High extent
7	Using e-learning, I can interact with the students and clarify their doubts in reasonable time.	179	4.13	High extent
8	Using e-learning allows me to choose topics to teach in order of my preference.	179	4.17	High extent
	Grand mean	**179**	**4.31**	**High extent**

Source: Field Survey, 2023

The data in table 2 indicates that the respondents' grand mean (M = 4.31) is higher than the cut-off mean of 3.50, indicating a high extent of performance expectancy towards e-learning adoption in technical and vocational education programs in Rivers State.

Research question 3

What is the extent of effort expectancy towards adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions?

Table 4.3: Respondents Mean on Effort Expectancy towards Adoption of E-learning

s/n	Item statements	N	Mean	Remark
9	My interaction with e-learning would be clear and understandable	179	4.13	High extent
10	It would be easy for me to become skillful at using e-learning.	179	4.03	High extent
11	I would find the e-learning easy to use.	179	3.98	High extent
12	Learning to operate the e-learning technologies would be easy for me.	179	3.91	High extent
13	I find it easy to get e-learning to do what I want to do.	179	3.53	High extent
	Grand mean	**179**	**3.96**	**High extent**

Source: Field Survey, 2023

The data in table 3 respondents had grand mean (M=3.96), the mean is higher than the cut off mean of 3.50 which indicates a high extent of effort expectancy towards the adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions?

Research question 4

What is the extent social influence towards the adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions?

Table 4: Respondents Mean on Social Influence towards Adoption of E-learning

s/n	Item statements	N	Mean	Remark
14	Most people, who influence my behavior (colleagues, students, head of department etc) want me to use the e-learning.	179	3.54	High extent
15	Most people who are important to me want me to use e-learning as much as possible.	179	3.81	High extent
16	In my institution, teachers who use e-learning have more prestige than those who do not.	179	3.75	High extent
17	Teachers in my institution who use e-learning have a high profile.	179	3.89	High extent
18	Using e-learning adds to my status amongst my colleagues.	179	4.16	High extent
	Grand mean	179	**3.87**	**High extent**

Source: Field Survey, 2023

The data in table 4 respondents had grand mean (M = 3.87), the mean is higher than the cut off mean of 3.50 which indicates high extent of social influence towards adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions.

Research question 5

What is the extent of facilitating conditions towards adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions?

Table 5: Respondents Mean on Facilitating Conditions towards Adoption of E-learning

s/n	Item statements	N	Mean	Remark
19	I have the resources necessary to use e-learning tools in teaching.	179	3.32	Low extent
20	My institution has provided me all the facilities I need for e-learning.	179	3.05	Low extent
21	ICT technical support (person or group) are available for assistance with e-learning difficulties.	179	3.12	Low extent
22	My institution provides incentives to teachers who use e-learning.	179	3.06	Low extent
23	My institution has provided training for me to use e-learning tools.	179	3.48	Low extent
	Grand mean	**179**	**3.24**	**Low extent**

Source: Field Survey, 2023

The data in table 5 the respondents' grand mean (M = 3.24) is lower than the cut-off mean of 3.50 which indicates low extent of facilitating conditions towards adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions. The respondents mean ranges between 3.05 and 3.48 is suggesting that the facilitating conditions of institutions are not entirely certain about the adoption of e-learning in technical and vocational education programs in tertiary institutions.

Hypothesis 1

There is no significant relationship between behavioral intentions and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions.

Table 6: Pearson's (r) for Test of Significant Relationship between Behavioral Intention 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	**ΣY²** 103705							
			86816	179	177	.53	8.368	1.960	Rejected
Behavioral Intentions (X)	**ΣX** 3612	**ΣX²** 73695							

Source: Field Survey, 2023

The study reveals a positive correlation between behavioral intentions and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions. The r-value of .53 is statistically significant, rejecting the null hypothesis, indicating a significant positive relationship between these intentions.

Hypothesis 2

There is no significant relationship between performance expectancy and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions.

Table 7: Pearson's (r) for Test of Significant Relationship between Performance Expectancy 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	**ΣY²** 103705							
			92456	179	177	.45	6.694	1.960	Rejected
Performance expectancy (X)	**ΣX** 3854	**ΣX²** 83696							

Source: Field Survey, 2023

The study reveals a positive correlation between performance expectancy and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions. The r-value is .45, and the t-value (6.694) is greater than the critical t- value (1.960) at df of 177 and .05 level of significance for a two-tailed test, the result is statistically significant. Hence we fail to accept the null hypothesis. This indicates a significant positive relationship exist between performance expectancy and e-learning adoption.

Hypothesis 3

There is no significant relationship between effort expectancy and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions.

Table 8: Pearson's (r) for Test of Significant Relationship between Effort Expectancy and Adoption of E-learning

Variables	Sum of Scores	Sum of Scores square	ΣXY	N	df	r	trcal.	tcrit	Decision
Adoption of e-learning (Y)	**ΣY** 4270	**$ΣY^2$** 103705	83761	179	177	.12	1.608	1.960	Accepted
Effort expectancy (X)	**ΣX** 3504	**$ΣX^2$** 69713							

Source: Field Survey, 2023

The study found a positive correlation coefficient r-value (.12) between effort expectancy and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions. However, the t-value (1.608) was less than the critical t-value (1.960) at df of 177 and .05 level of significance for a two-tailed. This indicates no statistically significant relationship. Therefore, the null hypothesis was accepted, indicating a positive but not significant relationship between these factors.

Hypothesis 4

There is no significant relationship between social influence and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions.

Table 9: Pearson's (r) for Test of Significant Relationship between Social influence 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	.15	2.019	1.960	Rejected
Social influences (X)	**ΣX** 3428	**$ΣX^2$** 66362							

Source: Field Survey, 2023

The study reveals a positive correlation coefficient r-value (.15) between social influence and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions. The t-value (2.019) is greater than the critical t-value (1.960) at df of 177 and .05 level of significance for a two-tailed test. Hence, we reject the null hypothesis and indicating a significant positive relationship between these factors.

Hypothesis 5

There is no significant relationship between facilitating conditions and adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions.

Table 10: Pearson's (r) for Test of Significant Relationship between Facilitating Conditions 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	68778	179	177	.18	2.434	1.960	Rejected

Facilitating Conditions (X)	ΣX	ΣX^2
	2869	73695

Source: Field Survey, 2023

The study reveals a positive correlation coefficient r-value (.18) between facilitating conditions and the adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions. The t-value (2.434) is greater than the critical t-value (1.960) at df of 177 and .05 level of significance for a two-tailed test, indicating a statistically significant relationship. Hence we reject the null hypothesis and confirming the adoption of e-learning.

Discussion of Findings

The study found a high relationship between behavioral intentions and the adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions. The findings of this present study is in agreement with Oye et al, (2012) who in their study found behavioral intentions as the strongest predictor of actual use of e-learning technologies. Respondents perceived e-learning tools as making teaching and learning more interesting and fun, and expressed their willingness to use them for practical lessons and plan for future use.

Performance expectancy also showed a significant positive relationship with the adoption of e-learning, with performance expectancy scores correlated positively with their scores on adoption. The findings of the present study is in agreement with Maina & Nzuki (2015) that found performance expectancy, effort expectancy, and social influence positively correlated with behavioral intention, which directly influences the adoption and implementation of e-learning. Respondents were in agreement about the benefits of using e-learning tools for teaching, such as faster task completion, increased productivity, career advancement, and reduced work load.

The study found a high relationship between effort expectancy and the adoption of e-learning technologies in technical and vocational education in tertiary institutions in Rivers State. The findings that perceived ease of use, ease of learning, and perceived efficacy beliefs were important factors influencing effort expectancy. This is in line with (Veiga et al, 2011; Wu et al, 2018 and O'Neil et al, 2014) That perceived playfulness had a direct effect on CBA use, while perceived ease of use, perceived usefulness, computer self efficacy, social influence, facilitating conditions, content, and goal expectancy had indirect effects. Respondents anticipated clearer interactions with e-learning tools, becoming skillful, and completing tasks with little or no assistance.

Social influence was also found to have a significant positive relationship with adoption of e-learning. This agrees with Nanchang (2019) respondents believed that institutional support and the use of e-learning tools would add to their status among colleagues. However, there was a low facilitating condition of institutions towards the adoption of e-learning.

The study reveals a low facilitating condition for the adoption of e-learning technologies for practical skill training in Nigerian technical and vocational institutions.

The results show a significant low positive relationship between facilitating conditions and the adoption of e-learning technologies. These findings confirmed a similar study by Khan et al, (2012) and Maina & Nzuki (2015) The respondents were unclear about the availability of ICT and technical support assistance, which could affect the adoption of e-learning management systems. They also lacked information about incentives and training opportunities for using e-learning tools. Also in-line with Kosgei (2015) this suggests a lack of infrastructural, policy framework, training, and leadership support for e-learning adoption. Furthermore, there was a lack of awareness of the availability of training and support for institutions, highlighting the need for training and support as a facilitating condition for e-learning adoption.

Conclusion

The researcher found that determinant factors like behavioral intentions, performance expectancy, effort expectancy, and social influence significantly influence e-learning adoption in technical and vocational education programs in Rivers State tertiary institutions. However, facilitating conditions like lack of administrative support and unclear institutional policies hinder e-learning adoption. Lack of training and awareness about available resources also contribute to the need for e-learning adoption.

The attitudes of teachers in technical and vocational education institutions towards e-learning technologies are influenced by various motivational factors. Supportive management encourages innovative teaching methods, leading to efficient performance. However, unsupported staff training hinders e-learning adoption. Schools need to build necessary infrastructure and collaborate with management to encourage staff adoption. This study has implications for policy decisions in higher education in developing countries; ensuring critical factors for e-learning acceptance are addressed during implementation.

Recommendations

The researchers recommend that:

1. Regular training and workshops on e-learning use in technical and vocational education in Rivers State tertiary institutions.

2. The management should invest in technology to improve its availability and use.
3. Incentives should be given to staff that incorporate e-learning tools, and special recognition for instructors using e-learning.
4. Support for academic staff and collaboration with management are also suggested.
5. Synchronization with departmental systems is also recommended for success.
6. Study should be conducted at technical colleges to understand the adoption of technology in learning, compare e-learning adoption in public and private tertiary institutions, compare technical education to engineering, social sciences, and humanities, and explore its implications.

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