

An Analysis of Social Networking for E-learning in Institutions of Higher Learning using Perceived Ease of use and Perceived Usefulness

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ABSTRACT

Higher education students and faculty use Facebook and Twitter. Researchers have also looked at social networking platforms in higher education. Social media has facilitated student-professor communication, collaboration, and engagement. To embrace students and teachers who utilize technology to learn and teach, it must be determined what influences their readiness to do so. This report tests the adoption of social networking media for e-learning in Nigerian utilizing the Technology Acceptance Model (TAM), which emphasizes perceived ease of use, perceived usefulness, and behavioural intention to utilize new technologies. Surveys were utilized for quantitative research. This study polled teachers and students from 4 Nigerian schools. Structural Equation Modeling was used to anticipate the model's recommended factors (SEM). The study indicated that students' and teachers' behavioral intentions to use social media for e-learning in Nigerian universities are influenced by perceived ease of use and perceived usefulness.

Keywords: Perceived ease of use, Perceived usefulness, Social media networking, Students, teachers.

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INTRODUCTION

“Teachers and students alike have been paying close attention to the Internet’s impact on education in the last few years. Web 4.0 and Web 5.0 have sparked a new wave of interest and intrigue among internet users, especially those who use social networking sites on a regular basis”.^[1] Young adults, many of whom are in college, make up the majority of those who use social networking sites like Facebook and Twitter.^[2] According to numerous studies, Facebook represents the most commonly utilized social networking site among college students, with an estimated 89 percent of them using it for educational purposes as well.^[3] “A recent research of 3000 college students from the United States found that 90% of students use Facebook, 87% make use of Instagram and 37% utilizes Twitter”.^[4]

“Due to their widespread adoption, social networking sites like Facebook, Instagram, Snapchat, Tiktok and Twitter have garnered a great deal of media attention. Communication, collaboration, and engagement are now easier and more efficient thanks to social media sites and they have been

implemented to aid various educational endeavors”.^[5] “Social media platforms have revolutionized information and knowledge exchange in the communication fields”.^[5] People’s methods of exchanging, accessing, and disseminating information have all changed as a result of this revolution.^[6] The capacity to share and produce material, as well as new ways to engage and collaborate, are all advantages of social networking tools.^[7] Because of these features, social networking sites are widely acknowledged as key instruments for transforming the educational landscape. With the use of social media, e-learning technologies can be leveraged to create a collaborative and blended learning environment.^[8]

According to a recent study, “the lots of students in the higher institutions in Nigeria and generally young adults prefers adopting new technologies and are eager to use any modern equipment via social media networking sites”.^[9] According to studies by Ajibade SS *et al.*^[10] “The use of social media networking platforms (SMNPs) have drastically transformed the way by which human communicate and the Education sector in Nigeria have shown so much interest in social media network especially in its use with e-learning”.^[11] The literature on the use of social media networks for e-learning in Nigeria, on the other hand, is lacking. Hence, the purpose of this article is to evaluate the “perceived usefulness” and “perceived ease of use” of social media networks in eLearning

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for Nigerian Institutes of Higher Learning, this article will focus on these two aforementioned factors.

LITERATURE REVIEW

Social networking has become a worldwide phenomenon in the last few years. “Due to the rapid advancement of communication technology and the widespread use of the Internet, Social media Network platforms such as Facebook, Twitter, Instagram, Tiktok and Snapchat^[12] have emerged as one of the most popular online pastimes”.

E-learning technologies can benefit from the use of social media networking.^[13] It is possible for lecturers to use social media networking to build e-learning activities but much more crucially, learners can use social media networking such that their learning experiences are improved.^[14] A rising number of parents and teachers are concerned about the expanding use of social network sites and the influence this has on classroom interaction, especially amongst learners and lecturers in institutes of higher learning.^[15]

Many studies have found that social media networking have a significant impact on the efficiency of teaching and learning. As an example, numerous studies have found that social media networking sites like Facebook and Twitter can help students improve their speaking and writing language skills when studying a foreign language.^[16] Increasingly, higher institutions are allowing students to use social media networking sites as e-learning resources, allowing them to access course materials, collaborate with colleagues, and collaborate with lecturers.^[17] Social media and blended collaborative methods to learning and teaching are fast gaining weight in the shifting higher education landscape. “In the opinion of many instructors, the use of this type of instruction will allow students who are not physically present on campus to participate in classroom activities that would otherwise be out of their reach”.^[18]

According to previous studies, social networking in higher education has its own set of difficulties and hurdles. College students in the United Kingdom were studied for their use of social networking.^[18] The study had 76 questionnaire participants and 14 interview participants. The study found that there are 5 major difficulties associated with social media networking and learning, including copyright infringements, study inventiveness, a sense of information limitation, as well as lecturers who may not be ready or understand how to use and benefit from social media networking in their classrooms.

“The most important factors promoting the popularity of social media network are their functionality, ubiquity, and ease”.^[19] “Social network technologies may help students better absorb curriculum and improve interactions with others, according to some”.^[20] Social media networking on the internet are sometimes free or just cost a little amount of

money to use. The use of social networking sites can have an impact on students’ performance, even if they are viewed as a digital networking rather than a formal instrument for classroom instruction.^[21] “Several studies have revealed four benefits of social media in higher education such as improving motivation for learning, fostering relationships, fostering teamwork, and providing students with individualized course materials are all examples of these strategies”.^[22]

Even if using social media in institutions of higher learning has many advantages, there are also some drawbacks. One of most serious issues with social media is the risk of wasting valuable time on unimportant activities.^[23] For the reasons outlined above, this study analyzes how using social networking media affects students’ and teachers’ perceived ease of use and perceived usefulness in institutes of higher learning in Nigeria.

RESEARCH QUESTION

Despite the fact that social media technologies were utilized in the classroom, two research issues must be answered before Nigerian higher education institutions can use social media technology in e-learning in the country.

Q1: Are the perceived benefits and ease-of-use of e-learning correlated with the intensity with which social media is used in Nigerian higher education institutions?

Q2: What effect does the rate with which people utilize social media have on how easily and usefully they view e-learning to be for their education in Nigerian higher education institutions.

RESEARCH HYPOTHESIS AND MODEL

This study examines the use of social media networking in Nigerian higher education to assess how easy it is to use and how useful it is. Extensive (TAM) was used to examine the variables that can affect the acceptability of modern technologies in education - learning. In a variety of situations, the TAM has been shown to be an excellent technique for predicting and describing how people will utilize technology.^[24]

Technology Acceptance Model (TAM)

There is a model for describing an individual’s IT acceptance behavior that was created from the Theory of Reasoned Action (TRA). This model is known as the Technology Acceptance Model (TAM). “Users’ attitudes and opinions have a major role in whether or not they adopt or reject social media networking”.^[25] An explanation of how social media networking adoption and use are influenced can be found in the TAM model. “Perceived usefulness (PU) and perceived ease of use (PEOU) are the two key attitudes that affect whether or not a person would really utilize a piece of technology”.^[26] “While both perceived ease of use and perceived perceived usefulness

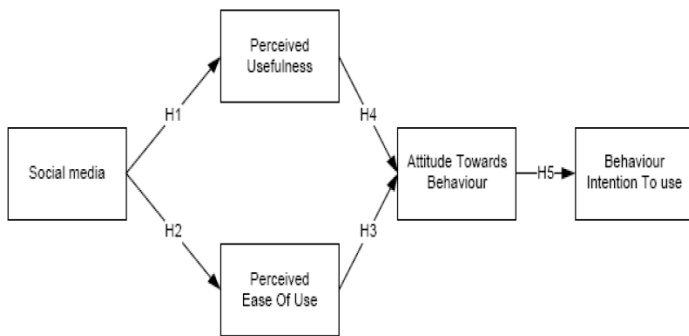


Figure 1: Research Model.

have a role in predicting predicting user attitudes,^[27] found that the influence of perceived usefulness was 50% larger than the influence of perceived ease of use in predicting user attitudes toward utilizing a system, It has been found that perceived usefulness and perceived ease of use can be used to describe or forecast a person's intention to use a variety of technologies, including e-commerce, e-learning, e-library, e-tax filing and telemedicine technology".^[28] "A number of scholars have used TAM in e-learning research and discovered that an individual's behavioral intention to use e-learning systems is influenced by perceived ease of use and perceived utility".^[29] A research methodology for evaluating the influence of perceived ease of use and perceived usefulness of social media network for e-learning in Nigerian education system has been proposed using TAM (Figure 1). Variables in the model include, for example, the use of social media, perceptions of variables, mindset, and behavioral intent.

Social Media Networking

In Melati IS, *et al.*^[30] social media is an essential teaching and learning tool that should be utilized to its fullest extent. Student learning outcomes can be improved by using social networking at educational institutions.^[31] It is possible for students to use the Internet as a learning aid by embracing a social media network strategy.^[32] Students' and teachers' experiences in online learning have been examined in a number of studies.^[29] The following are possible alternative hypothesis to test in this investigation.

H1a: Students' perceived usefulness of e-learning in Nigerian institutions are affected by social media use.

H1b: Teachers' perceived usefulness of e-learning in Nigerian institutions are affected by social media use.

H2a: In Nigerian higher education institutions, social media use influences students' e-learning's perceived ease of use.

H2b: Nigerian teachers' e-learning's perceived ease of use are affected by social media use.

Perceived Usefulness and Perceived Ease of use

Perceived ease of use and usefulness affect TAM behavioral intentions.^[33] Significant number of studies have linked perceived usefulness and ease of use.^[34] According to,^[35,36] perceived usefulness (PU) is linked to e-learning technology attitudes. The research analyzes the link between the elements using various hypotheses:

H3a: The perceived ease of use influences the attitude of learners' as pertaining e-learning in Nigerian institutions.

H3b: The perceived ease of use influences the attitude of instructors' as pertaining e-learning in Nigerian institutions.

H4a: The learners' perceived usefulness of e-learning impact its utilization in Nigerian institutions.

H4b: The teachers' perceived usefulness of e-learning impacts its utilization in Nigerian institutions.

Attitude Towards Use (ATU)

"A person's attitude toward engaging in a particular behavior is defined as either a positive or negative feeling".^[37] When it comes to successful deployment of social media, having a "positive attitude toward social media" is commonly considered as a precondition.^[38] As indicated by Bariham I, *et al.*^[39] "the success of e-learning depends on various aspects, such as the attitudes and happiness that users have with using technology in the teaching and learning process". Furthermore, "research has demonstrated that teachers' attitudes toward technology and how it affects their work can be used to build more appropriate technology skills training for education and a better incorporation of technology into the teaching process is also facilitated by this".^[40] There is a considerable correlation between instructors' attitudes toward technology and their success in employing it for learning. "It's been demonstrated in studies that people are more likely to adopt new technology if they have a rather more positive attitude toward it".^[40]

There are two possibilities here (because the null hypothesis has no bearing):

H5a: ATU influences Nigerian students' behavioral intention to adopt E-learning.

H5b: ATU influences teachers' behavioral intention to adopt E-learning in Nigerian universities.

RESEARCH METHODOLOGY

Study plan

Qualitative and quantitative research methodologies were employed in order to find answers to the study's questions. As part of the study's "mixed strategy," researchers employed both of these research approaches. In the mixed methodology technique, a survey is the method that was chosen. For theory

testing, survey research has been most typically utilized in non-experimental design. From a managerial standpoint, survey research could corroborate the study outcomes' external validity. Oral and written surveys are the focus of this investigation. For the purposes of this article, we'll refer to a written survey as the administered questionnaire. This study utilized a mail survey.

Respondents were interviewed after completing a questionnaire survey. Those who completed the survey were given the option of taking part in an interview at the end of it.

It was entirely up to them whether or not they participated in the interview. The interview sought qualitative data on e-learning implementation in Nigerian higher education institutions and teachers' and students' attitudes on e-learning.

The interviews were also used to provide more information. Interviews help researchers grasp respondents' perspectives, ideas, attitudes, sentiments, and event views.^[41]

Population Size and Sample Size

Most of the participants in this research are from Nigerian institution of higher learning. There were two sections to the polls, each with its own survey questions. Students and teachers were asked to fill out a self-administered survey in the first phase of the study. Students and teachers were asked to return for a second round of interviews. This study recruited volunteers from a public university, public polytechnic, private university, and private polytechnic. They were selected for the following factors:

Two of these institutions are located in urban areas, while the other two are in rural locations, illustrating Nigeria's geographic variety.

We chose University of Benin as our public university and The Federal Polytechnic Ado Ekiti as our public polytechnic because of the sheer size of their student bodies and the fact that they draw students from all around the country.

It was decided that the private institutions would be Babcock University and Allover Central Polytechnic. A small sample size means that the percentage of students and teachers from each university is irrelevant.

Once respondents had filled out the questionnaire, a follow-up interview was undertaken. A voluntary interview was offered at the conclusion of the questionnaire. According to the number of people who agreed to participate in an interview survey, there was really no minimum sample size. The students and faculty of 4 Nigerian institutions of higher learning were the focus of this study, which included one public university, one public polytechnic, one private university and one private polytechnic. Consequently, 450 student questionnaires and 450 faculty questionnaires were sent to students and

faculty in four institutions of higher learning. 368 of the 450 questionnaires issued to students were received, and 39 were rejected because of incomplete data due to the participants' inability to complete the questionnaires. This study's overall response rate is 81.7 percent. There were 450 questionnaires issued to teachers, but only 240 were received in a manner that could be used in the analysis, and 9 were thrown out because they had missing data. 53.3 percent of teachers participated in this study. Respondents to the questionnaire were evaluated using SPSS version 21 (SPSS). In Table 1, the information and statistics about the students and teachers are shown.

Data Analysis

Testing causal links and assessing hypotheses research models were done using AMOS software Version 21. This study's data was evaluated in two stages. First, the measurement model's

Table 1: Teachers and learners demography profile.

	Students		Teachers	
	Frequency	Percent	Frequency	Percent
Gender				
Male	209	56.8	152	63.3
Female	159	43.2	88	36.7
Age				
18 – 29 yrs	251	68.2	27	11.3
30 – 49 yrs	113	30.7	124	51.7
50 above	4	1.1	89	37.1
Type of Institution				
Public Uni	118	32.1	78	32.5
Private Uni	86	23.4	52	21.7
Public Poly	105	28.5	65	27.1
Private Poly	59	16.0	45	18.8
Use of social media				
Yes	354	96.2	191	79.6
No	14	3.8	49	20.4
Social media mostly used				
Facebook	151	41.0	130	54.2
Instagram	101	27.4	19	7.9
Snapchat	15	4.1	7	2.9
Tiktok	16	4.3	10	4.2
Twitter	65	17.7	23	9.6
Others	8	2.17	4	1.7
No social media	12	3.1	47	19.6
Rate of social media use				
Once a month	24	6.5	15	6.3
Once a week	41	11.1	21	8.6
Once a day	109	29.6	39	16.3
More than once a day	180	48.9	124	51.7
Never use	14	3.8	41	17.1

constructs were tested for validity and reliability. It also tested the structural model's hypotheses. The measurements and structural models were calculated with maximum likelihood estimation (MLE).

Development of a Measuring Model

Items of each factor were evaluated for their multivariate normality and internal consistency. An exploratory factor analysis (EFA) was used to show that the items of each measurement were uni - dimensional. In each latent construct, the measurement model was used to establish that the items were valid and reliable.

Using Cronbach's Alpha (α), the dependability of each factor was evaluated. Cronbach's Alpha of at least 0.7 is adequate for internal consistency.^[42] Tables 2-4 display the reliability value for each factor. Reliability levels of 0.7 or higher are deemed satisfactory. The convergent and discriminant validity of the construct were investigated. Composite reliability (CR) and Average Variance Extracted (AVE) were used to assess convergent validity.^[43] To be regarded satisfactory, the Average Variance Extracted (AVE) should be at least 0.5, while the frequently used Figure for Composite Reliability is at least 0.7.^[44] A p -value of 0.001 indicates statistical significance, as shown in Tables 2-4. Each factor's loading value exceeds or equals this value.

"The difference between a construct and its indicators and another's is measured by its discriminant validity".^[45] It can also be used to determine how distinct a particular construct is from others.^[46] "It is recommended by Hair JF, et al.^[47] that

Table 2: Student Construct Reliability.

Variables	Elements	Factor loading	CR	AVE	α
Social Networking	SN1	0.918	0.958	0.761	0.911
	SN2	0.845			
	SN3	0.779			
	SN4	0.744			
Perceived ease of use	EOU1	0.786	0.920	0.644	0.939
	EOU2	0.942			
	EOU3	0.760			
	EOU4	0.856			
Perceived Usefulness	UFN3	0.652	0.879	0.644	0.881
	UFN4	0.921			
	UFN5	0.918			
Attitude	ATD3	0.702	0.874	0.628	0.879
	ATD4	0.848			
	ATD5	0.841			
Bahvioural Intention	BIT1	0.889	0.942	0.734	0.843
	BIT2	0.824			
	BIT3	0.989			

Table 3: Model of Students' Relationship among the Variables in the Model.

	1	2	3	4	5
1	1.000				
2	0.467	1.000			
3	0.367	0.563	1.000		
4	0.563	0.571	0.456	1.000	
5	0.575	0.560	0.581	0.637	1.000

Where 1 represents "Social Networking", 2 represents "Ease of Use"; while 3 represents "Behavioral Intention", while 4 also stands for "Usefulness" and 5 "represents" Attitude

Table 4: Teachers construct reliability.

Variables	Elements	Factor loading	CR	AVE	α
Social Networking	SN1	0.832	0.935	0.721	0.947
	SN3	0.928			
	SN4	0.913			
Perceived ease of use	PEOU1	0.931	0.920	0.833	0.902
	PEOU3	0.948			
	PEOU4	0.903			
Perceived Usefulness	PU2	0.732	0.879	0.682	0.923
	PU3	0.958			
	PU5	0.893			
Attitude	ATI2	0.768	0.874	0.618	0.951
	ATI3	0.973			
	ATI5	0.601			
Bahvioural Intention	BIT1	0.959	0.942	0.997	0.915
	BIT2	0.908			
	BIT4	0.910			

correlations between items within any two constructs be smaller than the square root of the AVE shared by all items within that construct". To meet acceptable discriminant validity, every signal must assess its target constructs to the greatest extent possible. There should be at least one construct and its measures with an AVE greater than the AVE of the model's other constructs. Tables 3-5 show the results of this study, which used the correlation approach to assess discriminant validity. This is seen in Tables 2-4, which exhibit the convergent validity results. The conditions for convergent validity were met for all of the constructs.

Evaluation of Structural Model

AMOS was utilized to test hypothesis pathways and evaluate model variance (R^2). There were six goodness-of-fit indices evaluated in the research: the χ^2 -square test, goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), Tucker-lewis Index (TLI) as well as the root mean square error of approximation (RMSEA).

Table 5: Model of teachers' relationship among the variables in the model.

	1	2	3	4	5
1	1.000				
2	0.467	1.000			
3	0.367	0.563	1.000		
4	0.563	0.571	0.456	1.000	
5	0.575	0.560	0.581	0.637	1.000

Where 1 represents "Social Networking", 2 represents "Ease of Use"; while 3 represents "Behavioral Intention", while 4 also stands for "Usefulness" and 5 "represents" Attitude

Table 6: Sample student results relating to the goodness-of-fit model.

Fitness index	Criteria	Values	References
χ^2 -square	<3.0	1.895	[54]
GFI	≥ 0.9	1.01	[55]
TLI	≥ 0.9	1.03	[54]
CFI	≥ 0.9	1.04	[55]
AGFI	>0.8	0.98	[46]
RMSEA	<0.08	0.041	[46]

Table 7: Sample student results relating to the goodness-of-fit model.

Fitness index	Criteria	Values	References
χ^2 -square	<3.0	1.421	[54]
GFI	≥ 0.9	1.12	[55]
TLI	≥ 0.9	1.07	[54]
CFI	≥ 0.9	1.07	[55]
AGFI	>0.8	0.98	[46]
RMSEA	<0.08	0.052	[46]

More than or equal to 0.9 is required for TLI, GFI, and CFI to meet model specifications, and χ^2 -square should be less than 3.^[43] RMSEA must be lower than 0.08 while AGFI must be more than 0.8.^[46] In the previous section, we proposed some general criteria for (AMOS), the results of which are shown in Tables 6 and 7. There appears to be a good match between measured data and the proposed fit criteria for the structural model.

HYPOTHESIS OUTCOME AND DISCUSSION

Structural models 1 and 2 are depicted in Figure 2 and Figure 3. Model-to-model path coefficients and their significance levels are computed using this test. Multiple correlations (R^2), a measure of variance that can be demonstrated by independent constructs, are also available as part of this test.

Predicting e-learning's perceived usefulness in model 1 by social networking ($\beta = 0.308, p < 0.001$). The Perceived Usefulness ($R^2 = 0.55$) was 55% explained by this variable. Hypotheses H1a, on the other hand, are supported. Social

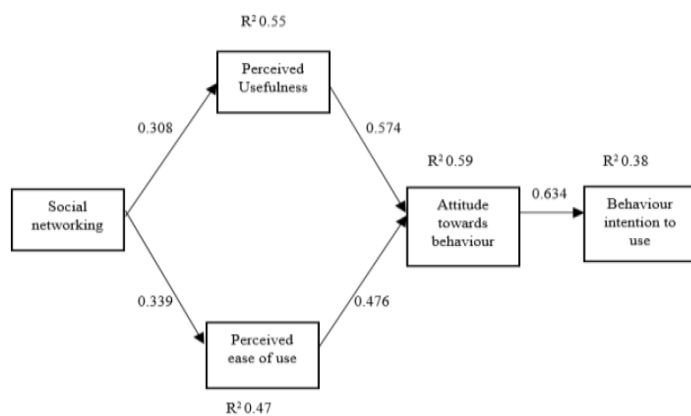


Figure 2: Students Structural Model.

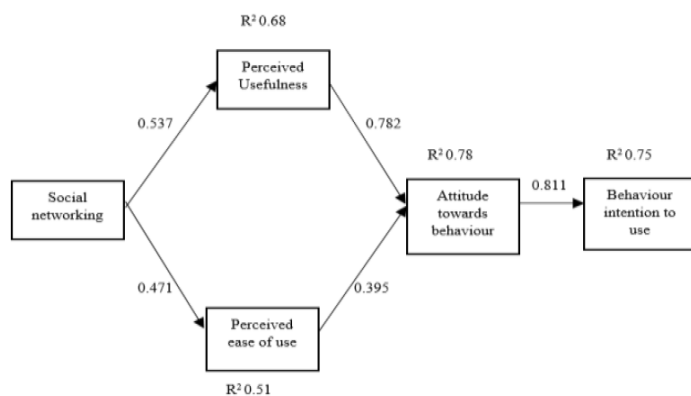


Figure 3: Teachers Structural Model.

networking predicted perceived ease of use ($\beta = .339, p < 0.001$). The Perceived Ease of Use ($R^2 = 0.47$) was 47% explained by this variable. Hypotheses H2a were therefore validated.

Perceived Ease of Use ($\beta=0.476, p < 0.001$) and Perceived Usefulness ($\beta=0.574, p < 0.001$) predicts Attitude towards Behavior. These factors described 59% of Behavior Attitude ($R^2 = 0.59$). Hence hypothesis H3a, H4a were validated. Attitude towards behavior ($\beta=.634, p < 0.001$) influences behavioral intention to use and explains 38% of the variation. Thus, hypothesis H5a was found to be confirmed.

In model 2, social networking predicts e-learning perceived usefulness ($\beta=0.537, p < 0.001$). This measure described 68% of Perceived Usefulness ($R^2=0.68$). Hence, hypothesis H1b confirmed. Social networking predicts perceived ease-of-use ($\beta=0.471, p < 0.001$). This measure described 51% of Perceived Ease of use ($R^2=0.51$). Hence, hypothesis H2b supported.

Perceived Ease of Use ($\beta = 0.395, p < 0.001$) and Perceived Usefulness ($\beta = 0.782, p < 0.001$) predicted Attitude towards Behavior. These variables explained 78 percent of Attitude towards Behavior ($R^2=0.78$). Hence hypothesis H3b, H4b confirmed. Attitude towards behavior ($\beta = 0.811, p < 0.001$) influences behavioral intention to use and describes 75% of the variance. hypothesis H5b was confirmed. All alternative

hypotheses have strong statistical validity, because the indices are positive.

This study's findings suggest a critical impact played by social media networking in the spread of online learning across Nigerian institution of higher learning. Learners' and instructors' perceptions of social networking sites' ease of use and usefulness differ greatly, as researchers predicted. As a result, individuals in Nigeria who believe that social media networking is more valuable will be more likely to employ e-learning technologies for their education. Adoption of e-learning depends on characteristics such as convenience of use and usefulness, according to Dwivedi, *et al.*^[48] In this study, researchers discovered that learners and instructors who often used social networking sites in their daily life had more favorable views of e-learning.

According to a new study, social networking ease of use and e-learning acceptance are more closely linked. Learners and instructors who often and/or heavily use social media platforms have a high likelihood of embracing e-learning technologies in the classroom and learning.^[49] Higher institution students displayed a much more positive behavior towards interaction between school peer and academic accomplishment via social interactive blogs.^[50]

CONCLUSION

The purpose of this study is to analyze the social media networking utilization and its connection to the hypotheses and see how they relate to how e-learning's perceived usefulness and perceived ease of use in Nigerian institutions of higher learning. This article's main finding is that perceptions of social media networking sites' usefulness and ease of use are crucial in determining whether or not students and faculty in Nigerian institutions of higher learning will embrace and use e-learning. In conclusion, social media networking sites are widely used, which has a beneficial effect on students' and teachers' perceptions of ease of use of e-learning technology in the Nigerian institutions of higher learning.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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