

E-Learning Adoption and Implementation for Enhanced Learning Behavior for Students and Lecturers in Higher Education in Algeria

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Abstract: *E-learning has become more popular as a result of the ICT growth over the past few decades, disrupting the old educational model in many nations around the world. The Algerian government has recently offered various measures to introduce e-learning in institutes of higher learning. However, Algeria is one of the few developing nations where e-learning and ICT are still in their infancy. As a result, the adoption of e-learning in Algeria's higher education system may be seen as unusual. This study looks at how the higher education system in Algeria feels about implementing e-learning. In 10 universities in Algeria, the study used the Technology Accepting Model to gather information from 728 students and 327 lecturers. To analyze the research models' prediction performance, structural equation modeling (SEM) was used. The findings from both the student and lecturer models indicate that when e-learning platforms and devices are straightforward and simple to use, people who believe in the value of mobile devices and social networking applications will be more likely to use them. The study also took into account the moderating effect that computer experience has on the relationship between perceived e-learning features and attitude toward behavior in embracing the technology. According to the moderation finding, students and lecturers with more computer expertise than those with less experience are more likely to be affected by perceived e-learning features on attitude toward conduct.*

Keywords: E-learning adoption; learning behavior; computer experience; behavioral intention.

1. INTRODUCTION

Information and communication technology (ICT) has grown rapidly over the past few decades, which has prompted numerous changes and advancements in all areas of life, particularly the educational field [1]. For instance, the development of ICT has enhanced student access to higher education by enabling institutions of higher learning to reach a diverse group of students. New innovative distribution and learning approaches have appeared to generate relevant learning experiences for students in academic contexts as a result of improvements in ICT and network technologies [2]. In several countries' higher education institutions, e-learning has gained popularity [3]. The adoption of e-learning still faces a number of barriers and difficulties in some nations, despite the widespread use of e-learning in higher education institutions. These difficulties and difficulties can be summed up as a lack of leadership, ICT infrastructure, instruction for instructors and students, and e-learning strategy [4]. Successful e-learning implementation provides institutions and students with new learning options that may help them get past the barriers and difficulties that prevent them from participating fully in a traditional classroom. The cost of education, travel, and classroom amenities are common difficulties. Successful application of e-learning necessitates research into the pedagogical, technological, and individual elements that promote the efficient use of the technology.

Numerous scholars have emphasized the importance of examining the variables that affect users' acceptance and usage of e-learning in order to improve the implementation and use of e-learning [5].

In many industrialized nations, including the USA, UK, much of Europe, and Australia, using and implementing e-learning has become generally recognized across higher education [6]. It appears that several developing nations are implementing e-learning in their higher education systems to enhance and improve the educational experience [7]. However, implementing this technology as a teaching and learning tool in Algerian higher education is still in its infant stage, where some of the hurdles and difficulties are still being solved.

Due to differences in culture, legislation, government regulation, and economic climate, researchers discovered that different countries have different Critical Success Factors for embracing e-learning. As a result, depending on their origins, students' and teachers' perspectives of e-learning are different. In some instances, cultural and cultural-pedagogical difficulties have prevented educational institutions from reaching their intended objectives. On the one hand, most Algerians still maintain a lot of their old views, rituals, habits, communication styles, and protocols [8]. The potential of e-learning in Algeria, on the other hand, is still largely unknown to scholars. Each of these variables may result in difficulties and difficulties while implementing e-learning. The adoption of e-learning in Algeria's higher education sector may be

viewed in a distinctive way because of the country's distinct culture, policies, governmental regulations, and economic environment. As a result, the main goal of this research is to determine how students and professors see the Algerian higher education system's acceptance of e-learning.

ICT and e-learning are still in their infancy in only a few underdeveloped nations, like Algeria [9]. The National ICT Policy is continuously being implemented, and in particular, projects in several domains are still being developed. Even though the majority of Algeria's public universities have some basic ICT infrastructure and resources like computers, projectors, networks, and internet access, they still place a high priority on the traditional teaching method of face-to-face interaction between students and professors inside and outside of the classroom. Additionally, the majority of educational opportunities are restricted to campuses [9]. Recently, as a result of the covid-19 outbreak, the government of Algeria has offered some initiatives to move towards the adoption and implementation of e-learning in higher education institutions. For instance, The National Bureau for Distance Education and Training of the

Ministry of Higher Education offers online learning platforms in various subjects for all academic levels, but some initiatives have been more successful than others [9]. There are not enough qualified and experienced instructors who can use ICT in classrooms for teaching. Incorporating ICT and e-learning technology into teaching and learning is still a difficult task for Algeria's higher education system. The difficulties are associated with budgetary issues, awareness of and attitudes toward e-learning among students and teachers, a lack of an effective technology infrastructure, and a lack of e-learning curriculum development [9].

However, it has not yet been determined and researched what conditions will allow e-learning technology to be successfully implemented in higher education in Algeria. Because of this, the main focus of this study is on academic staff and students' perspectives in Algeria on the factors that influence the adoption and implementation of e-learning for improved learning behavior in higher education, in addition to a review of core e-learning adoption and implementation in the African context. After the study's findings are presented, suggestions for potential doable solutions to aid in the adoption and implementation of e-learning will be made. Since e-learning is still a relatively new experience in all Algerian higher education institutions, to the best of our knowledge, this area of research has not been investigated. Hence, the present research examines the experience, perception, and intention of lecturers and students in Algeria toward using e-learning in higher education.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Technology Acceptance Model (TAM)

To describe a person's IT adoption behavior, the Technology Acceptance Model (TAM) was created from the Theory of Reasoned Action (TRA). TAM aims to investigate how users' attitudes and beliefs affect their adoption or

rejection of IT. The goal of TAM is to describe the factors that influence the adoption and use of IT. It argues that two distinct attitudes perceived Usefulness (PU) and Perceived Ease of Use (PEOU) determine one's behavioral intention to use technology [10]. A person's perception of a system's usefulness can be described as "the extent to which he or she believes that adopting the system would increase productivity."

However, perceived ease of use is described as "the extent to which a person believes that using a certain technology would require no effort. Perceived utility and perceived ease of use both influence user attitudes toward utilizing a system, but perceivable usefulness has a 50% greater impact than perceivable ease of use, who researched the hypothesis. A variety of technologies, including telemedicine, e-banking, e-commerce, e-learning, e-libraries, word processing, e-mail, smartcards, and microcomputers, have been studied to see how well perceived usefulness and perceived ease of use reflect or predict behavioral intention. Numerous researchers have used TAM in studies on e-learning and discovered that perceived usefulness and ease of use have a considerable impact on a person's behavioral intention to utilize e-learning systems [11].

2.2 Behavioral Intention to use E-learning Technology

Behavioral intention shows a person's readiness to carry out a specific behavior. According to [12], it is the degree to which a person intends to engage in a given behavior. According to [13], this behavior is typically used as a measure of users' adoption and acceptance of new systems. In this study, the term "intention to use e-learning" refers to participants' readiness to embrace and make use of e-learning as a teaching and learning instrument in higher education institutions in Algeria.

2.3 Attitude Towards E-learning Behavior

Attitude Towards Electronic Learning Behavior refers to a person's feelings, whether favorable or unfavorable, regarding engaging in a particular behavior. According to [14] a "Attitude towards Behavior" is an assessment of how likely one is to engage in a particular behavior. The success of educators in integrating technology into the classroom and their attitude toward it are strongly correlated [15]. According to research, people are more likely to adopt new technology if they have a good attitude toward it. Likewise this study, "Attitude toward Behavior" is "the users' perception of acceptance and usage of e-learning as a tool for teaching and learning at higher education institutions in Algeria [16]."

2.4 Perceived Usefulness of E-learning

The term "Perceived Usefulness" (PU) was first used to describe "the extent to which a person believes that utilizing a particular system will increase his or her job performance." PU was defined as the level that people anticipate achieving

when using a specific system by [17] discovered a direct relationship between perceived usefulness (PU) and attitude toward use in the context of acceptance of e-learning and factors that affect teachers and students to use technology. This study's definition of PU of e-learning, which is based on prior research, is "the extent to which students and teachers believe that employing e-learning would enhance their teaching and learning effectiveness."

2.5 Perceived Ease of Use of E-learning

Given that effort is limited, consumers are more likely to adopt a program that they view as being simpler to operate than another. PEOU measures the system's clarity and understandability, the system's ease of use, the mental effort necessary to interact with the system, and the system's ease of use in general [18]. The behavioral Intentions to Use a System are Affected by PEOU and PU [19]. It was also discovered that the PEOU had a favorable impact on the PU. PEOU refers to "the level of effortlessness that a prospective user anticipates from the target system. Accordingly, this study's definition of PEOU about e-learning, which is based on the literature, is "the extent to which students and lecturers believe that using e-learning will be free of effort [20]. Based on the aforementioned literature, we suggest a study model that takes into account the characteristics that influence online learners' engagement and the importance of computer experience, as shown in the figure. The following is a summary of the hypotheses that the model yielded.

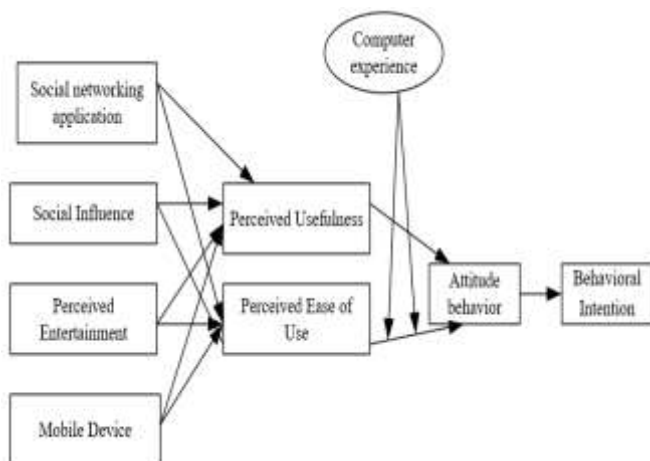


Figure 1 Research Model

H1a: Students' perceptions of the value of e-learning in higher education in Algeria are influenced by their use of social networking applications.

H1b: The use of social networking applications affects how professors in Algerian higher education perceive the value of e-learning.

H2a: In higher education in Algeria, the use of social networking applications affects how students perceive how easy it is to use e-learning.

H2b: In higher education in Algeria, the use of social networking applications by professors affects how simple they believe e-learning to be to utilize.

H3a: In higher education in Algeria, perceived entertainment has a beneficial impact on students' perceptions of the value of e-learning.

H3b: In higher education in Algeria, perceived entertainment has a positive impact on how useful professors perceive e-learning to be.

H4a: Students' perceptions of amusement have a favorable impact E-perceived learning's usability in Algerian higher education.

H4b: In higher education in Algeria, perceived entertainment has a positive impact on how easy e-learning is perceived to be by instructors.

H5a: Social influence has a favorable effect on students' perceived value of e-learning in higher education in Algeria.

H5b: In higher education in Algeria, social influence has a beneficial impact on how useful instructors perceive e-learning to be.

H6a: Social influence has a favorable effect on students' E-perceived learning's usability in Algerian higher education.

H6b: Social influence influences lecturers in a favorable way. E-perceived learning's usability in higher education in Algeria

H7a: Mobile Devices usage influences students' Perceived Usefulness of e-learning in Algerian higher education.

H7b: Mobile Devices usage influences lecturers' Perceived Usefulness of e-learning in Algerian higher education.

H8a: Mobile Devices usage influences students' Perceived Ease of Use of e-learning in Algerian higher education.

H8b: Mobile Devices usage influences lecturers' Perceived Ease of Use of e-learning in Algerian higher education.

H9a: Perceived Ease of Use influences students' attitudes toward the behavior of using e-learning in Algerian higher education.

H9b: Perceived Ease of Use influences lecturers' attitudes towards behaviors of using e-learning in Algerian higher education.

H10a: Perceived usefulness influences students' attitude towards the behavior of using e-learning in Algerian higher education.

H10b: Perceived usefulness influences lecturers' attitudes towards behaviors of using e-learning in Algerian higher education.

H11a: Attitude Towards behavior influences students' behavioral Intention to Use e-learning in Algerian higher education.

H11b: Attitude Towards behavior influences lecturers' behavioral Intention to Use e-learning in Algerian higher education

H12a: Computer experience moderates the relationship between perceived usefulness and attitude towards the behavior of e-learning in Algerian higher education.

H12b: Computer experience moderates the relationship between perceived ease of use and attitude towards behaviors of e-learning in Algerian higher education.

3. MATERIALS AND METHOD

Of the 1,000 surveys sent to students that contained data, 728 were filed in a way that allowed for analysis, and 13 were rejected because the participants had not completed the questionnaires completely and left out necessary information. The overall response rate for this study among students was 71.5%. 327 of the 500 questionnaires sent to academics were returned in a way that qualified them for analysis. Due to the participants' incompleteness, four questionnaires were discarded because they had missing data as well. The overall response rate for the study among instructors was 64.6%. Data was collected, cleaned, coded, and processed into SPSS and AMOS for analysis.

The relevance of the predicted routes in the research model and the variance (R2) explained by each dependent variable were examined using AMOS Version 21's Structural Equation Modeling (SEM) to assess the fit of the proposed model. The Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), the Goodness-of-Fit Index (GFI), the Adjusted Goodness-of-Fit Index (AGFI), and the Root Mean Square Error of Approximation were all analyzed as part of the study (RMSEA). The TLI, GFI, and CFI must all be higher than or equal to 0.9, and 2-square must be less than 3 for the model to fit the data well. Additionally, the AGFI should be greater than 0.8 and the RMSEA should be lower than 0.08.

By using a subgroup analysis, the analytical approach of was used to evaluate the moderating effect on the structural model. The path coefficients were first assessed simultaneously across many groups in a "unconstrained" manner, allowing them to differ between groups in the dataset. The goal path coefficient was then restricted to be equal for simultaneous multi-group estimation in a "completely constrained" model. A (2) square difference test-dependent Goodness-of-Fit statistical value for the "unconstrained" and "completely constrained" models is compared. The theories are then put to the test using this.

3.1 DATA ANALYSIS AND RESULTS

This section starts off by providing some background information on the participants' backgrounds, demographics, and plans for using online learning. Participants were chosen from ten universities in Algeria. Two sets of 1,000 and 500 questionnaires each were sent to students and instructors, as was described before in the previous section. Overall, 715 (71.5%) valid questionnaires from students and 323 (64.6%) valid questionnaires from professors were returned.

3.2 Reliability and Validity of the measurement model

The test results for unit dimensionality and dependability are displayed in Table 1 below. The findings revealed that all elements in the corresponding measurements were one-dimensional. The internal consistency was examined using the Cronbach's Alpha coefficient. To assess the adequacy of the reliability coefficients obtained for each

measurement, recommendations were employed. Ideally, Cronbach's Alpha is 0.7 or above. The Cronbach's Alpha values for each construct in the models are displayed and all values above 0.7 and so satisfied the criteria. Each factor has a loading value greater than or equal to 0.5 and is significant at the p 0.001 level [21]. All constructs' convergent and discriminant validities were also tested. Utilizing Composite Reliability (CR) and Average Variance Extracted, convergent validity was assessed (AVE).

All CR values exceeded 0.7, and all AVE values were greater than or equal to 0.5. Each construct demonstrates strong convergent validity. After removing any constructs that loaded below 0.5, all requirements were thus satisfied. By contrasting the square root of the AVE with their paired correlations displayed in the diagonal of the correlation matrix in Table 1, discriminant validity is attained. In this study discriminant validity to be good, a construct's square root of the AVE should be greater than the correlation between it and the other constructs in the model. Table 1 demonstrates how unique each construct was from the others. The diagonal displays the square roots of the AVE values for each construct, which were greater than the other correlation coefficients between the constructs. The outcomes thus confirmed the measurement models' discriminant validity.

Table 1 Factor correlation matrix

		Matrix of Student Model							
		1	2	3	4	5	6	7	8
	S	0.8							
	N	0.79							
	A								
	SI	0.4	0.8						
		0.28	0.64						
	PE	0.	0.	0.8					
		0.33	0.33	0.76					
		0.06	0.07						
	M	0.	0.	0.	0.8				
	D	0.23	0.31	0.31	0.49				
		0.00	0.05	0.04					
	P	0.	0.	0.	0.	0.8			
	U	0.41	0.52	0.36	0.41	0.77			
	S	0.04	0.09	0.09	0.09				
	PE	0.	0.	0.	0.	0.	0.8		
	U	0.34	0.33	0.11	0.13	0.39	0.73		
		0.01	0.02	0.06	0.07	0.00			
	A	0.	0.	0.	0.	0.	0.	0.8	
	T	0.37	0.35	0.30	0.25	0.39	0.25	0.83	
	B	0.02	0.04	0.06	0.00	0.09	0.05		
	BI	0.	0.	0.	0.	0.	0.	0.	0.8
	U	0.27	0.31	0.31	0.25	0.35	0.15	0.51	0.96
		0.00	0.02	0.06	0.01	0.05	0.07	0.01	
		Matrix of Lecturer Model							
	S	0.8							
	N	0.55							
	A								

SI	0.3	0.8						
	31	50						
PE	0.	0.	0.8					
	47	36	39					
	4	0						
M	0.	0.	0.	0.8				
D	37	29	49	05				
	7	6	7					
P	0.	0.	0.	0.	0.8			
U	47	42	63	53	34			
S	9	3	3	2				
PE	0.	0.	0.	0.	0.	0.8		
U	55	38	45	10	16	36		
	7	0	6	6	7			
A	0.	0.	0.	0.	0.	0.	0.8	
T	31	26	40	23	37	06	31	
B	0	6	2	3	7	4		
BI	0.	0.	0.	0.	0.	0.	0.	0.8
U	27	27	44	28	44	06	55	51
	6	0	9	2	0	9	0	

Note: Diagonals represent the square roots of AVE, and the other Matrix entries are the factors' correlations.

Six indices, including the Tucker-Lewis Index (TLI), the goodness-of-fit index (GFI), the adjusted goodness-of-fit index (AGFI), the comparative fit index (CFI), and the root mean square error of approximation, were employed to examine the goodness-of-fit of the suggested measurement models (RMSEA). Finally, tables 4 display the measurement models' goodness-of-fit indices.

The model fit was found to be satisfactory according to the goodness-of-fit analysis. The GFI for the student model was 0.935, and the GFI for the lecturer model was 0.927, both of which were higher than 0.90 and below the threshold of 3. The 2-square for the student and lecturer models, respectively, were 1.951 and 1.604, both of which were below the threshold of 3. The student model's AGFI was 0.926 and the lecturer model's was 0.943, both higher than 0.9; the student model's CFI was 0.972 and the lecturer model's was 0.976, both higher than 0.9; the student model's and lecturer model's TLI were 0.928 and 0.941, both higher than 0.9; and the student model's and lecturer model's RMSEA were 0.036 and 0.041, both less than All of these results fall within the range of generally recognized thresholds recommended in the relevant literature [22]. As a result, the fit indices show that the models successfully fit the data.

In the estimated structural model for students, perceived entertainment, social influence, mobile devices, and social networking applications together accounted for 57% of the variation in perceived usefulness. Additionally, 4 other factors—Mobile Devices, Perceived Entertainment, Social Influence, and Social Networking Applications—explained 48% of the variation in perceived usability. Additionally, perceptions of usefulness and usability contributed to the explanation of a 55% variance in attitudes

about behavior. Overall, the estimated model for students was able to account for 52% of the variation in e-learning intention

Similar to this, in the estimated structural model for lecturers, social networking applications, perceived entertainment, social influence, and mobile devices together accounted for 62% of the perceived usefulness of e-learning. Additionally, social networking applications, perceived entertainment, social influence, and mobile devices all accounted for 51% of the variation in perceived ease of use of e-learning. The attitude toward the variety in behavior was explained by perceived usefulness and ease of use in 69% of cases. Overall, 63% of the variability in the desire to use e-learning was explained by the estimated model for lecturers. Figure 3 displays the multiple squares correlation R2 for each dependent variable in the lecturers' model

3.3 Test of Hypothesis

All of the hypothesized correlations were supported, with the exception of one link in the students' estimated model and two in the lecturers' estimated model, according to the findings from the structural equation models displayed in Figures 3 and 4. For instance, the proposed relationship between Social Networking Application and Perceived Usefulness in the student's model was statistically significant ($p = .347, 0.001$). The relationships between perceived usefulness and social influence, perceived usefulness and mobile devices, perceived usefulness and social networking applications, perceived usefulness and perceived entertainment, perceived usefulness and social influence, perceived usefulness and mobile devices, attitude toward behaviors and perceived usefulness, and perceived usefulness and perceived ease of use are similar. Behaviors, Perceived Ease of Use, and Attitude Towards Behaviors At $p 0.05$, the intentions and attitudes toward the acts were statistically significant. Statistics showed that the proposed relationship between perceived usefulness and perceived entertainment was unimportant ($p > 0.05, \beta = 0.079$). As a result, this approach was not encouraged.

The perceived utility of e-learning was also predicted by Social Networking apps ($\beta = 0.347, p 0.001$), Social Influence ($\beta = 0.273, p 0.001$), and Mobile Devices ($\beta = 0.319, p 0.001$). Hypotheses H1a, H5a, and H7a were therefore supported, whereas H3a was not. Mobile Devices ($\beta = 0.279, p 0.001$), Perceived Entertainment ($\beta = 0.0264, p 0.01$), Social Influence ($\beta = 0.186, p 0.05$), and Perceived Ease of Use were all predicted by social networking applications. As a result, the hypotheses H2a, H4a, H6a, and H8a were verified. Perceived Ease of Use and Perceived Usefulness both significantly influenced attitudes toward activities ($p = 0.001, .351$ and $.463$, respectively). Consequently, hypotheses H9a and H10a were confirmed. Behavior-related Intention to Use is strongly influenced by attitude toward behavior ($\beta = .510, p 0.001$). In this way, hypothesis H11a was verified. For instance, the proposed relationship between the social networking application and perceived usefulness in the lecturers' model was statistically significant ($\beta = .463, p = 0.001$). A statistically significant relationship between

perceived usefulness and perceived entertainment, perceived usefulness and mobile devices, perceived ease of use and social networking applications, perceived ease of use and perceived entertainment, perceived ease of use and mobile devices, attitude towards behaviors and perceived usefulness, attitude towards behaviors and perceived ease of use, behaviors intention and attitude toward behaviors, and behaviors intention and attitude toward behaviors was also found. Perceived Usefulness and Social Influence, as well as Perceived Ease of Use and Social Influence, were expected relationships, however they were not statistically significant ($\beta = -0.051, p > 0.05$) or ($\beta = 0.083, p > 0.05$), respectively. These pathways were therefore not supported.

Additionally, Social Networking Applications ($\beta = 0.463, p = 0.001$), Perceived Entertainment ($\beta = 0.196, p = 0.01$), and Mobile Devices ($\beta = 0.314, p = 0.001$) all predicted the perceived utility of e-learning. As a result, hypothesis H5b was rejected while H1b, H3b, and H7b were accepted. Mobile Devices, Perceived Entertainment, and Perceived Ease of Use were all predicted by Social Networking Application ($\beta = 0.352, p = 0.001$), respectively. As a result, hypotheses H2b, H4b, and H8b were supported, and H6b was rejected. Thus, while H6b was rejected, hypotheses H2b, H4b, and H8b were all supported. Perceived Ease of Use and Perceived Usefulness also significantly influenced attitude toward activity ($p = 0.01, \beta = 0.583, \text{ and } 0.292$, respectively). Therefore, hypotheses H9b and H10b were proven correct. Behavior-related Intention to Use is strongly influenced by attitude toward behaviors ($\beta = 0.695, p = 0.001$). Thus, hypothesis H11b was confirmed.

3.4 Moderating Effects of Students and Lecturer's Computer Experience

The high-low analysis for the moderating effects of computer experience is shown in figure4 and 5. The slope interaction test was utilized to examine the moderating effect.

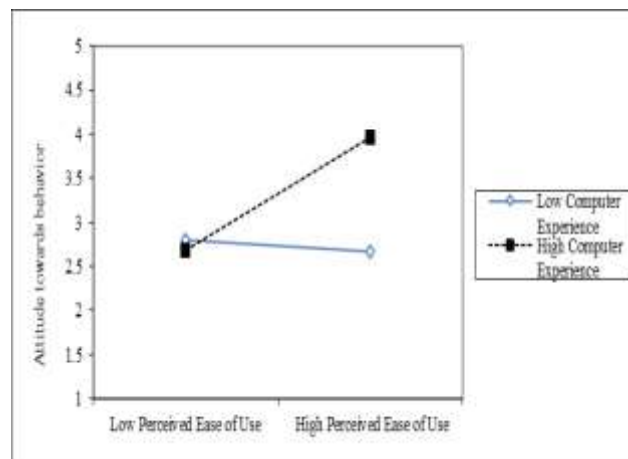
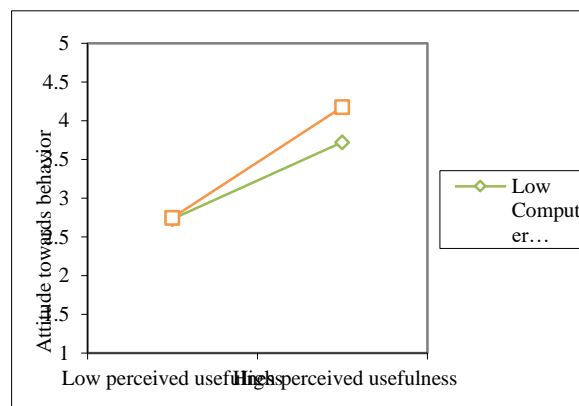
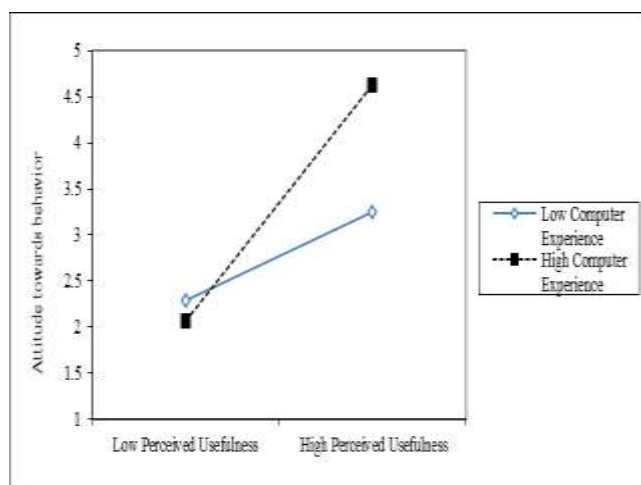


Figure 4 Moderating Effects of Student's Computer Experience

Figure 4 shows that computer experience (CE) increases the positive relationship between Perceived Usefulness (PU), Perceived Ease of Use (PEU), and Attitude towards Behavior (ATB). The slope interactions justify the study of computer experience over the perceived usefulness; therefore, the adoption is impactful through computer experience. This moderation perceived powerful, enhanced learning behavior effects, with innovative antecedents for e-learning adoption. The presence of computer experience to augment e-learning adoption and implementation speeds up the advancement of e-learning functionality in institutions of higher learning in Algeria.



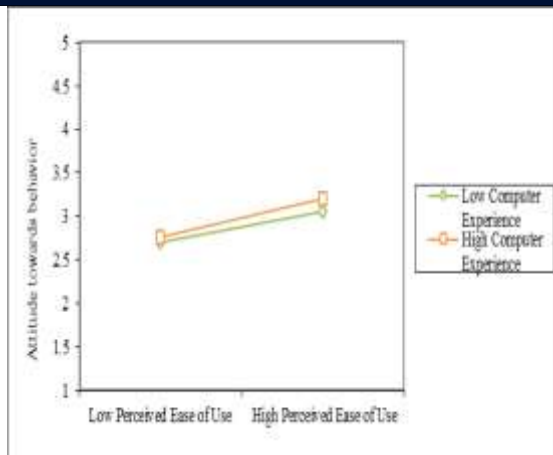


Figure 5 Moderating Effects of Lecturers Computer Experience

Figure 5 shows that computer experience (CE) moderates the Influence of perceived usefulness (PU) and Perceived Ease of Use (PEU) on Attitude towards Behavior (ATB), such that the effect of perceived usefulness and perceived ease of use of e-learning on attitude towards behavior are stronger with high computer experience than with low computer experience

4. DISCUSSION OF THE RESULTS

After the text edit has been completed, the paper is ready for the template. Duplicate the template file by using the Save As command, and use the naming convention prescribed by your conference for the name of your paper. In this newly created file, highlight all of the contents and import your prepared text file. You are now ready to style your paper; use the scroll down window on the left of the MS Word Formatting toolbar. The adoption and implementation of e-learning for learning and teaching in higher education in Algeria is the main topic of this study. The purpose of this study is to examine the variables that influence university professors and students in Algeria in terms of their acceptance and utilization of e-learning in higher education. Four components relating to attitudes and intentions were added to the TAM based on empirical research and literature on the adoption of information technology. Eight components made up the research model for this study, as indicated in figure 2. According to the models created by the students and lecturers, Social Networking apps, Social Influence, and Mobile Devices all had a substantial impact on how easy and useful e-learning was assessed to be. Additionally, the Attitude toward Use was highly impacted by Perceived Ease of Use and Perceived Usefulness. The intention to utilize e-learning was, in turn, highly influenced by the attitude toward use. The findings imply that people are more likely to adopt e-learning technologies at Algerian universities if they believe that Social Networking Applications and Mobile Devices are useful.

Social networking applications (SNA) are essential tools for teaching and learning and that they ought to be

widely utilized for these purposes [23]. The use of SNA in educational settings may improve students' learning outcomes. This study looks at the SNA-related hypotheses and how each relates to how useful and simple e-learning is perceived to be in higher education in Libya. The significance of this study lies in the fact that perceived ease of use and perceived usefulness of SNA are seen as the primary variables in determining whether students and lecturers in higher education institutions in Algeria will embrace and use e-learning.

The findings of this study indicate that implementing SNA is crucial to the adoption of e-learning in Algerian higher education. SNA strongly influences perceived ease of use and perceived usefulness for both students and instructors in Algeria, contrary to what was predicted. As a result, when the SNA is straightforward and simple to use, someone who believes social media to be more valuable will be more inclined to use e-learning technology for learning in Algeria. Perceived Ease of Use and Perceived Usefulness were highlighted, as the main drivers of e-learning adoption. According to this study, lecturers and students who frequently utilize SNA in their daily lives likely to have more favorable opinions of online learning. The study also discovers a stronger link between SNA usability and support for online learning. This study supports the findings of [24] study, which found that teachers and students who frequently utilize the SNA had a high likelihood of embracing e-learning technology in their instruction. In conclusion, SNA's widespread adoption has a beneficial effect on both lecturers and students' perceptions of how simple it is to use e-learning tools in Algerian higher education.

The findings also demonstrate that in Algerian higher education, students' perceptions of the usability of e-learning are highly influenced by perceived enjoyment (PE). This result is consistent with. They also discovered that the usability of e-learning was strongly impacted by PE. This study discovered that students' perceptions of the usefulness of e-learning are unaffected by PE. Regarding the lecturers, the findings demonstrated that PE strongly influences lecturers' perceptions of the usefulness and simplicity of e-learning. This finding is in line with those of other studies by [25], which found that PE affects both the e-learning system's perceived usefulness and ease of use.

However, the findings indicate that PE has a considerable impact on both students' and lecturers' perceptions of the ease of use, which indirectly supports research into both parties' intents to adopt and use e-learning. Let's assume that instructors and students agree that e-learning enhances and is compelling for both teaching and learning. In such situation, accepting and incorporating information into their learning process will be quite simple for them. According to the study's findings, lecturers' behavioral intentions to use e-learning are not significantly influenced by social influence (SI), however students' behavioral intentions are. This means that while friends, family, coworkers, or supervisors may influence students' decision to adopt e-learning, they have no bearing on lecturers. According to the

students' model's hypotheses, SI has a big impact on how useful and simple e-learning is seen by students. This outcome is consistent with findings from earlier investigations [25]. SI specifically affects how useful and simple the e-learning system is perceived to be.

Both perceived ease of use and perceived usefulness were unaffected by SI, as predicted by the lecturers' model. This outcome is in line with other earlier investigations. In contrast to perceived usefulness and perceived ease of use, showed that SI had no significant impact on intentions. The majority of lecturers being men may be one explanation for this outcome. According to [26], men are less affected by SI than women are.

According to the models, the use of mobile devices (MD) by instructors and students affected how easily and how usefully e-learning was perceived. Through Perceived Usefulness and Perceived Ease of Use, MD use also indirectly influenced the attitude toward using e-learning. Therefore, people who believe that MDs are valuable will be more likely to use e-learning technology for learning in Algeria when the MDs are straightforward and simple to use. According to earlier research [27], the use of a technology in the past significantly influences its acceptance in the future.

The study highlighted that students' and lecturers' experiences with MD would influence their perception of its ease of use and usefulness of e-learning. This result is consistent with a past study by [28]. The high frequency of use of MD enables students and lecturers to accept and use e-learning. The familiarity with mobile device technology will assist and support the extension and experimentation of e-learning use in other areas, such as teaching and learning. In contrast, students and lecturers who don't use MD frequently or who aren't proficient with it will be less likely to explore or stray from their usual practices. As a result, individuals are less likely to think that e-learning is simple to use or advantageous for teaching and learning. [29] discovered that after being more comfortable with their MD, students and teachers were more receptive to the e-learning system.

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