

**College Students' Acceptance of Moodle  
Through Learning Management  
Systems: A Test of the UTAUT Model**

**By:**

**Dr. Amal Mubarak Alhammar,**

**Dr. Kholoud H A Alnajjar.**

**Dr. Mona Abdulhameed Khudhur Hasan**

Associate Professor Educational Technology Department  
Collage of Basic Education The Public Authority for  
Applied Education and Training

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### Abstract:

The study aimed at investigating college students' acceptance of Moodle through Learning Management Systems in the light of the UTAUT Model. For the purpose of this study ,quantitative survey research was the most suitable one, and so it was employed. The independent variable is UTAUT model with its four constructs: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC), Students' Acceptance of Moodle Through Learning Management Systems is the dependent variable. A purposive sampling technique was adopted in the administration of the questionnaire, thus students who engage Introduction to Educational Technology Classes on University of Basic Education campus were contacted. After obtaining the informed consent from all students involved, a total of 310 (69.35% females, and 30.65% males) students participated in this study. They ranged in age from 19 to 21 years ( $M = 20.08$ ,  $SD = 3.27$ ). Findings revealed that there were significant correlations between the four constructs: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC) and Students' Acceptance of Moodle Through Learning

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\* **Dr. Amal Mubarak Alhammar, Dr. Kholoud H A Alnajjar. Dr. Mona Abdulhameed Khudhur Hasan:** Associate Professor Educational Technology Department Collage of Basic Education The Public Authority for Applied Education and Training.

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Management Systems. These correlations were significant ( $P < .01$ ). It was found that the four independent variables (PE , EE , SI and FC) when put together yielded a coefficient of multiple regression (R) of 0. 157 and a multiple correlation square of 0. 146. This shows that 14.6% of the total variance in LMS of those who participated in the study is accounted for by the combination of PE , EE , SI and FC.

**Key words:** Moodle; Learning Management Systems; UTAUT Model

**Introduction:**

Information Communication Technology has become part and parcel of the educational system of any country, especially in higher education institutes, as it helps to diminish the distance between three parties: the instructor, the student and the content. This can be done through giving them the chance to communicate and interact virtually (Oliveira,Cunha and Nakayama, 2016). Currently, higher education institutes (HEIs) all over the world ,widely adopt Moodle as one of learning management systems (LMSs), either to support distance learning or to complement classroom instruction (Busaidi, 2012). Researchers(e.g. Lonn and Teasley, 2009; Xiao and Chun,2019) found that LMSs to facilitate college student active learning and empower mutual interaction between students and their instructors.

Several models have been developed to measure the students' behavioral intention to use technology. For instance, Venkatesh and colleagues (2003) proposed the Unified Theory of Acceptance and Use of Technology (UTAUT) to define factors that are likely to affect students' intention to adopt technology. According to this model, the acceptance of technology is based largely on a number of factors such as performance expectancy, effort expectancy, social influence and facilitating conditions. UTAUT model contributes greatly to the exploration of technology acceptance and usage (Venkatesh et al., 2003). Thus, the four factors are used in this study. Descriptions of these factors are as follows.

*Performance Expectancy (PE)*

PE is supposed to be an important predictor of technology acceptance. It has been defined as “the degree to which an individual believes that the system helps to improve job performance.” (Cheng,2019). PE uncovers users' perception of the ability to emphasize its functional capability to result in a specific solution or behavior(Md. Aftab et al.,2020). Some researchers (e.g. Cheng, 2019; Md. Aftab et

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al., 2020;Teo et al., 2019) among others ,have identified PE as a robust predictor of students' behavioural intention in adopting LMSs . This allows us to know that if students understand the technology is easy and effortless to use , they will be ready to use it (Kamaludeen, Khashyaullah & Ahmad, 2017).

**H1.** Performance Expectancy (PE) positively influences college students' acceptance of Moodle through LMS.

### ***Effort Expectancy(EE)***

EE assesses how easy the individual can use technology. Students(or users in general) are likely to adopt a technology if this technology serves their purpose(Salloum and Shaalan,2018). As indicated by Sun, Lou, Chao, and Wu (2008), users accept to use a new technology if it is characterized by being user-friendly and a method of giving an easy-to-use interface and guiding learning. EE which were previously known as perceived ease of use, was found to directly determine students' behavioural intention in accepting and adopting LMSs and the behavioural intention(Xiao and Chun,2019).

**H2.** Effort Expectancy (EE)positively influences college students' acceptance of Moodle through LMS.

### ***Social Influence (SI)***

According to Venkatesh and colleagues (2003) Social Influence is defined as how individual perceives others' belief regarding the usage a new system. For instance, a student decides to use online application because other students around him are doing the same thing. Pan and Jordan-Marsh(2010) found that SI was a significant predictor of technology use intention. Some other researchers(e.g. Barrane, Karuranga and Poulin,2018 ;Chao, 2019;Dwivedi et al.,2019; suggest that essential others' pressure and expectation will have a significant influence on the adoption of technology.

Essential others (relatives, colleagues, friends and neighbors)'s expectations shape the intentions of person to use technology (Owusu,2019).

**H3.** Social Influence (SI)positively influences college students' acceptance of Moodle through LMS.

***Facilitating Conditions (FC)***

It is defined as “the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system.”(Venkatesh et al., 2003). It is posited that the availability of facilitating conditions accelerates intention to use of technology(Md. Aftab et al.,2020). Venkatesh et al. (2003) found that facilitating conditions without adding any moderator is not significant to predict intention to use system when the construct of effort expectancy is used in the same model, but when it is moderated by age and experience; it had a strong effect.

**H4.** Facilitating Conditions (FC)positively influences college students' acceptance of Moodle through LMS.

**Problem Statement**

One can say that the effectiveness of using technology in education is still under debate despite its widespread use. Hands-on experiences are still used by stakeholders and practitioners in higher education to make decisions instead of depending on research evidence. The wide use of educational tools such as Moodle through learning management systems in recent years has inspired higher education institutes all over the world to redefine their teaching and learning processes. As a result of that, higher education institutes are doing their best to invest in infrastructure, equipment, technology, and professional development programmes as a way to improve their educational effectiveness (Rashid, 2017). To my knowledge, no study has examined college students' acceptance of Moodle through learning management systems in the light of the UTAUT Model in Kuwait. The

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UTAUT model was adopted in this study because many scholars (e.g. Dwivedi, Rana, Chen, and Williams (2011) considered it as the most accepted and influential one to evaluate students and well as instructors' intentions to accept and use technology in teaching and learning.

### **Purpose**

The study aimed at investigating college students' acceptance of Moodle through Learning Management Systems in the light of the UTAUT Model.

### **Significant of the Study**

This study contributes to the literature practically, theoretically and methodologically. First, this study gives the guidelines for the instructors as well as students to accept Moodle through learning management systems as the main e-Learning tool. this Theoretically, this study integrates the UTAUT. This study also contributes to the field of the acceptance for better understanding the UTAUT Model in Kuwait. Methodologically, this study is quantitative in nature, conducted among college students where data were collected through learning management system acceptance scale.

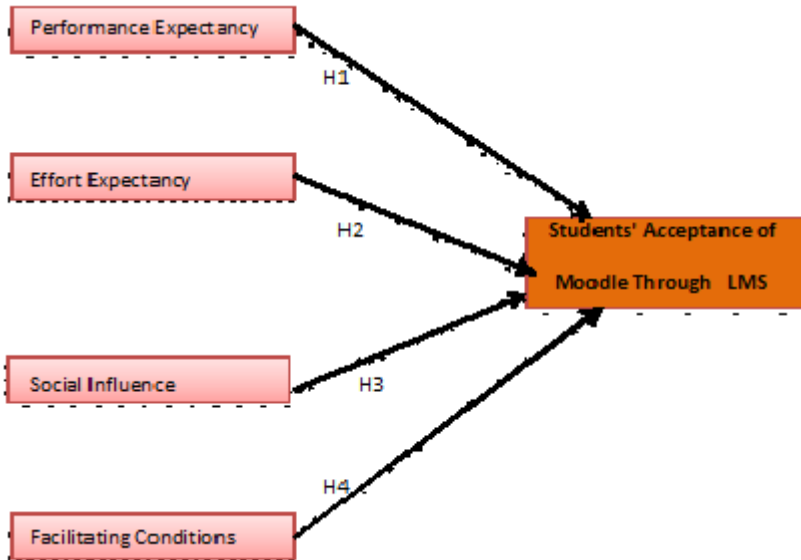
### **Methodology**

#### ***Design***

For the purpose of this study ,quantitative survey research was the most suitable one, and so it was employed. The independent variable is UTAUT model with its four constructs: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC), Students' Acceptance of Moodle Through Learning Management Systems is the dependent variable.

The conceptual study model was developed using the UTAUT model. Students' acceptance of Moodle through learning management systems in the light of the UTAUT Model as shown in Figure 1 below were used.





**Figure 1. Study Model**

### **Participants**

The target population was the students of the University of Basic Education. Those who are enrolled in Introduction to Educational Technology Classes. Each group has at least 70 students. A purposive sampling technique was adopted in the administration of the questionnaire, thus students who engage Introduction to Educational Technology Classes on University of Basic Education campus were contacted. After obtaining the informed consent from all students involved, a total of 310 (69.35% females, and 30.65% males) students participated in this study. They ranged in age from 19 to 21 years ( $M = 20.08$ ,  $SD = 3.27$ ). The researcher told those students that although he hoped that all of them could continue with her till the end of this study, they were free to discontinue participation at any time. However, their participation is very important. The researcher told those students that any information they would provide would be top secret and confidential. It would not be revealed to anyone.

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### **Instrument**

A questionnaire (Appendix 1) for the survey was designed based on the theoretical framework in order to verify the research hypotheses. It is a 5-point Likert- Type Scale. It consisted of 25 items comprising five factors : Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) , Facilitating Conditions (FC)and Students' Acceptance of Moodle Through Learning Management Systems. It is a 5-point Likert scale from 1 = strongly disagree, 5 = strongly agree. The scale takes only 15 minutes to complete. Each subscale has five items . Cronbach alpha coefficients were 0.93 for the composite score, 0.87, 0.85 , 0.86, 0.91 and 0.90 for the five subscales. The content validity of the questionnaire was examined by a group of 5 experts. They assessed the relevance of each item using a four-point Likert scale (where 1 represents “irrelevant” and 4 represents “highly relevant”).They provided suggestions and comments. The 25 items were judged to be quite or highly relevant. A content validity index was calculated at the item level (I-CVI = 0.90).

### **Procedures**

Prior to administering the questionnaire, students were notified and given the option of refusing to participate in the study. They were informed about purpose of the study. They were instructed to respond to the each item. To ensure that the respondents responded to the items honestly and sincerely, they were told not to identify themselves in any way on the questionnaire paper. They were also informed that they should not be concerned with anything concerns their participation in the study and their responses are for research purposes only and would be kept confidential .All data were entered in an SPSS file.

## Data analysis

Pearson correlation and moderated hierarchical multiple regression analyses were conducted to test the hypothesis of the study.

## Results

### *Descriptive data and inter-correlations*

Table 1 shows the means, descriptive statistics and inter-correlations of Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) , Facilitating Conditions (FC)and Students' Acceptance of Moodle Through Learning Management Systems. Table 1 shows that there are significant correlations between the four constructs: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC) and Students' Acceptance of Moodle Through Learning Management Systems. These correlations were significant ( $P < .01$ )

Table 1 – Descriptive statistics and inter- correlations of Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) , Facilitating Conditions (FC)and Students' Acceptance of Moodle Through Learning Management Systems

Variables	1	2	3	4	5
<b>Performance Expectancy</b>	1.00	.41**	.29**	.35**	.52**
<b>Effort Expectancy</b>	.41**	1.00	.27**	.32**	.51**
<b>Social Influence</b>	.29**	.27**	1.00	.34**	.50**
<b>Facilitating Conditions</b>	.35**	.32**	.34**	1.00	.53**
<b>LMS</b>	.52**	.51**	.50**	.53**	1.00
<b>Mean</b>	21.05	20.51	21.53	22.13	22.23
<b>Standard deviation</b>	1.32	1.15	1.21	1.52	1.43
<b>** P &lt;.01</b>					

*Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) , Facilitating Conditions (FC)as Predictors of Students' Acceptance of Moodle Through Learning Management Systems(LMS)*

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Results presented in table 2 show that the four independent variables (PE , EE , SI and FC) when put together yielded a coefficient of multiple regression (R) of 0. 157 and a multiple correlation square of 0. 146. This shows that 14.6% of the total variance in LMS of those who participated in the study is accounted for by the combination of PE , EE , SI and FC. As indicated in table 3, the analysis of variance of the multiple regression data produced an F-ratio value significant at 0.000 level ( $F(4, 310) = 14.165; P < 0.01$ ).

Table 2. The regression results of the Predictor Variables (PE , EE , SI and FC) and the Outcome Measure(LMS).

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
n0 1	.396 <sup>a</sup>	.157	.146	.99138

a. Predictors: (Constant), FC, EE, SI, PE

b. Dependent Variable: LMS

Table 3 Summary of Multiple Regression Analysis between the Predictor Variables (PE , EE , SI and FC) and the Outcome Measure(LMS).

**ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	55.686	4	13.922	14.165	.000 <sup>a</sup>
	Residual	299.762	305	.983		
	Total	355.448	309			

a. Predictors: (Constant), FC, EE, SI, PE

b. Dependent Variable: LMS

As for results displayed in table 4, each of the four independent variables made significant individual contributions to the prediction of LMS. The results indicated

that the following beta weights which represented the relative contribution of the independent variables to the prediction were observed. PE ( $b = .514$ ,  $t = 2.967$ ;  $P < 0.003$ ), EE( $b = .223$ ,  $t = 3.747$ ;  $P < 0.000$ ), SI( $b = .134$ ,  $t = 2.597$ ;  $P < 0.010$ ), and FC( $b = .527$ ,  $t = 4.950$ ;  $P < 0.000$ )

Table 4. Relative Contribution of the Independent Variables to the Prediction of LMS. **Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
	B	Std. Error	Beta			Zero-order	Partial	Part
1 (Constant)	17.532	4.107		4.269	.000			
PE	-.514	.173	-.163	-2.967	.003	-.204	-.168	-.156
EE	.223	.059	.200	3.747	.000	.163	.210	.197
SI	-.134	.052	-.140	-2.597	.010	-.115	-.147	-.137
FC	.527	.106	.268	4.950	.000	.280	.273	.260

a. Dependent Variable: LMS

As is shown in figure 2., the histogram of the residuals with a normal curve superimposed. The residuals look close to normal. The normal probability plot of the residuals as shown in figure 3.is approximately linear .This supports the condition that the error terms are distributed in a normal way. Overall , as shown in figure 4, the residual plot (see below) shows the residuals and a histogram with a normal distribution overlay.

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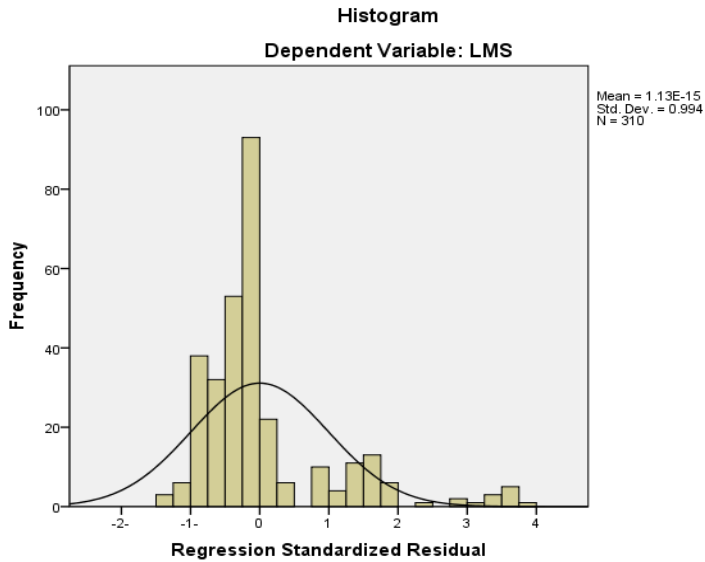


Figure 2. Regression Standardized Residual

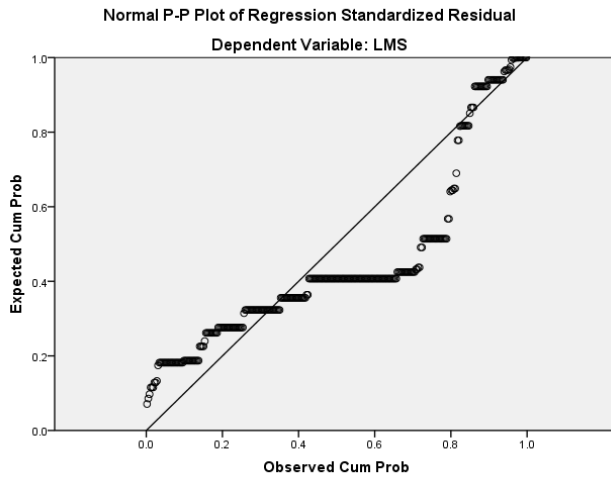
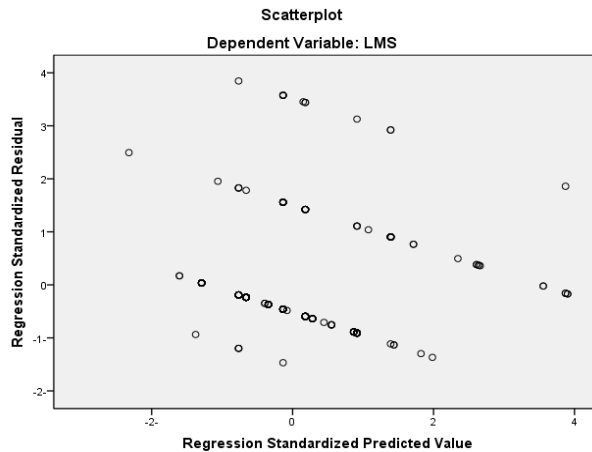


Figure3. Normal P-P Plot of Regression Standardized Residual



**Figure 4. Scatterplot**

## Discussion

The purpose of this study was to investigate college students' acceptance of Moodle through Learning Management Systems in the light of the UTAUT Model. Findings from table 1. indicated that there were significant correlations between the four constructs: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI) and Facilitating Conditions (FC) and Students' Acceptance of Moodle Through Learning Management Systems. These correlations were significant ( $P < .01$ ).

It was found that the four independent variables (PE , EE, SI and FC) when put together yielded a coefficient of multiple regression (R) of 0. 157 and a multiple correlation square of 0. 146. This shows that 14.6% of the total variance in LMS of those who participated in the study is accounted for by the combination of PE , EE , SI and FC. As indicated in table 3, the analysis of variance of the multiple regression data produced an F-ratio value significant at 0.000 level ( $F(4, 310) = 14.165$ ;  $P < 0.01$ ).

The results indicated that the following beta weights which represented the relative contribution of the independent

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variables to the prediction were observed. PE ( $b = .514$ ,  $t = 2.967$ ;  $P < 0.003$ ), EE ( $b = .223$ ,  $t = 3.747$ ;  $P < 0.000$ ), SI ( $b = .134$ ,  $t = 2.597$ ;  $P < 0.010$ ), and FC ( $b = .527$ ,  $t = 4.950$ ;  $P < 0.000$ ).

This finding is in the same line with Hsiao's finding (2012), as he used three of the UTAUT model to assess the acceptance of Moodle: performance expectancy, effort expectancy, and social influence.

As suggested by UTAUT, it was found that Performance Expectancy can be a strong predictor of Students' Acceptance of Moodle Through Learning Management Systems. In the context of Moodle Through Learning Management Systems, Performance Expectancy indicates that students will find Moodle Through Learning Management Systems useful due to the opportunity that Moodle presents for gaining access to information quickly from anywhere at any time further studies are needed to substantiate the effect of this variable on Moodle Through Learning Management Systems. It was found by other researchers that Performance Expectancy strongly influences students' Intention to use other electronic resources such as electronic government resources (AlAwadhi & Morris, 2008), and instant messaging on mobile device (Lin, Chan, Jin & Y., 2004).

Effort Expectancy (EE), which is the degree of ease an individual associates with the use of an information system/technology, was found to be a strong predictor of Students' Acceptance of Moodle Through Learning Management Systems. Other researchers (e.g. Jairak, Praneetpolgrang, et al., 2009) found that Effort Expectancy has a significant positive relationship with Behavioral Intention (BI).

Moreover, Social Influence (SF), which is the extent to which users perceive that others important to them believe that



they should use a new information system, was found to be a strong predictor of Students' Acceptance of Moodle Through Learning Management Systems. Other researchers( e.g. Ahmad , 2015)found that Social Influence strongly affect students' Intention to use M-learning in the pedagogical environment.

Additionally, Facilitating Conditions (FC), which is defined as the “degree in which an individual believes that an organizational and technical infrastructure exists to support the use of the system” was found to be a strong predictor of Students' Acceptance of Moodle Through Learning Management Systems. Other researchers( e.g. Jairak, Praneetpolgrang, et al.,2009) proved that Facilitating Conditions has a significant positive relationship with Behavioral Intention (BI), and not significant with the attitude toward Behavioral (AT).

### **Application and implications**

This study contributes to the general body of knowledge in understanding the college students' acceptance of Moodle through Learning Management Systems in the light of the UTAUT Model .These findings help the management to forecast and the implement a structured support program to assist students in using LMS efficiently.

We can recommend that to ensure students' acceptance of Moodle through Learning Management Systems , HEIs should emphasize more on the UTAUT Model.

### **Limitations and future research**

This study has some limitations. First as cross-sectional study, there has to be caution in making any generalization of the results. Future researchers should get more respondents from wider geographical location, that is from different universities. Furthermore, self-report questionnaire were used to collect data from respondents. It is recommended that future researchers use different method such as personal interview or telephone interview to collect data. This may help get a reliable data after clarifying and removing what may be ambiguous.

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