

# Acceptance use Blackboard as a medium for E-learning during COVID-19 period for Saudi students: Case Northern Border University

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## Summary

This study aims to measure acceptance by students of the Northern Borders University in the Kingdom of Saudi Arabia to learn using a blackboard application in E-learning during quarantine period to prevent an outbreak of the covid-19 epidemic among Saudi students. Multiple modeling was used to measure the acceptance of students of the northern borders in e-learning using the Blackboard application, by distributing a questionnaire to a group of students and collecting 405 answers, including males and females, of different ages. The results in this study indicate a positive, but not significant, effect of the exerted effort on behavioral intention in general. However, it is significant in the case of differences between genders and age, and the existence of a positive and moral effect for both social affiliation and the conduct of self-learning on the behavioral intention of e-learning according to gender and age.

## Key words:

*Information Technology, E-Learning, Blackboard, Quarantine, COVID-19.*

## 1. Introduction

The Internet and World Wide Web have provided opportunities for developing e-learning systems. The development of e-learning systems has started a revolution for instructional content delivering, learning activities, and social communication, based on activity theory **Liaw et al., 2007**. Moreover, the use of ICT improves learning, especially if accompanied by strict instructions for its application, and possibly the recent technological transformation that has led to improved internet flow speed, and the emergence of smart mobile devices. Devices that resulted in distance learning, after the development of what is known as online learning, which has revolutionized ICT for its ease of use, then came to the M-Learning which also facilitated the learning process for easy use of a mobile phone.

In e-learning systems, learning activities are based on learner autonomy and interactive learning actions; also, learning instruction is based on multiple media and ill-structured formats. Furthermore, e-learning also offers

collaborative learning opportunities. Based on activity theory, the purpose of this study is to examine learners' attitudes toward e-learning systems. Indeed, understanding learners' attitudes toward e-learning systems are necessary to ensure that e-learning stands the best possible chance to succeed **Liaw et al., 2007**.

In the case of the dominion of Saudi country, it is advanced within the field of what is called distance education, and a few universities have adopted distance learning programs in order that the coed studies all his lectures remotely and has taken their tests electronically. With the emergence of the Corona Virus Pandemic (COVID-19), the Ministry of Education within the Kingdom of Saudi country announced, in cooperation with the upper authorities, a call to suspend studies all told schools and academic institutions that include private and public universities and colleges. The resolution also includes both the tutorial body and therefore the unit, as a part of preventive measures the epidemic. On the opposite hand, the ministry of education directed all educational institutions to activate distance education during the amount that may be included within the suspension of the study, in order that the continuation of the academic process is maintained through the electronic teaching methods provided by the ministry, which are approved by them to realize effectiveness and quality as an exceptional alternative to the tutorial process. Because the ministry provided all the approved means for distance education, within the universities circulated the blackboard platform, and Northern Borders University was one amongst the colleges that applied distance education during this exceptional period.

**Will students of Northern Border University accept the blackboard application as a means of distance learning during the quarantine period to prevent the COVID-19 pandemic?**

The importance of the study is to activate the countries of e-learning in distance learning for ease of use, on the

one hand, and to provide it to all segments of society, the computer and the mobile phone are available to almost every adult in the family. Therefore, the results of this study are essential for all members of society who are interested in education, which may contribute to these results in the development of educational technology via the computer and mobile phone.

This article divided into **First:** Introduction, **Second:** literature review and Hypotheses, **Third:** methodology, **Fourth:** results and discussion, **finally,** Conclusion, limitations, Practical and social implications, and prospects for research and recommendations that decision-makers in Saudia can develop e-learning in its universities.

## 2. Literature review and Hypotheses

### 2.1 Literature review

Previous studies on E-Learning and M-Learning have each had a different area of interest and a different focal point.

#### 2.1.1 Studies at the theoretical level

**Venkatesh et al., 2003** study entitled User acceptance of information technology: Toward a unified view, and based on the unified theory of acceptance and use of technology (UTAUT), The UTAUT thus provides a useful tool for managers needing to assess the likelihood of success for new technology introductions and helps them understand the drivers of acceptance in order to proactively design interventions (including training, marketing, etc.) targeted at populations of users that may be less inclined to adopt and use new systems. The paper also makes several recommendations for future research including developing a deeper understanding of the dynamic influences studied here, refining measurement of the core constructs used in UTAUT, and understanding the organizational outcomes associated with new technology use. **Wang et al., (2009)** study entitled Investigating the determinants and age and gender differences in the acceptance of mobile learning, and based on the unified theory of acceptance and use of technology (UTAUT), and the results indicate that performance expectancy, effort expectancy, social influence, perceived playfulness, and self-management of learning were all significant determinants of behavioral intention to use m-learning. This study finds that age differences moderate the effects of effort expectancy and social influence on m-learning use intention. That gender differences reduce the impact of social importance and self-management of learning on m-learning use intention. **Wang, H & Wang, S, 2010** study entitled User acceptance of mobile Internet based on the unified theory of acceptance and use of technology: Investigating the

determinants and gender differences, Based on the Unified Theory of Acceptance and Use of Technology Model (UTAUT), and using the structural equation modeling approach. Empirical data mostly supported the proposed model. The findings of this study provide several crucial implications for m-Internet service practitioners and researchers. **Boateng et al., 2016** study entitled Determinants of e-learning adoption among students of developing countries, used a quantitative research approach comprising of a survey of 337 students was adopted. Data were collected using questionnaires designed in conjunction with 13 factors (computer self-efficacy (CSE), perceived ease of use (PEOU), perceived usefulness (PU) and attitude towards use (ATTU)) in the conceptual model of the study. Data analysis was conducted using structural equation modeling and concluded demonstrated that some of the constructs used had either a direct or indirect effect on university students' ELIB. Based on this, there is a need for practical application of the result of the study in the development and management of e-learning in universities. **Hilao & Wichadee, 2017** study entitled Gender differences in mobile phone usage for language learning, attitude, and performance, The use of a useful tool to support learning can be affected by the factor of gender. The findings demonstrated that male and female students did not differ in their usage, attitudes toward mobile phone uses for language learning as well as their learning performance at a significance level. Also, the constraints of using a mobile phone to learn include the screen and keyboard. They followed by the intrusiveness of SMS background knowledge, and limited memory of the mobile phone. **Hoi, 2020** study entitled Understanding higher education learners' acceptance and use of mobile devices for language learning: A Rasch-based path modeling approach, applying in this study the modified version of the Unified Theory of Acceptance and Use of Technology (UTAUT). The results indicated the important roles of attitude and performance expectancy in predicting learners' behavior intention and their usage of MALL. The facilitating condition found to have no direct effect on learners' usage of MALL, representing a departure from the literature. **Liaw, 2008** study entitled "Investigating students' perceived satisfaction, behavioral intention, and effectiveness of e-learning: A case study of the Blackboard system" in this study the results showed that perceived self-efficacy is a critical factor that influences learners' satisfaction with the Blackboard e-learning system. **Liaw et al., 2007** study approves that activity theory is an appropriate theory for understanding e-learning systems. Furthermore, this study also provides evidence that three other factors can positively influence e-learning as a problem-solving environment.

### 2.1.2 Studies at the level of the Kingdom of Saudi Arabia

**Alotaibi, 2013** study entitled Determinants of Mobile Service Acceptance in Saudi Arabia: A Revised UTAUT Model, proposed a theoretical framework based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model, and The results suggest that behavioral intentions towards the use of M-Tadawul can be predicted by performance expectancy, effort expectancy, social influence and M-Tadawul characteristics. The findings also indicate that the effect of predicting variables is mediated by gender, age and education. It is studying the moderating impact of training in developing countries as well as applying heuristics evaluation of mobile services in Saudi Arabia would, therefore, merit further investigation.

**Al-Hujran et al., 2014** study entitled "Get Ready to Mobile Learning": Examining Factors Affecting College Students' Behavioral Intentions to Use M-Learning in Saudi Arabia, This paper aims at examining the main factors affecting the adoption intention of Mobile Learning (M-Learning) based on the Unified Theory of Acceptance and Use of Technology (UTAUT) given the significance and power of such a theory in the field of Information Systems (IS), and the results also show that Facilitating Conditions has no significant effect on the intention to use M-Learning. Further, the findings show that the developed model explains 62.4% of the variance in the adoption intention to use M-Learning. **Al-Shahrani, 2016** study entitled investigating the determinants of mobile learning acceptance in higher education in Saudi Arabia, and used the UTAUT model: collected from 1,207 undergraduate students at KKU, Saudi Arabia. Multiple linear regressions administered to test the proposed hypothesis. The proposed model was supported and explained up to 52% of the variance in behavioral intention to use M-learning. The results indicate that performance expectancy, effort expectancy, and social influence were all statistically significant predictors of behavioral intention to use M-learning. Despite the high potential of mobile handheld devices to provide students and institutions with many benefits, such as study aids, accessibility to information, and universal communication, students may be constrained by limited or no internet connectivity, limited screen size, short battery life, and low memory, all of which may dampen student interest in using M-learning. **Fageeh, 2011** study entitled EFL students' readiness for e-learning: factors are influencing e-learners' acceptance of the Blackboard in a Saudi university. Moreover, the findings have demonstrated that informants in this study have identified the facilitators and inhibitors of e-learning previously recognized in prior research, also showed that students are ready to accept technology implementation and to shift to an e-learning model of education.

### 2.2 Hypotheses

To answer the previous problem and achieve the desired research objectives, we propose the following set of hypotheses:

#### *Effort Expectancy (EF)*

H1: Effort expectancy has a positive effect on behavioral intention to use e-learning.

H2: Effort expectancy influences behavioral intention to use e-learning more strongly for women than for men.

H3: Effort expectancy influences behavioral intention to use M-learning more strongly for the older age.

#### *Social Influence (SI)*

H4: Social influence has a positive effect on behavioral intention to use e-learning.

H5: Social influence influences behavioral intention to use e-learning more strongly for women than for men.

H6: Social influence influences behavioral intention to use e-learning more strongly for older age.

#### *Self-management of Learning (SL)*

H7: Self-management of learning has a positive effect on behavioral intention to use e-learning.

H8: Self-management of learning influences behavioral intention to use e-learning more strongly for men than for women.

H9: Self-management of learning influences behavioral intention to use M-learning more strongly for older age.

#### *Using Blackboard application*

H10: Blackboard application has a positive effect on behavioral intention to use e-learning.

## 3. Methodology

### 3.1 Data

#### 3.1.1 Descriptive Analysis

The questionnaire was distributed to a group of students, and the answers were received from 405 students, 58.77% female and 14.23% Male. The results are as shown in **Table 1** below:

**Table 1: Characteristics of the respondents**

Characteristic	Number	Percentage
<b>Gender :</b>		
Male	167	14.23
Email	238	58.77
<b>Age :</b>		
<18	3	0.74
18-20	157	38.76
20-22	194	47.9
>22	51	12.6
<b>Speciality :</b>		
General setting	85	21
Law	135	33.33
Accounting	55	13.58
Financing and insurance	37	9.13

Human Resources	80	19.75
Marketing	13	3.21

Source: From the respondents' answers.

### 3.1.2 Statistics Descriptive of Model

Moreover, It is also acceptable in all study variables, as shown in **Table 2**. It also displays the Moyenne and Standard deviation for each variable.

## 3.2 Model

### 3.2.1 Reliability and Validity Model

Cronbach's Alpha coefficient is used to test the internal consistency of each building. Alpha Cronbach values above the recommended 0.60 thresholds (**Bagozzi and Yi, 1988; Fornell and Laerker, 1981; Mameche et al., 2020**) ranged from 0.66 to 0.94 for all constructs, as shown in **Table 3**, lending to support the internal consistency of the elements under each underlying construction.

**Table 3:** Test Reliability of Questionnaire

Number of elements	Cronbach's Alpha
23	0.934

Source: Output SPSS

In this study, Cronbach's Alpha statistic in global is 0.934 (<0.94); this means that the data is acceptable and reliable, which helps to obtain good results.

### 3.2.2 Estimation the Model

The effect of Effort Expectancy ( $EE_i$ ), Social Influence ( $SI_i$ ) and Self-management of Learning( $SL_i$ ) on Behavioral Intention ( $BI_i$ ) see Figure 1. Was measured through **equation 1** and **2** shown below:

$$BI_i = f(EE_i, SI_i, SL_i) \quad (1)$$

$$BI_i = \alpha_1 + \alpha_2 * EE_i + \alpha_3 * SI_i + \alpha_4 * SL_i + \epsilon_i \quad (2)$$

Where  $BI_i$ : Behavioural Intention is the dependent variable.  $EE_i$ : Effort Expectancy;  $SI_i$ : Social Influence;  $SL_i$ : Self-management of Learning.  $\alpha_j$  ( $j = 1 \dots 4$ ) is a parameters  $\epsilon_i$  ( $i = 1 \dots n$ ) are white noise error terms.

## 4. Results and Discussion

### 4.1 Results

After evaluating the model, we came to the results shown in **Table 4**. See **Equation 3**

$$BI_i = 0.326 + 0.088 * EE_i + 0.49 * SI_i + 0.393 * SL_i \quad (3)$$

(0.451)                      (0.457)                      (0.001)                      (0.000)

### 4.2 Discussion

This paper conducted a pilot evaluation of the extent of acceptance by students of the Northern Border University for e-learning. The results provide sufficient evidence of students acceptance of e-learning about the following three indicators: expected effort, social impact, and self-management, which are the determinants of e-learning, in addition to behavior that differs in gender and ages. We can also divide the obtained results into three components:

#### 4.2.1 Determinants of M-learning Acceptance

The results of this study indicated that there was a positive and moral effect of both expected performance, expected effort, social dimension, and enjoyment during education on behavioral intention, which was consistent with Wang's study **Wang, Y. S. et al. (2009)**, and negative effect of self-learning on behavioral intention contrary to what was expected, which is inconsistent with Wang's study **Wang et al., 2009**.

#### *Effect Effort Expectancy on behavioral intention*

In this study there is a positive effect for effect effort Expectancy on behavioral intention but not significant, this negates the hypothesis H1, that is, the effort exerted by the students does not explain the behavioral intention of e-learning.

#### *Effect Social Influence on behavioral intention*

In this study there is a positive and significant effect for social influence on behavioral intention, this accepted the hypothesis H4, that is when SI goes up by 1%, BI goes up by 49%.

#### *Effect Self-management of Learning on behavioral intention*

In this study there is a positive and significant effect for Self-management of Learning on behavioral intention, this accepted the hypothesis H7, that is when SL goes up by 1%, BI goes up by 39.3%.

#### 4.2.2 Gender and Age Differences

When entering the gender and age differences in the model, we found that: First: Gender has a positive effect on behavioral intention in e-learning through effort expectancy, social influence and self-management of learning, but the effect in females was greater than in males, and this confirms hypotheses H2, H5 and H8, the reason is that females are more interested than males, which is consistent with (Morris & Venkatesh, 2000; Venkatesh et al., 2000), And also for the Kingdom of Saudi Arabia's orientation towards empowering women in the labor market, thus creating new job positions for females, see Louail & Riache, 2019. Second: Age differences affect the behavioral intention in e-learning through its effect on the effort expectancy, social influence, and self-management of learning. It is was evident in the age group of 20-22 years and over 22T years, since these two groups are about to graduate from university and they do not want to miss the opportunity that made available to them which confirms hypotheses H3, H6 and H9, which corresponds to Wang et al., 2009.

Finally, the Blackboard application it is easy for students to learn e-learning in different gender and ages, which confirms hypothesis H10.

#### 5. Conclusion

The results in this study indicate a positive, but not significant, effect of the exerted effort on behavioral intention in general. However, it is significant in the case of differences between genders and age, and the existence of a positive and moral effect for both social affiliation and the conduct of self-learning on the behavioral intention of e-learning according to gender and age. Moreover, that the use of the Blackboard application contributed to facilitating e-learning for students at Northern Borders University, however, the weakness of the Internet during school times due to the tremendous pressure, and the lack of internet access for some students due to its high prices, is among the problems that faced e-learning in the northern border region. Decision-makers, whether at the local or national level, can develop e-learning because of its benefits for the region in particular and the Kingdom of Saudi Arabia in general, and benefit from distance education even after the pandemic, especially in complementary tracks of the educational process such as language learning and professional skills...

Finally, this study contains deficiencies that can open future horizons for other studies, for example studying e-learning in a group of countries, such as the Arab countries of the Gulf Cooperation Council countries, can give different and more comprehensive results.

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**Table 2:** Total Items Statistics

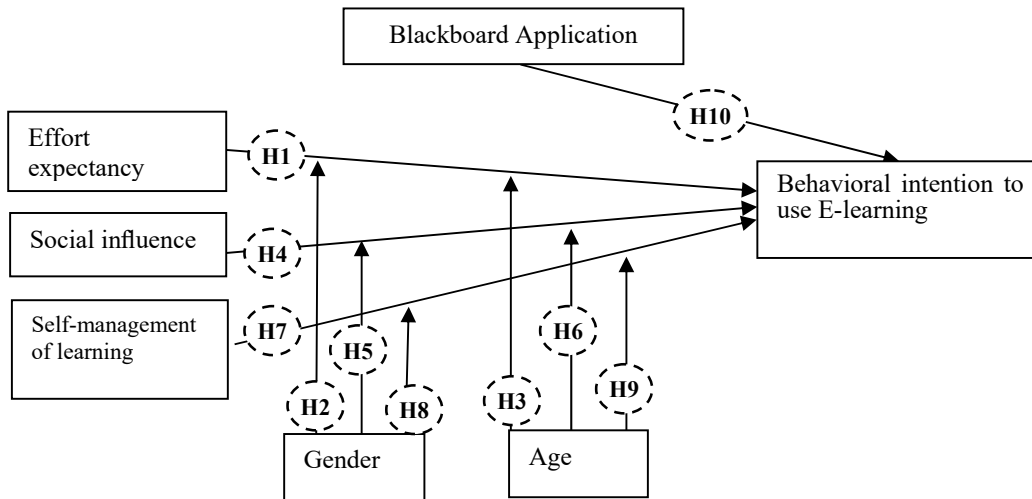
	Minimum	Maximum	Somme	Moyenne	Variance
Student Gender	0	1	167	0.41	0.243
Student Age	1	4	1103	2.72	0.468
effort expectancy (EE)	1	5	1500.00	3.7037	1.272
Social Influence (SI)	1	5	1545.00	3.8148	0.857
Self-management of Learning (SL)	1	5	1632.00	4.0296	0.805
Behavioural Intention (BI)	1	5	1550.33	3.8280	1.688
N	405				

EE: effort expectancy; SI: Social Influence; SL: Self-management of Learning; BI: Behavioural Intention.  
**Source:** Output SPSS

**Table 4:** Estimation of regression the model

model	Non-standardized coefficients		standardized coefficients	t	Sig
	A	Erreur standard	Bêta		
C	0.326	0.431		0.756	0.451
Effort Expectancy (EE)	0.088	0.118	0.085	0.746	0.457
Social Influence (SI)	0.490	0.145	0.349	3.366	0.001
Self-management of Learning (SL)	0.393	0.106	0.300	3.717	0.000

EE: Effort Expectancy; SI: Social Influence; SL: Self-management of Learning.  
 BI: Behavioural Intention (dependent variable)  
**Source:** Output SPSS



**Fig 1.** Modified UTAUT Model for e-learning