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## THE BLACKBOARD LEARNING MANAGEMENT SYSTEM: AN INTENTION USAGE AMONG LECTURERS AT A SAUDI ARABIA PUBLIC UNIVERSITIES

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**Abstract:** A good number of researchers have demonstrated the need for online training for faculty members in various countries around the world in recent years. However, most of these academic researchers have discussed the different effects of the online training system. Conversely, the need for online training for female faculty members in Saudi Arabia has not been adequately measured which is culturally very diverse and unique. Thus, empirical evidence is clearly lacking and needs to be studied. There is also no conclusive model for the Saudi Arabian educational industry yet exists. Thus, this study aims to examine the factors that enable the intention to adopt the E-learning systems by university lecturers. Accordingly, the approach adopted in this study employed the unified theory of acceptance and use of technology (UTAUT). Using a self-administrated survey, data were collected from (195) female English instructors from public universities in Saudi Arabia. Structural equation modeling (SEM) was also employed as the primary method of analysis. The results of this study have shown that the (UTAUT) components involve (performance expectancy, effort expectancy, social influence and facilitating conditions are significant influences the instructors' intention (BI) to use (BBS). Therefore, these outcomes can serve as an essential guideline for universities to enhance employee motivation and conjointly to retain staff with high potential and talent within the setting of the Kingdom of Saudi Arabia. Finally, the theoretical, practical implications and the study limitations are discussed, and future study directions are proposed..

**Key words:** Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Behavioural Intention Learning Management Systems, Blackboard Systems and Saudi Arabia.

### INTRODUCTION

The online learning platform has unique characteristics and facilities that go beyond investigating simple "Web surfing" activities and consider an all-inclusive concept that could redefine students' online learning experience (Vanderlinde, et al., 2015; Alqahtani, 2016; Kesici, & Tunç, 2018). Past studies have also demonstrated the importance of online learning platforms (e.g. Sarkar, Ford, & Manzo, 2017; Huda, et al., 2018; Al Halbusi, & Tehseen, 2018; Sukandi, et al., 2019). This indicates that faculty at Saudi universities also require such

online platforms to teach effectively (Moskovsky, et al., 2015; Wong, et al., 2019). English instruction and education in Saudi education has teacher-centered relatively than student-centered, which averts students from increasing adequate language proficiency (Albugami, & Ahmed, 2015; Adham, et al., 2018; Khalid, et al., 2020). Thus, future studies online education should study the experiences of contingent faculty.

As stated by Cigdem and Ozturk (2016); Islam (2015); Ros et al., (2015), Learning Management System (LMS) has become a major contributor in the field of distance education in the last two decades. LMS is, therefore, critical for the success and relevance of academic institutions (Aguenane, 2020; Aguenane, 2020; Alam & Shakir, 2019; Babalola & Yelwa, 2020). Several researches have been conducted on web-based distance learning (DL) technology with the Internet as the platform (Limayem and Cheung 2011; Sanga 2016). Certain LMSs, such as Blackboard, have become growingly significant for university faculty in managing students online and delivering course instruction (Capece and Campisi 2013; Sanga 2016). Hence, researchers are now focused on gaining an understanding of the role of the organisations in developing and maintaining well-defined units within their institutions that suffice in offering technical support and training for effective transference of LMS skills to the faculty (Chiaburu and Marinova 2005). The universities are specifically assigned the task to offer a supportive web-based learning environment through the use of software packaged systems and organisational support.

Therefore, several theoretical models have been developed in recent years in order to understand the factors that influence the adoption and use of technology in education. Some of these models are Innovation Diffusion Theory (IDT); Technology Acceptance Model (TAM); Theory of Planned Behaviour (TPB); Unified Theory of Acceptance and Use of Technology (UTAUT), and UTAUT2; Theory of Reasoned Action (TRA); and Model of PC Utilisation (MPCU). UTAUT was recommended by Venkatesh et al. (2003) after analysing, comparing and then incorporating the primary influencing factors in the models and theories described above. The UTAUT model is the most extensively used model and is of the highest significance and relevance. This study makes use of the UTAUT model to identify and assess the factors that influence the intention of adoption of e-learning technologies by the teachers and instructors at Saudi universities.

## 2. Theoretical Background and Hypothesis development

### 2.1 Performance expectancy (PE) and Behaviour Intention (BI)

Performance expectancy (PE) is described as “the extent to which a person thinks that utilising the system would aid him/her in making gains with regards to job performance” (Venkatesh et al., 2003, p. 447). In comparison to the behavioural belief construct Effort Expectancy (EE), PE was observed to have a considerably higher correlation with attitude of utilising technology (Venkatesh et al., 2003; Venkatesh, et al., 2010). The same outcome was observed in case of e-learning studies (Ahmad & Ahmad, 2019; Chu and Chen 2016; Tarhini et al., 2015; Abbasi, et al., 2015). In this work, PE was deployed for scrutinising the instructors’ beliefs regarding the likely advantages of utilising e-learning tools (for example, BBS). Several research works have emphasised the key role which PE plays in terms of the attitude towards online as tools for learning (Al-Gahtani 2016; Chiu and Wang 2008; Chu and Chen 2016; Marchewka et al., 2014; Merhi 2015; Oye et al., 2014). In the this cross-sectional research, and in line with the UTAUT research, it is estimated that if educators assume that the web learning

system is beneficial and enriches their learning experience, then they are highly likely to promote the system and their attitude towards e-learning systems such as BBS would be optimistic. Thus, the following hypothesis was suggested:

H.1: Performance expectancy (PE) has a positive impact on Behaviour Intention (BI) of Using BBS in teaching.

### 2.2 Effort expectancy (EE) and Behaviour Intention (BI)

Effort expectancy (EE) is defined as “the degree of ease associated with device use” (Venkatesh et al., 2003, p. 450). Based on the literature review, most succeeding studies regarding teachers’ views on utilising technologies back the key role which EE plays in forecasting the attitude of usage (Abbasi et al., 2015; Al-Gahtani 2016; Cheung and Vogel 2013; Chiu and Wang 2008; Merhi 2015; Oye et al., 2014; Park 2009). From the perspective of this work, EE was included to study instructors’ beliefs as to whether the system is independent of effort and to estimate their attitude towards deploying the web-based learning system (BBS). It is estimated that if the instructors think the system is simple to use, then there are higher chances that they would espouse and utilise it. Hence, we recommend the following hypothesis:

H.2: Effort expectancy (EE) has a positive impact on Behaviour Intention (BI) of using BBS in teaching.

### 2.3 Social influence (SI) and Behaviour Intention (BI)

Social influence (SI) is described as “the extent to which a person senses that important others think he/she should utilise the new system” (Venkatesh et al., 2003, p 451). It is similar to a social norm in TPB, TRA, and TAM2. In simple words, SI pertains to the social pressure arising from an external environment which envelops individuals and might impact their perceptions and conducts of engaging in a specific action (Ahmad & Ahmad; 2018; Venkatesh et al., 2003). The direct impact of SI on espousal of technology is advocated from the fact that individuals might be influenced by the viewpoint of others and thus engaged in specific behaviour even if they do not intend to. Venkatesh and Davis (2000) contend that the impact of SI takes place solely in mandatory environments and has less impact in a voluntary setting. Thus, going as per the guidelines of UTAUT and because the usage of a specific system is compulsory (instructors are required to utilise the e-learning system for completing their course), this work will analyse the direct impact of SI on attitude towards using BBS. From the perspective of e-learning technologies, teachers’ decision to espouse and accept these technologies is typically impacted by the pressure exercised by other seniors/colleagues/lecturers (Cheung and Vogel 2013; Chu and Chen 2016; Lin et al., 2013; Marchewka et al., 2014; Sharma et al., 2017; Tosuntas et al., 2015). Thus, this study recommends the following hypothesis:

H.3: Social influence (SI) has a positive impact on Behaviour Intention (BI) of using BBS in teaching.

### 2.4 Facilitating condition (FC) and Behaviour Intention (BI)

FC (Facilitating condition) can be described as “the extent to which a person believes that a technical and organisational infrastructure exists to aid use of the new system” (Venkatesh et al., 2003, p 453). Put differently, it means the provision of external resources that are required to facilitate a specific behaviour’s performance (Ajzen 1991). With respect to this study, FC can be measured by the awareness of instructors regarding their ability to access the

resources required and the necessary support to leverage the e-learning resources available. Consequently, the relevance of the external influence of the facilitating conditions on the administrative process is a significant antecedent of individual behavioural roles within the information system studies (Banerjee and Dey 2013; Dwivedi et al., 2011; Williams et al., 2011) as well as within the context of e-learning (Chu and Chen 2016; Marchewka et al., 2014; Phahlane and Kekwaletswe 2014; Sawang et al., 2014; Tosuntas et al. 2015; Tarhini, et al., 2016). It is very essential to determine whether the facilitating condition has a direct effect on the behavioural intentions toward using (BBS). Thus, it is supposed that such external resources will cause the instructors to accept the LMS. Accordingly, the following hypothesis is proposed:

H.4: Facilitating condition (FC) has a positive effect on Behaviour Intention (BI) of Using BBS in teaching.

### Figure 1. Research Model

## Method

### Data Collection and Targeted Sample

The targeted sample of this study encompasses (195) instructors at Saudi public universities. Therefore, the sample of this research incorporates faculty members' working full-time in Saudi public universities and the respondents who complete the questions should not be working less than one year in that particular organization as selection criteria.

### 3.2 Measurement

All the scales for this research were adapted from previous studies associated with UTAUT and earlier empirical research. More specifically, PE, EE, and FC were quantified using 4 items, for the SI was measured with 3 items. Finally, BI has been assessed by 3 items. Those items were adapted from (Venkatesh et al., 2003; Venkatesh et al., 2012). All of these items been assessed using A 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

Importantly, in this research, the items were converted from English to Arabic since the respondents were Arabic speakers. Also, the questions of the survey were read and authorised by a panel of 6 experts in the field of information systems, technology management and research strategy so as to insure the subject matter of the items. Then, the questionnaire was converted by following the "Double blinded principle", the original English texts of the scales were converted into Arabic, and the Arabic texts were converted back by 2 professional scholars (Brislin 1980) to assure their legitimacy.

## 4. Data Analysis and Results

Using the SmartPLS 3.2.8 software, structural equation modeling by PLS (Partial Least Squares) method was used to evaluate the research model (Ringle et al., 2015). The study pursued the two-phase analytical method suggested by Anderson & Gerbing (1988) and Hair et al. (2017), starting with the measurement model assessment (constructs reliability and validity), followed by the structural model assessment (testing the conceptualized relationships).

### 4.1 Assessment of Measurement Model

The evaluation of the measuring model was carried out through the reliability of parameters as well as the validity of parameters (including discriminant and convergent validity). For the reliability of the parameter, this research has tested the alpha of the individual Cronbach to quantify the reliability of each core parameter within the measuring model. The results indicated that each alpha of the specific Cronbach between 0.681 and 0.870 was higher than the recommended magnitude of 0.7 (Nunnally, & Bernstein, 1994; Hair et al., 2017). In addition, for testing the parameter reliability, this research employed the CR (composite reliability) which also attained the suggested values. Hence, the values were between 0.823 and 0.898 which are greater than 0.7 (Hair et al., 2017), That adequately indicated the reliability of the parameter as indicated in (Table, 1). Therefore, for all constructs, the achieved CR and Cronbach's Alpha were considered to be error-free enough. Loading factor was used to determine the reliability of the predictor. High loadings on a parameter suggest that the associated indicators appear to have a lot of similarity which the parameter captures (Hair et al., 2017). Factor loads greater than 0.50 were considered to be very significant (Hair et al., 2010). For each item the loadings exceeded the suggested value of 0.5 as indicated in (Table, 1).

Furthermore, this study used the AVE (Average Variance Extracted) for measuring convergent validity (meaning the degree to which a variable is positively correlated with other measures of the same parameter) and stated that all AVE values were greater than the acceptable value of 0.50 (Hair et al., 2017) between 0.526 and 0.680. For all parameters the convergent validity was true as indicated in Table 1.

<b>Constructs</b>	<b>Item</b>	<b>Loading (&gt; 0.5)</b>	<b>Cronbach's Alpha (&gt; 0.7)</b>	<b>CR (&gt; 0.7)</b>	<b>AVE (&gt; 0.5)</b>
<b>Performance Expectancy</b>	PE1	0.650	0.751	0.843	0.575
	PE2	0.731			
	PE3	0.829			
	PE4	0.810			
<b>Effort Expectancy</b>	EE1	0.809	0.843	0.894	0.680
	EE2	0.835			
	EE3	0.758			
	EE4	0.890			
<b>Social Influence</b>	SI1	0.738	0.681	0.823	0.608
	SI2	0.772			
	SI3	0.827			

<b>Facilitating Conditions</b>	FC1	0.879	0.855	0.902	0.699
	FC2	0.890			
	FC3	0.857			
	FC4	0.704			
<b>Behavioral Intention (BBS)</b>	BI1	0.814	0.835	0.882	0.601
	BI2	0.820			
	BI3	0.808			
<b>Note: CR= Composite Reliability; AVE= Average Variance Extracted.</b>					

Discriminant validity is the extent to which items differentiate among parameters or measure different concepts; it was checked by using Heterotrait-Monotrait Ratio (HTMT) standards. This research evaluated discriminant validity using this method, Since the Fornell-Larcker model received some criticism. Henseler et al., (2015) reported that the absence of discriminant validity in general research circumstances is not correctly revealed. They suggested an alternative approach based on the multitrait-multimethod matrix that is the HTMT (Heterotrait-Monotrait Ratio) of correlations. Therefore, this analysis used HTMT to test discriminating validity. While there is a problem when HTMT's value is higher than 0.85 (Kline, 2010), all the values shown in Table 2 were lower than the suggested value suggesting that the discriminating validity was defined.

<b>Constructs</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>SI</b>
<b>1. Behavior Intention (BI)</b>					
<b>2. Effort Expectancy</b>	0.442				
<b>3. Facilitating Conditions</b>	0.348	0.337			
<b>4. Performance Expectancy</b>	0.525	0.780	0.36		
<b>5. Social Influence</b>	0.314	0.234	0.189	0.184	
<b>Note: HTMT values should be less than 0.90.</b>					

Hypothesis Testing

The testing of the hypothesis provided the first sign of the direct impact of performance expectancy, effort expectancy, social influence and facilitating conditions which are significantly predicted on the BI (behaviour intention) using BBS. Thus, H1, H2, H3 & H4 are the accepted results which are given in Table 3.

<b>Table 3. Hypothesis Analysis.</b>										
<b>Hypot hesis</b>	<b>Relations hip</b>	<b>S td Beta</b>	<b>St d Erro r</b>	<b>t- valu e</b>	<b>P - valu e</b>	<b>BC I 95% LL</b>	<b>BC I 95% UL</b>	<b>Decis ion</b>	<b>f<sup>2</sup></b>	<b>V IF</b>
<b>H-1</b>	PE -> BI (BBS)	0. 344	0. 059	5. 861	0. 000	0.2 46	0.4 44	Supp orted	0. 236	1. 854
<b>H-2</b>	EE -> BI (BBS)	0. 279	0. 062	4. 467	0. 000	0.1 77	0.3 71	Supp orted	0. 189	1. 512
<b>H-3</b>	SI -> BI (BBS)	0. 395	0. 073	5. 427	0. 000	0.2 85	0.5 11	Supp orted	0. 348	1. 651
<b>H-4</b>	FC -> BI (BBS)	0. 173	0. 055	3. 146	0. 001	0.0 85	0.2 67	Supp orted	0. 036	1. 121
<b>Note: VIF= Variance Inflation Factor.</b>										
<b>Key: PE -&gt; BI (BBS)= Performance Expectancy-&gt; Behavior Intention (BI) of using (BBS); EE -&gt; BI (BBS)= Effort Expectancy -&gt; Behavior Intention (BI) of using (BBS); SI -&gt; BI (BBS)= Social Influence -&gt; Behavior Intention (BI) of using (BBS); FC -&gt; BI (BBS)= Facilitating Conditions -&gt; Behavior Intention (BI) of using (BBS).</b>										

As mentioned in the section on analysis, the issue of collinearity is crucial in the conduct of the structural model. As mentioned by Hair et al. (2017), when the largest VIF is higher than 5, there is a multi-collinearity issue. Nonetheless, Table 3 indicates a VIF-based multicollinearity diagnosis indicating that there is no evidence of substantial multicollinearity among the exogenous constructs in the research since all VIF values are below 5 (between 1,651 and 2,302). It means that the differences mentioned in the endogenous construct do not overlap with each other in the exogenous constructs. Importantly, in general, the R2 values attained an acceptable level of descriptive power as suggested by Hair et al. (2017), which clarified 0.413 percent of the variation in the given model of the study.

Hence, this research assessed effect sizes (f2). Effect size f2 determines whether an underlying exogenous construct has a weak, moderate, or significant effect on an underlying endogenous construct (Gefen & Rigdon, 2011). Hair et al. (2017) suggested looking at the change in R2 values. Cohen (1988) recommended a f2 magnitude at 0.02 (small effects), 0.15 (medium effects), and 0.35 (large effects) as a guideline measure. As shown in Table 3, instead.

**Discussion and Implications**

The research has shown that most of the candidates were quite well-informed

and capable of calculating, a prerequisite for adopting LMS. Interestingly, for Blackboard users are able to well deliver the lessons. However, as proposed in this study UTAUT elements have a positive impact on the intention use of BBS. Therefore, the statistical outputs of this research revealed as followed: The performance expectancy, effort expectancy, social influence and facilitating conditions are positively influence the behavioral intention to adapt the learning management systems (blackboard systems) among Saudi lecturers. Thus, the outcome of this research has established the lecturers at the Saudi Public universities that are more encouraged and inspired to adopt the LMS. Thus, Saudi universities should help lecturers further in terms of conducting workshops and conferences to learn more of learning management system (LMS).

### 5.1 Theoretical Implications

Binyamin, Rutter, & Smith, (2019) indicated that there is a research limitation in the area of LMS in Saudi Arabia. To be more precise, the earlier research concentrated on the UTAUT model to affect the outcomes of the organisations. Thus, this study investigates the correlation between (Performance Expectancy, Effort Expectancy, Social Influence and facilitating conditions) and the teachers' behavioural intention (BI) for using (BBS). Generally, the majority of the studies in the domain of LMS (Learning Management System) have been carried out in the US as well as the Western nations. So, since these findings are not entirely in line with the literature's recommendations, further work seems to be needed. Hence, this study is devised to apply the UTAUT model in another context. Therefore, this research makes a significant contribution to the literature by giving a first perception of the Saudi environment to improve the perceptions (BBS).

### 5.2 Managerial Implication

This study serves as an important of Learning Management System (LMS) related to intention usage of using (BBS) in Saudi universities. The outcomes of this research provide guidelines to use (BBS) in a better way with respect to Saudi. The outcomes of this research provide strategies on the way in which the management quality can provide and better the perceptions (BBS) factors and benefits in teaching of the teachers in the public universities of Saudi.

Moreover, a practical consequence of our research is the finding that the parameters like (Performance Expectancy, Effort Expectancy, Social Influence and facilitating conditions) have a positive impact on the behavioural intention of using (BBS). The previous studies have indicated that the top management, especially the CEO (chief executive officer), could influence the behavioural intention of using (BBS) which subsequently influences the performance of the lecturers as well as the student's satisfaction (Chau and Hu, 2001; Venkatesh et al., 2003). Our research provides a viable means for the top managers to accomplish that. In particular, the top managers may motivate the teachers to adopt (BBS) in the classroom and incorporate it into their style of teaching. Additionally, our research indicates that PE, EE, SI and FC, to some degree; replace each other in influencing the intention of using (BBS) among the lecturers. Hence, the universities of Saudi with low behavioural intention (BI) of using (BBS), at least as far as the lectures are concerned, should be strongly motivate the teachers to accept and use the (BBS).

### 5.3 Limitation and Future works

With any research study, there are mostly some limitations to its overall scope. The first shortcoming of this research is that the cross-sectional data design



makes it tough to provide perfect conclusions as regards causality. Nonetheless, since this study had to determine a sensitive subject such as the candidates' behavioural intention (BI) (Randall & Gibson, 1990), absolute anonymity was required (Randall & Fernandes, 1991), which makes it tough to perform a longitudinal assessment (e.g. Podsakoff, 2003). Hence, the longitudinal assessment is needed in that context. Second, limitation of this research is in the data. In this research, our data is obtained from a single source. Even though we have employed remedies recommended by Podsakoff et al., (2012), we cannot discard CMB entirely. Besides the potential effects of CMB, the precision of our empirical results may also be influenced because we utilised self-reported data to determine the behavioural intention which is a rather complex problem. Due to this, we cannot entirely discard the social desirability response prejudice. Future studies, whenever possible, could gather data from several sources and ask students, peers or the supervisors to determine to what extent the teachers use BBS in their teaching.

Another limitation, since we found some universities are specially the top public universities already utilized the BBS in their teaching. Thus, the future research may focus on the actual usage more than the intention. Finally, which is the most importantly, the femininity concerns are dominant in Saudi Arabia where the education of males and females is conservatively segregated (Al-Jarf, 2008; Alhaysony, 2017). Where the departments are mixed of males and females. As mentioned by the previous research females' students were more optimistic than men students concerning e-learning (Almazroui et al., 2012; Binsahl, & Chang, 2012; Al Alhareth, et al., 2015). Thus, future research may see the difference between gender in this context.

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