Mobile learning by English literature students: the role of user satisfaction

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Article Info	ABSTRACT
Article history: Received Dec 4, 2020 Revised Mar 30, 2021 Accepted Dec 19, 2021 *Keywords:* Effort expectancy M-learning Performance exepctancy Subjective norms UTUAT	The purpose of this study is to determine the predictors of using mobile learning (ML) among English literature students in Iraq. This study assumes that variables of UTAUT such as effort expectacny (EE) and performance expectancy (PE) as well as the subjective norms (SN) from theory of planned behavior (TPB) will affect the behavioral intention (BI) to use ML. BI and availability (FC) will affect the actual use (AU). In addition, user satisfaction is proposed as a mediating variable between PE, EE, and SN with BI. Data of this study was collected using a questionnaire from 240 undergraduate students. The data was analyzed using PLS. The findings showed that PE, EE and SN are important factors for the BI of ML. BI and FC significantly affected the AU. User satisfaction mediated only the effect of PE and EE on BI. Easier processes and instruction must be provided by univeristies to enhance the adoption of ML among English literature students.

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1. INTRODUCTION

Mobile learning (ML) is a new and advance technology that its importance has further increased in the time of COVID 19. It is defined as any learning that occurs over the internet using mobile and distance learning [1]. This kind of learning has gained attention again after the outbreak of COVID 19. Several universities around the world are using distance learning to keep their students and academic staff safe [2]. ML is important and beneficial for students and lecturers because it allows learning at anytime from anywhere providing that there is an internet connection and a device such as smartphone to access the internet [3]. ML is widely used in developed countries because these countries enjoy high speed of internet and well-established infrastructure. These are the facilitating conditions that help in using the technology. However, when it come to developing countries and in particular to Iraq, the use of ML is limited and this is due to several issues such as the perception of students about the benefit and the easiness of using the ML as well as the strength of the infrastructure and the internet connection along with the user satisfaction with the technology [4]-[6].

Among the technology acceptance model (TAM) and unified theory of acceptance and use of technology (UTAUT) are highly used in the literature of technology adoption [7]. TAM had been used by most of previous studies and has limitations regarding the explanatory power. It can explain only half of the behavior [8]. On the other hand, UTAUT which has higher explanatory power was utilized in limited number of studies [9]. For this reason, other theorist suggested to include additional variables that can help in

increasing the explanatory power of the model [10]. Information system success (IS success) predicted that the use of technology is affected by the quality and satisfaction with the service [11]. In addition, the subjective norms (SN) of others on the users is a critical factor for using a technology. An important contextual factor, in the case of Iraq, is the facilitating condition (FC) of the ML [12].

Among the significant application of ML is to practice and master a new language either for fun or because studying the language such as in the English literature studies. Majority of specialist and non-specialist use the internet and mainly the application in the phone to learn English. English is the language of business and academic research. The importance of English is increasing because it is the language of the science, medicine, tourism, and other fields. In this process, students around the world are studying English as a second language. The use of ML for learning English among undergraduate students has not been widely investigated in developing countries [13], [14]. The fluency of English of the students is low and more practices are needed to strengthen several parts and in particular the speaking and the pronunciation of words correctly. Accordingly, this study aims to examine the factors that affect the use of ML among undergraduate English language literature students in selected universities in Iraq. Iraq is still in the stage of rebuilding and developing the basic infrastructure such as the electricity and the internet connection. However, telecommunication companies in the country are doing well by providing high speed internet and there is a need to examine the factor to understand the enablers of using the technology among students. In the following sections, the literature is discussed followed by the hypothesis's development, methodology, findings, discussion and conclusion.

2. LITERATURE REVIEW AND CONCEPTUAL MODEL DEVELOPMENT

ML as well as the theoretical framework of this study along with the proposed framework are discussed.

2.1. Mobile learning

ML is a method that is used to connect and attend classes over the internet and using a mobile device [15], [16]. The wide spread of mobile is obvious over the use of laptop and PC. Currently, mobile is used for checking emails, conducting online transaction and learning either by using applications or by attending classes [17], [18]. The use of ML receive much attention during this year (2020) of the outbreak of COVID 19 and the interest is projected to grow due to the consequence of the outbreak [19]. Smartphone now days can do all the function of a computer and their usage in everyday life activities is obvious. Nevertheless, in Iraq, the adoption of technology still in the range of 20% and students have preference to the traditional method [16], [17], [20]. For this reason, the study will attempt to identify the factor that affect the adoption of ML among Iraqi students.

2.2. Theoretical framework

Several theories have been used in the literature of technology adoption. Among the theories, the use of TAM is obvious. However, one of the most comprehensive model is the UTAUT, which predicts that the use of the technology is affected by effort expectancy (similar to PEOU in TAM), performance expectancy (similar to PU in TAM). SNs in TPB and FC [8] are included in this study. IS success proposed that the satisfaction with the service is critical for the usage of a technology [11]. Thus, in this study, the key variables of UTAUT such as the EE, PE, FC as well as the variable of TPB such as SN, and USS from IS success are proposed as important variables to affect the usage of ML by undergraduate English literature students in Iraq.

2.3. Conceptual framework and hypotheses development

The literature focused largely on using TAM for technology adoption. In this study, TAM along with other theoretical frameworks are used to develop the conceptual framework. EE and PE are proposed to have direct effect on behavioral intention (BI). In addition, the SN from TPB is expected to have a direct effect on BI while FC and BI are expected to directly affect the actual use (AU). USS is expected to mediate the effect of EE, PE, and SN on BI. Figure 1 shows the conceptual framework.

2.3.1. Performance expectancy and BI

PE is defined as the benefits and privileges that a user can gain from using a technology or a new system [21]. UTAUT proposed that the PE is important variable in the technology usage. In the context of ML, the PE of ML in accessing high quality content of learning material is important for the students to use the technology [18], [22]. Prior literature found that the PE has a significant effect on the BI to use ML [23]-[26]. In this study, it is proposed that PE will have a positive effect on BI to use ML by Iraqi undergraduate English literature students.

H1: PE affects positively the BI to use ML

2.3.2. Effort expectacny and BI

The easiness in using the ML is referred to as EE [21]. EE is critical for using any new systems [27], [28]. Clear and simple instructions regarding the usage is important for students to deploy the ML [15], [16], [29]. TAM proposed that EE is a critical factor for the usage of a technology. Previous studies that deployed TAM found that the EE is essential variable for the use of technology such as ML [23]-[26], [29]. In this study, EE is expected to have a positive effect on the BI to use ML.
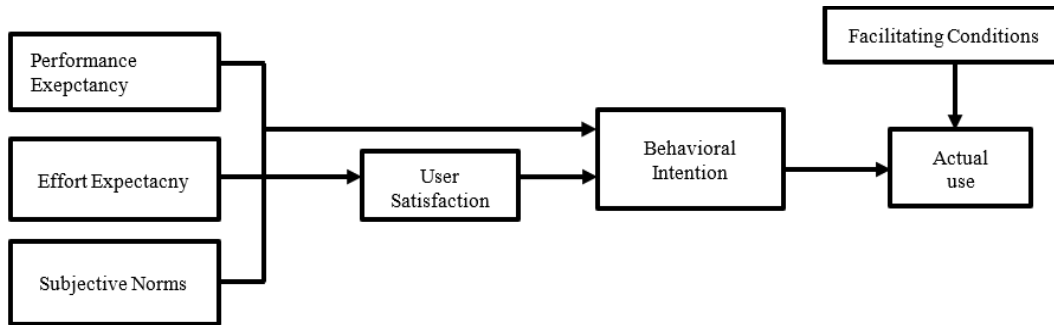
H2: EE affects positively the BI to use ML

Figure 1. Conceptual framework

2.3.3. Subjective norms and BI

The effect of others such as classmate, lecturers, family member, and experts on the decision of students to use ML is known as the SN [30]. TPB indicates that SN at the early stage of introducing new technology is weak and strengthen over time after the spread of the technology [8]. Several studies found that the effect of SN on BI is positive and significant [31], [32]. On the other hand, some of the previous studies indicates that the effect is not significant and it requires more time to feel the effect of others on the decision of the users [33]. In this study, SN is proposed to have important effect on the BI to use ML by Iraqi undergraduate English literature students.

H3: SN has a positive effect on the BI to use ML.

2.3.4. BI and AU

BI refers to "the positive or negative feelings toward using the technology while the AU refers to the action of using or not using the technology" [21], [8]. TAM and UTAUT proposed that the BI is a predictor of AU. Other studies that deployed TAM or UTAUT found that the BI is critical for the AU [34]-[36]. In this study, it is proposed that the BI will have a positive effect on the AU to use ML by Iraqi undergraduate English literature students.

H4: BI affects positively the AU of ML.

2.3.5. Facilitating conditions and AU

FC refers to the ability to access the ML from anywhere at any time using mobile device [37]. TOE proposed FC as a technological factor and has the ability to determine the usage of a technology. Several previous studies indicates that the FC of infrastructure, internet connection and other factors helps in predicting the AU of a technology [38]-[40]. In this study, FC is proposed to have a direct positive effect on the AU of ML.

H5: FC affects positively the AU of ML.

2.3.6. Mediating role of USS

USS is defined as "an affective state that is the emotional reaction to the entire CC experience of a user" [41]. USS with cloud services investigated in few studies [42]. A high quality cloud services is more preferable for active users than low quality services [42]. DeLone and McLean [43] developed the information system success. The authors highlighted the importance of USS with the electronic services to adopt the technology. Researchers have implemented the model of [43] and confirmed the importance of USS for technology acceptance [44]-[46].

Kang et al. [47] proposed that USS with electronic service affects the BI to use electronic services. Park and Ryoo [48] investigated the intention of users to switch toward electronic services and found that USS with the cloud services is an important predictor of the intention to switch to the services. Park and Kim [49] found the USS can mediate the effect among variables. Burda and Teuteberg [41] indicated that satisfaction is critical for trust and PE of cloud.

There are lack of studies that deal with the mediating role of USS. In the study of [50], [51] USS was found as a mediating variable between quality and the use of electronic systems. Thus, in this study, USS is proposed as a mediating variable between PE, EE, and SN with BI.

H6: USS mediates the effect of PE on BI to use ML

H7: USS mediates the effect of EE on BI to use ML

H8: USS mediates the effect of SN on BI to use ML

3. METHODOLOGY

This study is a quantitative in nature. A questionnaire was sent to the universities that have agreed to help in the process of data collection. The English literature students in these four Iraqi universities (University of Babylon, University of Kerbala, University of Kufa, University of Wasit) are the population of this study. These four univeristies are the largest in the south of Iraq. In the four universities, there are 3913 English literature students. Thus, these 3913 students are the population of this study. To represent this population, the sample was chosen randomly. This is because the population is homogenous [52]. According to [53], the sample size for a population of 3913 is 350 respondents. The data is collected using a questionnaire. Measurement of the variables were adopted from previous studies. PE (4 items), EE (4 items), BI (5 items), AU (3 items) were adopted from [21]. SN (5 items) was adopted from [54] FC (4 items) was adopted from [55] and USS (4 items) was adopted from [50]. The measurement was validated by three PhD holders with experience of using ML and technology adoption and a pilot study was conducted to ensure that the measurements are reliable.

An online questionnaire was sent to students in the four Iraqi universities. The lecturers and the management of the universities were asked for help in distributing the questionnaire. A total of 255 questionnaires were collected. This made the response rate accounts to 72.8%. These responses are sufficient for the use of partial least square (PLS) [56]-[59]. The data examination was conducted to ensure that the data is ready for further analyses and to meet the assumption of structural equation modeling (SEM) analysis. Missing value was assessed using the frequency analysis. A total of 11 responses were deleted due to missing value issue. Outlier was examined and it was found that there is four outliers. This makes the complete and usable dataset account to 240 responses. The normality of the data was examined using Skewness and Kurtosis. Value of Skewness and Kurtosis were greater than absolute 2. For the multicollinearity, the value of tolerance and variation inflation factor (VIF) has met the assumption indicating that there is no collinearity issues.

4. FINDINGS

Findings of this study are discussed in this section. It includes the background information of the respondents are given as well as the analysis of smart PLS.

4.1. Profile of respondents

A total of 240 undergraduate students have participated in this study. Majority of the respondents (87.5%) are younger than 25 years. The respondents are males (78.8%) who are doing studies in the level of bachelor's degree and have experience of using the ML between 3 to 7 years (74.5%).

4.2. Measurement model

In PLS, the models are assessed by assessing factor loading (FL), reliabilities and validities [60]. FL for all the variables is greater than 0.70 except for item SN2 form SN, BI1 from BI, EE3 from EE, and FC3 from FC. After deleting the items with low FL, the indices were achieved except for GFI=0.878. However, [60] pointed out that if three of the indices are achieved, they are considered sufficient. In term of the cronbach's alpha (CA), and composite reliabilities (CR), both reliabilities are greater than 0.70. The average variance extracted (AVE) for all the variables is greater than 0.50 indicating that the convergent validity is achieved. For the discriminant validity, it is achieved because the square root of AVE is greater than the cross loading. Table 1 shows the results of assessing the measurement model.

Table 1. Reliabilities and validities of the measurement model.

	CA	CR	AVE	AU	BI	EE	FC	PE	SN	USS
AU	0.91	0.94	0.79	0.89						
BI	0.89	0.93	0.81	0.45	0.90					
EE	0.94	0.96	0.84	0.36	0.48	0.92				
FC	0.88	0.92	0.74	0.21	0.26	0.13	0.86			
PE	0.92	0.95	0.81	0.29	0.50	0.62	0.09	0.90		
SN	0.84	0.90	0.76	0.36	0.48	0.57	0.23	0.58	0.87	
USS	0.89	0.93	0.82	0.43	0.51	0.42	0.34	0.44	0.45	0.91

Note: PE: perceived usefulness, EE: perceived ease of use, SN: subjective norms, USS: user satisfaction, FC: facilitating conditions, BI: behavioral intention, AU: Actual use, CR: cronbach's alpha, CR: composite reliability, AVE: average variance extracted.

4.3. Structural model

In assessing the structural model there are two important criteria that are the R-square and the path coefficient [60]. The value of R-square 0.25, 0.50, 0.75 is considered weak, moderate, and substantial respectively. In this study, the R-square accounted to .73 indicating that 73% of the variation of AU can be explained by the variables of this study. The structural model of direct effect and mediating model were examined. Figure 2 shows the structural model of this study. It can be seen that all the indices were achieved.
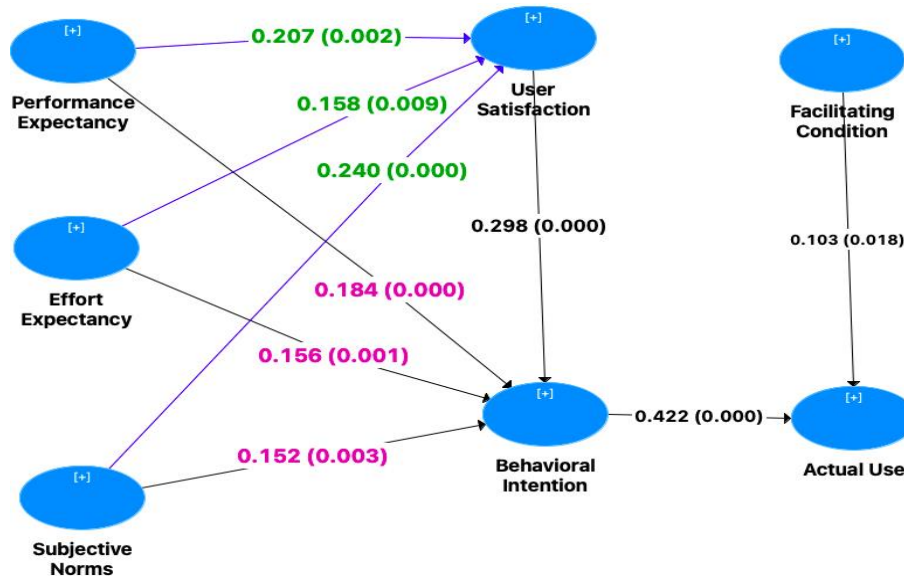
Figure 2. Structural model

4.4. Results of hypotheses

This study included direct and mediating effect hypotheses. The direct effect was examined first followed by the mediating effect. Table 2 shows the results of testing the hypotheses. For the effect of PE on BI, the finding in Table 2 shows that it is significant. Similarly, for the EE and SN they have important effect on the BI of the students suggesting that H2 and H3 are supported. For H4 and H5 they are also supported because the effects of BI and FC on AU are significant. The mediator was tested by comparing the direct effect with the indirect effect. The results show that there is a mediation. However, the mediation is partial. Thus, H6 is partially supported. For H7, it also shows that USS partially mediated the effect of EE on BI. In addition, USS did mediate the effect of SN on BI. This is because the indirect effect is significant. Thus, H8 is supported.

Table 2. Results of hypotheses testing

		β	StD.	T-value	P values
Direct effect					
H1	PE -> BI	0.18	0.05	3.49	0.00
H2	EE -> BI	0.16	0.05	3.42	0.00
H3	SN -> BI	0.15	0.05	2.98	0.00
H4	BI -> AU	0.42	0.05	9.37	0.00
H5	FC -> AU	0.10	0.04	2.36	0.02
Indirect effect					
H6	PE -> USS -> BI	0.06	0.02	2.82	0.00
H7	EE -> USS -> BI	0.05	0.02	2.37	0.02
H8	SN -> USS -> BI	0.07	0.02	3.42	0.00

5.   DISCUSSION AND IMPLICATIONS

The current study aimed to find the factors that impact the undergraduate English literature students to deploy the technology of ML in learning English language. Based on existing theories and frameworks, this study proposed that PE, EE, SN will have a direct effect on BI. In addition, the study proposes that BI and FC will affect the AU. USS was proposed as a mediating variable between PE, EE, SN and BI. The data was collected from 240 undergraduate students. The findings using PLS showed that the effects of PE, EE, and SN on BI are positive and significant. These finding are in line with the TAM model which proposes that PE and EE are critical for the usage of a technology. they are also in line with the findings of previous studies

[23]-[26], [29]. The findings indicates that the PE is essential for students. Universities are recommended to increase the benefits and the way of teaching English for students. This can be by including material that enhances the learning such as to include short movies with clear English and subtitle. Universities also can include quiz, exercises, and increase the students' participation in a class using the ML so that the students can better perceive the benefit from ML.

The EE is also critical factor for the ML. Universities in Iraq are advised to ease the process of log in as well as the process of downloading and uploading files using the ML. The easier the system, the more positive BI will be generated by the students. SN is also among the important variable for using ML. It seems that the ML has its base in Iraq and the effect of SN on the BI is significant. This indicates that peers, classmate, lecturers, and management of the universities are in favor of using the ML and has to some degree influence on the decision of students to use the technology. However, the effect of SN on BI is lower compared with PE and EE. This finding is in line with the UTAUT which predicts that the effect of SN in the introduction phase of the technology is low, and it strengthens over time. For the FC and BI, they have a significant critical effect on the AU. FC is important in the context of Iraq. The ability to use the ML from anywhere at any time is vital for using the technology and it requires to be supported at the university and government level. High speed internet should be provided in the campus and the government should ensure that electricity and internet are available for students in their houses and campus of the universities. The findings are in line with the IS success model, which predicted that USS with the technology is important for the increase in the use of the technology.

6. CONCLUSION

This study was conducted in Iraq among undergraduate students of English literature. The findings showed that PE is the most important factor followed by EE and SN. FC as well as BI affected the AU while USS mediated partially the effect of PE and EE on BI. The finding is limited to the perception of undergraduate English literature students. It is also limited in term of sample size to 240 students. However, these responses are sufficient for the use of PLS. Only four universities were included in this study due to the time and the FC. As a future work, it is suggested that research should examine the use of ML among other students in other filed. Researchers are also suggested to include more universities such as private and public universities. More studies are needed in developing countries to assess the goodness of ML and the predictors of the wide usage of this technology.

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