

The readiness of Iraqi EFL teachers to use mobile learning in teaching English in schools

Ibtihal Hassan Mussa¹, Nurhasmiza Abu Hasan Sazalli²

¹Alrahma school, Directorate of Education-Karbala, Ministry of Education, Catonsville, Iraq

²Faculty of Social Sciences and Humanities, Universiti Teknologi Malaysia, Johor Bahru, Malaysia

Article Info

Article history:

Received Oct 20, 2020

Revised Aug 26, 2021

Accepted Sep 8, 2021

Keywords:

English foreign language

M-learning

Social cognitive theory

TAM

UTAUT

ABSTRACT

The importance of mobile learning (M-learning) has increased during the outbreak of Coronavirus disease 2019 (COVID-19). Level of English foreign language (EFL) teachers to use the technology should be assessed to understand the perception and readiness of EFL teachers to use M-learning. Building on existing literature, this study proposed that performance expectancy, effort expectancy, social influence and facilitating condition will affect positively the readiness to use M-learning. The study also proposed attitude as a mediator and technology self-efficacy as a moderator. The data was collected from 163 EFL teachers in Iraq. The findings showed that facilitating condition, performance expectancy, effort expectancy, and social influence affected positively the readiness to use M-learning. Attitude fully mediated the effect of performance expectancy, effort expectancy, social influence on readiness to use M-learning. Technology self-efficacy did not moderate the effect of the variables but it has a significant direct effect on readiness to use M-learning. Decision makers are recommended to enhance the infrastructure and to initiate training courses to enhance the information technology knowledge of the EFL teachers.

This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



Corresponding Author:

Ibtihal Hassan Mussa

Alrahma school

Directorate of Education-Karbala

Ministry of Education, Catonsville, Iraq

Email: ibtihal_hassan@karbala.edu.iq

1. INTRODUCTION

In the last ten years, the advancement in mobile technology has changed the way of doing business as well as education [1]. Mobile learning (M-learning) has become an integral part of the educational system. This importance of M-learning has boomed in the last few months due to the wide spread of Coronavirus disease 2019 (COVID-19) and the shift of governments toward online learning [2]. In this environment, the readiness of teachers to use M-learning for teaching English foreign language (EFL) as a second language needs to be assessed [3]. This is because the teachers perception and readiness to use the M-learning is important for the success of the EFL teaching and learning [4]. It is also essential and useful in enhancing the EFL capabilities of students [5].

Studies indicate that teaching and learning EFL has become easier with the use of M-learning [6]. M-learning has a great potential to be the dominant model of teaching all subjects. It is flexible and allows teachers and students to attend and participate in classes at anytime from anywhere [7]. M-learning is defined as “any learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies” [8].

Despite the need of M-learning currently, prior literature indicate that the readiness of EFL teachers to use technology in teaching is still weak or moderate [9], [10] and they related the reasons to the lack of information technology (IT) skills and the perception of teachers regarding the M-learning [11]. Nevertheless, previous studies indicated that there are differences in the level of knowledge and self-efficacy of using the technology among teachers and this could attribute to the level and perception of readiness toward using M-learning for teaching EFL [12], [13].

Against this background, prior literature tends to be descriptive in nature. Most of previous studies attempted to describe the level of readiness without examining the causality between predictors or antecedents of the readiness of EFL teachers to use the M-learning [3], [14], [15]. Prior literature also focused on the readiness of students while the teacher who is the core of the educational process has received less attention [16], [17].

Among the studies that have examined the readiness, the overwhelming majority has deployed the technology acceptance model (TAM) [18]. A meta-analysis study found that TAM has dominated the field of M-learning and it can explain 40% of the behavioral intention (BI) of EFL teachers [17]. Other studies pointed out that unified theory of acceptance and use of technology (UTAUT) is better than TAM and it can explain 70% of the variation in BI and readiness of EFL teachers [19]. In addition, theories such as social cognitive theory (SCT) predicts that there are predictors that are linked to human factors as well as cognitive factors and environmental factors that lead an individual to perform a specific behavior [20]. A combination of these theories can enhance the predictability of the readiness of EFL teacher to use M-learning [21].

Nevertheless, previous studies carried out in developed countries while studies in developing countries are limited [22]. During the COVID-19, all countries adopted the online learning and there is a need to examine the readiness not only in the developed but also in the developing countries. In Iraq, the government refrained from practicing the traditional learning to stop the spread of COVID-19. Schools and teachers are instructed to do online teaching. The wide majority of people access the material using the mobile. However, it is not known to what degree the teachers are ready and can cope with the shift of teaching EFL using M-learning. Consequently, this study aims to identify the predictors of readiness of EFL teachers to use M-learning in Iraqi public schools. The coming sections elaborates on the literature reviews, methods, results, discussion, and conclusion.

2. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

In this section, the M-learning as well as the theoretical framework and conceptual framework are discussed. The sections starts by discussing M-learning and its applications. The section also discusses the theoretical framework of this study. Lastly, the conceptual framework and the hypotheses development are discussed.

2.1. Mobile learning

The introduction of the internet during last century has revolutionized all the aspect of life, business, and education [23], [24]. Internet has created new ways of learning, searching, and educating. In the 2010s, the smartphone has emerged and provided users with access to educational materials [25]. Using the Smartphone, the M-learning has the potential to enhance the educational process and system. It has been used in educating and learning by wide population around the world [7]. Researchers are with the opinion that the usage and readiness of using M-learning requires to examine the psychological side of the users. For this reason, they suggested that the M-learning should be designed to suit the human behavior. Positive attitude toward M-learning leads to using the technology [26]. This study looks into the readiness of using M-learning by EFL teachers since the technology has become essential for teaching EFL in Iraq.

2.2. Theoretical framework

TAM is a dominant acceptance model that has been used by most of previous studies to examine the readiness, acceptance, and adoption of M-learning by EFL teachers [17], [27]. TAM includes the ease of use and usefulness as well as the attitude. Nevertheless, TAM was criticized on the ground of its explanatory power as it can explain only 40% of the BI while UTAUT can explain 70% [19]. UTAUT includes variables of performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). The SCT pointed out that the human behavior is determined by three group of factors that include personal, environmental and behavioral factors. Self-efficacy and skills are among the behavioral factors while knowledge, attitude and expectation are personal factors. The environmental factors include the social norms and the influence of others [20].

These three theories has similar variables. For instance, the ease of use is similar to EE and usefulness is similar to PE [28]. Attitude is a variable in TAM and SCT while influence of others is existed in

UTAUT and SCT. Therefore, in this study, the variables of UTAUT namely, PE, EE, SI as well as FC are included. Attitude is proposed by TAM as a mediating variable and in this study, it is included as a mediator. Self-efficacy from SCT is a moderating variable. Thus, the study combines the three theories to enhance the explanatory power of the model and predict the readiness of EFL teachers to use M-learning in Iraq.

2.3. Conceptual framework

Based on the theory of TAM and UTAUT as well as the SCT, the readiness of individual to use a new system such as M-learning could be determined by the benefits and efforts as well as the effect of others on the individual (SI). In addition, the infrastructure and the equipment that are required to use the technology are essential to make the use a reality. The FC that helps in using the technology is important. A determining variable is the attitude toward the technology. Self-efficacy in using the technology is an essential for using M-learning. Based on the theories and the existing literature, this study proposes that PE, EE, SI, and FC will have a direct effect on the readiness to use M-learning by EFL teachers in Iraq. The study proposed that this effect will be mediated by the attitude of EFL teachers and moderated by their technology self-efficacy. Figure 1 shows the proposed model.

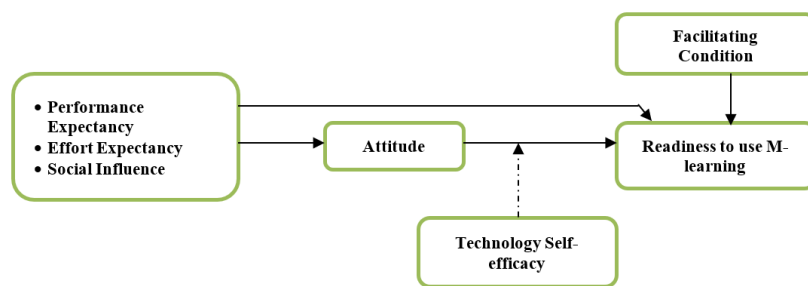


Figure 1. Proposed model

2.3.1. Performance expectancy and readiness

PE is the perceived benefits from using a system. Several studies indicated that high level of PE is important for encouraging EFL teachers to use M-learning. For instance, in the study of [19], PE affected significantly the use of M-learning by EFL teachers. Other studies that deployed TAM used the usefulness which is similar to PE and found that this variable has an important effect on the use of M-learning by EFL teachers [3], [14], [15]. In this study, the PE is expected to affect positively the readiness of EFL teachers to use M-learning. Thus, it is hypothesized. H1: PE affects positively the readiness of EFL teachers to use M-learning.

2.3.2. Effort expectancy and readiness

EE refers to the physical and mental efforts needed by an EFL teachers to use M-learning. Positive perception about the EE is important to enhance the BI to use M-learning [17]. In the study of [7], EE affected the readiness of EFL teachers. Similarly, in the study of [19], EE also found to have significant effect on the use of M-learning by EFL teachers. Other studies that deployed the TAM model such as [15], [14] found the ease of use affected positively the readiness and acceptance of M-learning by EFL teachers. Consequently, it is proposed that EE will affect the readiness of EFL teachers in Iraqi schools. Therefore, it is hypothesized. H2: EE affects positively the readiness of teachers to use M-learning.

2.3.3. Social influence and readiness

SI is the effect of others on the decision of EFL teachers to use M-learning. Several studies found that the effect of SI on readiness and acceptance of M-learning is positive and significant [19]. UTAUT theory suggested that the SI is important variable for the use of a technology [28], [29]. In addition, the theory of SCT indicates that SI is important for affecting the human behavior [20]. Based on the above, it is expected that SI will have a positive effect on readiness of EFL teachers to use M-learning. Thus, it is hypothesized. H3: SI affects positively the readiness to use M-learning by EFL teachers.

2.3.4. Facilitating condition and readiness

FC is the infrastructure and organizational support for using the M-learning by EFL teachers. UTAUT proposed that FC is critical and essential for any use of a new technology. Previous studies found that FC is an important predictor of using and accepting a technology [7], [13], [17]. In the study of [19], [30], [31], FC has a

positive significant effect on the readiness and acceptance of M-learning by EFL teachers. Thus, in this study, FC is expected to have a positive effect on readiness of EFL teachers to use M-learning. Hence, it is hypothesized. H4: FC has a significant positive effect on the readiness to use M-learning by EFL teachers.

2.3.5. Mediating roel of attitude

Attitude was proposed in several theories as an important variable. For instance, in the theory of planned behaviour (TPB) by [32], attitude was proposed as a predictor of BI. However, in the TAM model, the variable was proposed to mediate the effect of ease of use and usefulness on BI [18]. Attitude was found to mediate the effect of PP and EE on adoption of cloud computing [33]. It is also a mediating variable in the study of [34], [35] where attitude mediated the relationship among the variables. In this study and based on TAM, attitude is considered as a mediating variable. Thus, it is hypothesized. H5: Attitude mediates the effect of PE on readiness to EFL teacher to use M-learning. H6: Attitude mediates the effect of EE on readiness to EFL teacher to use M-learning. H7: Attitude mediates the effect of SI on readiness to EFL teacher to use M-learning.

2.3.6. Moderating role of technology self-efficacy

Technology self-efficacy (TSE) is the ability of EFL teachers to use the M-learning [36]. TSE differs among teachers and this creates differences in their perceptions about M-learning [12]. It is one of the most important variables when it comes to assessing the willingness of EFL teachers to use a technology [13]. Low TSE is the reason behind not using the technology among teachers [9]. Level of information and communication technology (ICT) is a determinant factor in using technology among teachers [10]. In the study of [31], TSE was found as an important variable to affect the BI to use M-learning. Few studies examine the moderating effect of TSE. For example, in the study of [37], TSE moderated the effect of usefulness on continuance intention to use the technology. In this study, TSE is expected to moderate the effect of PE, EE, and SI on RUML. Accordingly, it is hypothesized. H8: TSE moderates the effect of PE on readiness of EFL teacher. H9: TSE moderates the effect of EE on readiness of EFL teacher. H10: TSE moderates the effect of SI on readiness of EFL teacher.

3. METHODOLOGY

The population of this study is the teachers of EFL in Iraqi public school. Particularly, teachers in the public schools of Karbala are the respondents of this study. The reason for choosing those teachers is due the fact that the schools in Karbala are moving to distance learning and the usage of online learning compared with major city such as Baghdad, the capital of Iraq is low in Karbala schools. There are 712 EFL teachers in public schools. The sampling technique in this study is random. Thus, to determine the sample size, the study deployed the formula given by [38]. A questionnaire adopted from previous studies was used to collect the data. The measurement of EE, PE, SI and FC were adopted from [28], [39]. Measurement of attitude and self-efficacy were adopted from [17], [40] and readiness to use M-learning was adopted from [40].

Two academic staff with PhD degrees and adequate experience of more than 10 years in technology adoption validated the questionnaire and a pilot study was conducted to confirm the reliability. A total of 250 questionnaires were distributed using online questionnaire in English and Arabic languages. The data was collected from 176 teachers. Missing value were checked as well as outliers resulting in deleting 13 responses. Data was normally distributed, and it has no multicollinearity issue. The complete and usable response is 163 with response rate of 65.2%.

4. FINDINGS

4.1. Profile of the respondents

The respondents of this study are teachers of EFL. A total of 163 teachers have participated in this study. Out of which, 98 (60%) are males. The respondents ranged between 30 and above 50 years old with experience between less than 5 years and above than 20 years. The respondents are still in their middle career, and this can be noted from the experience of 57.1%, which is less than 15 years.

4.2. Measurement model

The data of this study processed using smart partial least square (smart PLS). In this analysis, there are two levels. The first is the measurement model and it is assessed by looking at the factor loading (FL), reliabilities such as cronbach's alpha (CA) and composite reliability (CR). In addition, average variance extracted (AVE) is used to assess the convergent validity [41], [42]. Based on the cut off value of FL, some of the items such as AT2, EE1, PE1, and FC4, were deleted due to low FL. The criteria of CA, and CR were

achieved because the values of CA and CR are greater than 0.70 as shown in Table 1. In addition, the convergent validity is achieved because the value of AVE are greater than 0.50. The last criteria is to assess the discriminant validity. Researchers suggested that the discriminant validity is achieved if the square root of the AVE is larger than the cross loading of the variables [41], [42]. In Table 1 it can be seen that the square root of AVE underlined as shown in Table 1, is greater than the cross loading indicating that the discriminant validity is achieved. Thus, based on Table 1, it is concluded that all the criteria of assessing the measurement model were achieved. The second level of smart PLS is the structural model.

Table 1. Result of assessing the measurement model

| | CA | CR | AVE | AT | EE | FC | PE | RUML | SI | TSE |
|------|------|------|------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| AT | 0.95 | 0.96 | 0.83 | <u>0.91</u> | | | | | | |
| EE | 0.90 | 0.92 | 0.71 | 0.40 | <u>0.84</u> | | | | | |
| FC | 0.94 | 0.96 | 0.90 | 0.46 | 0.31 | <u>0.95</u> | | | | |
| PE | 0.91 | 0.94 | 0.79 | 0.42 | 0.42 | 0.29 | <u>0.89</u> | | | |
| RUML | 0.94 | 0.96 | 0.82 | 0.58 | 0.37 | 0.61 | 0.38 | <u>0.90</u> | | |
| SI | 0.94 | 0.95 | 0.81 | 0.51 | 0.26 | 0.24 | 0.37 | 0.31 | <u>0.90</u> | |
| TSE | 0.84 | 0.88 | 0.64 | 0.48 | 0.32 | 0.50 | 0.45 | 0.69 | 0.35 | <u>0.80</u> |

4.3. Structural model

To assess the structural model, researchers suggested to examine the R-square (R^2), which is acceptable if it is greater than 0.25 while the F-square (f^2) or the effect size is acceptable if the value is greater than 0.02. Q-square (Q^2) or predictive relevance should be greater than zero. The path coefficient is acceptable if the P-value is less than 0.05 [41], [43]. Figure 2 shows the structural model of the direct and mediating effect.

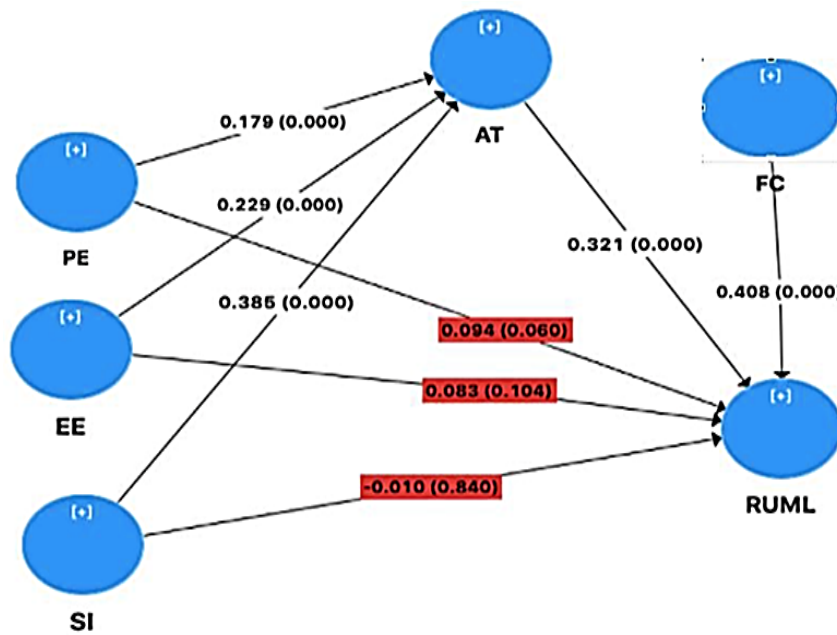


Figure 2. Structural model

Table 2 presents the findings of evaluating the structural model. It shows the hypotheses testing for the direct effect of PE, EE, SI, FC on the readiness to use M-learning (RUML). It shows also the results of testing attitude (AT) as a mediator and TSE as a moderator. The table shows the hypothesis (H), path coefficient (B), standard deviation (Std), t-value (T), p-value (P), as well as the F-square (F^2), Q-square (Q^2), and R-square (R^2). The models were able to explain 61% in the variation of readiness to use M-learning. All the Q^2 are greater than zero supporting the notion that the independent variables are capable of predicting the dependent variables. The f^2 of some paths were rejected due to the notion that the related hypothesis are rejected as well. This is in line with the suggestion of previous studies [44], [45].

Table 2. Results of testing the structural model

| H | | B | Std | T | P | f ² | Q2 | R2 | Significance |
|-----|-----------------|------|------|-------|------|----------------|------|------|--------------|
| H1 | PE -> RUML | 0.14 | 0.05 | 2.71 | 0.01 | 0.04 | 0.59 | 0.43 | Yes |
| H2 | EE -> RUML | 0.14 | 0.05 | 2.75 | 0.01 | 0.04 | | | Yes |
| H3 | SI -> RUML | 0.10 | 0.05 | 2.05 | 0.04 | 0.03 | | | Yes |
| H4 | FC -> RUML | 0.50 | 0.05 | 10.36 | 0.00 | 0.38 | | | Yes |
| H5 | PE -> AT-> RUML | 0.07 | 0.02 | 3.04 | 0.00 | 0.04 | .57 | .61 | Yes |
| H6 | EE -> AT-> RUML | 0.09 | 0.02 | 3.52 | 0.00 | 0.07 | | | Yes |
| H7 | SI -> AT-> RUML | 0.15 | 0.03 | 4.79 | 0.00 | 0.20 | | | Yes |
| H8 | TSE*PE -> RUML | 0.00 | 0.06 | 0.06 | 0.96 | 0.00 | .46 | 0.58 | No |
| H9 | TSE*EE -> RUML | 0.00 | 0.05 | 0.08 | 0.93 | 0.00 | | | No |
| H10 | TSE*SI -> RUML | 0.01 | 0.06 | 0.20 | 0.84 | 0.00 | | | No |
| | TSE -> RUML | 0.48 | 0.05 | 9.59 | 0.00 | 0.35 | | | Yes |

4.4. Hypotheses testing

The findings in Table 2 show that the direct effect hypotheses were all accepted. The effect of PE, EE, SI and FC on RUML is positive and significant indicating that the four variables of UTAUT are critical in predicting the RUML by EFL teachers in Iraq. Accordingly, H1, H2, H3, and H4 are supported. For the mediating role of attitude, the findings showed that once attitude entered in the path, the direct effect turned from significant to insignificant indicating that attitude is a full mediator between the PE, EE, and SI with RUML. Accordingly, H5, H6, and H7 are supported. For the moderating effect of technology self-efficacy (TSE), it can be seen in Table 2 that the hypotheses were rejected. Technology self-efficacy did not moderate the effect of PE, EE, and SI on RUML. However, it has a significant direct effect on RUML. Thus, H8, H9, H10 are rejected.

5. DISCUSSION AND IMPLICATIONS

This study has developed ten hypotheses and tested them to understand the predictors of the readiness of EFL teachers to use M-learning. The findings suggested that FC is the most critical factor for the RUML. This is followed by PE and EE equally and then SI. The reasons for the FC to be the most important could be due to the notion that infrastructure and equipment to use M-learning are essential in a country such as Iraq where the country are re-building its infrastructure after long period of instability. Further, the benefits of using the system is important for the teachers as well as the degree to which the use is easy and understandable by the teachers. These findings are in line with the UTAUT and TAM theory and they are also consistent with the results of prior literature i.e. [7], [14], [15], [17], [19]. Based on these results, policy makers are recommended to improve the infrastructure such as the internet speed and coverage as well as the basic requirement such as electricity. These basic requirements increase the readiness of the schools as well as the teachers to be well-equipped and ready to start the online distance teaching.

The findings also showed that attitude is a mediating variable. Attitude played a full mediator between PE, EE, SI and RUML. This indicates that EFL teachers must have a positive attitude toward M-learning to enhance their readiness and acceptance of such technology. Decision makers can educate the EFL teachers about the importance of this technology and its role in shaping their lives. This finding is in line with TAM, which proposed that attitude is a mediating variables. It is also in line with the findings of previous studies [18], [33], [35].

The finding also showed that technology self-efficacy is not a moderating variable. However, it has a strong direct effect on RUML indicating that this variable is essential for the use of M-learning. In other word, if EFL teachers have no technology self-efficacy, they will not use the technology. This is in line with the SCT theory and findings of previous studies [9], [10], [12], [13], [31], [37], [46], [47]-[49]. Decision makers are suggested to enhance the technology self-efficacy of EFL teachers. This could be by initiating a training course to educate the EFL teachers about using the M-learning and the technological applications.

The study has made a contribution to the literature by examining the readiness to use M-learning. While studies are in the phase of investigating the usage of M-learning, this study focused on the readiness due to the notion that Iraq is still in the early stage of technology adoption and usage. The study also contributed to the literature by combining UTAUT, SCT and TAM and managed to explain 59% of the readiness to use M-learning among teachers. Further, the study contributed to the literature by examining the role of self-efficacy and attitude in the context of M-learning.

6. CONCLUSION

This study was conducted in Iraq among EFL teachers to understand the predictors of readiness to use M-learning. The findings indicate that the FC, EE, PE, and SI are critical and important factors that can

determine the readiness to use M-learning by EFL teachers in Iraq. The study also found that attitude is a mediating variable and technology self-efficacy is an essential variable but not a moderating variable. EFL teachers in Karbala city participated in this study. Future studies are recommended to examine readiness of EFL teachers in different countries. In addition, future studies are suggested to examine the readiness of EFL teachers in private schools. Decision makers are recommended to enhance the infrastructure for using technology and to initiate training and workshops to increase the ICT literacy among EFL teachers.

REFERENCES

- [1] S. Alaarj, Z. Abidin-Mohamed, and U. S. B. A. Bustamam, "Mediating Role of Trust on the Effects of Knowledge Management Capabilities on Organizational Performance," *Procedia-Soc. Behav. Sci.*, vol. 235, Nov. 2016, doi: 10.1016/j.sbspro.2016.11.074.
- [2] O. B. Al-Ghraibah, "Online Consumer Retention In Saudi Arabia During COVID-19: The Moderating Role Of Online Trust," *J. Crit. Rev.*, vol. 7, no. 9, pp. 2464-2472, 2020, doi: 10.31838/jcr.07.09.399.
- [3] L. Van Vo and L. Thuy Vo, "EFL Teachers' Attitudes towards the Use of Mobile Devices in Learning English at A University in Vietnam," *Arab World English J.*, vol. 11, no. 1, pp. 114-123, 2020, doi: 10.24093/awej/vol11no1.10.
- [4] R. Metruk, "Confronting the challenges of MALL: Distraction, cheating, and teacher readiness," *Int. J. Emerg. Technol. Learn.*, vol. 15, no. 2, pp. 4-14, 2020, doi: 10.3991/ijet.v15i02.11325.
- [5] I. H. Mussa and A. S. Izkair, "The acceptance of using Mobile assisted language among EFL and ESL students," *Int. J. Contemp. Appl. Sci.*, vol. 4, no. 5, pp. 1-11, 2017.
- [6] M. Tayebnik and M. Puteh, "Mobile Learning to Support Teaching English as a Second Language," *J. Educ. Pract.*, vol. 3, no. 7, pp. 56-63, 2012, <https://ssrn.com/abstract=2279326>
- [7] A. Shamsuddin, E. Wahab, N. H. Abdullah, and A. Suratkon, "Mobile Learning Adoption in Enhancing Learning Experience among HEI students," *Proc. 2018 IEEE 10th Int. Conf. Eng. Educ. ICEED 2018*, 2019, pp. 202-207, doi: 10.1109/ICEED.2018.8626923.
- [8] J. Feser, "mLearning is not e-Learning on a mobile device," *Mastering Mob. Learn.*, p. 35, 2010, doi: 10.1002/9781119036883.ch5.
- [9] K. Liza and E. Andriyanti, "Digital Literacy Scale of English Pre-Service Teachers and Their Perceived Readiness Toward the Application of Digital Technologies," *J. Educ. Learn.*, vol. 14, no. 1, pp. 74-79, 2019, doi: 10.11591/edulearn.v14i1.13925.
- [10] J. O. Etuban, D. E. Marcial, and C. S. Abellanos, "Information and Communication Technology Readiness of Teachers in Cebu, Philippines," *UNP Res. J.*, vol. 25, no. December, pp. 1-17, 2016.
- [11] R. Dashtestani, "Implementing mobile-assisted language learning (MALL) in an EFL context: Iranian EFL teachers' perspectives on challenges and affordances," *JALT CALL J.*, vol. 9, no. 2, pp. 149-168, 2018, doi: 10.29140/jaltcall.v9n2.153.
- [12] W. Zeng, "Information Teaching Ability of EFL Teachers in Application-oriented College," *J. Phys. Conf. Ser.*, vol. 1533, no. 4, 2020, doi: 10.1088/1742-6596/1533/4/042076.
- [13] E. Harmandaoğlu Baz, P. T. Cephe, and C. Balçıklı, "Understanding EFL pre-service teachers' behavioral intentions to use cloud applications," *E-Learning Digit. Media*, vol. 16, no. 3, pp. 221-238, 2019, doi: 10.1177/2042753019834958.
- [14] V. F. Fitriani, "Portraying EFL students' learning styles in utilizing mobile - assisted language learning : how to be a good language learner," *Journal of Teaching & Learning English in Multicultural Contexts*, vol. 4, no. 1, pp. 34-45, 2020, <http://jurnal.unsil.ac.id/index.php/tlemc/index>
- [15] A. Andujar and F. Z. Nadif, "Evaluating an inclusive blended learning environment in EFL: a flipped approach," *Comput. Assist. Lang. Learn.*, vol. 39, no. 3, pp. 1-30, 2020, doi: 10.1080/09588221.2020.1774613.
- [16] N. Supraptiningsih, E. N. Fadila, and Z. Ahmad, "Listening Comprehension Problems Among EFL," *Ellter-J*, vol. 1, no. 1, pp. 1-11, 2020.
- [17] R. Scherer, F. Siddiq, and J. Tondeur, "The relation between teachers' emphasis on the development of students' digital information and communication skills and computer self-efficacy: the moderating roles of age and gender," *Large-scale Assess Educ* 4, no. 17, 2016, doi: 10.1186/s40536-016-0032-4.
- [18] F. D. Davis, "Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology," *Source MIS Q.*, vol. 13, no. 3, pp. 319-340, 1989, doi: 10.2307/249008.
- [19] C. Li, H. Ho, S. Ip and P. K. Ma, "*Blended Learning: Educational Innovation for Personalized Learning*", vol. 11546. Springer International Publishing, 2019, doi: 10.1007/978-3-030-21562-0.
- [20] A. Bandura, "Social cognitive theory of self-regulation," *Organ. Behav. Hum. Decis. Process.*, vol. 50, no. 2, pp. 248-287, 1991, doi: 10.1016/0749-5978(91)90022-L.
- [21] M. H. Kayali, N. Safie, and M. Mukhtar, "Literature Review of Cloud Based E-learning Adoption by Students: State of the Art and Direction for Future Work," *IOP Conf. Ser. Mater. Sci. Eng.*, vol. 160, no. 2016, pp. 1-8, 2016, doi: 10.1088/1757-899X/160/1/012087.
- [22] M. H. Kayali, N. Safie, and M. Mukhtar, "Adoption of Cloud Based E-Learning: A Systematic Literature Review of Adoption Factors and Theories," *J. Eng. Appl. Sci.*, vol. 11, no. 8, pp. 1839-1845, 2016, doi: 10.36478/jeasci.2016.1839.1845.
- [23] S. S. Alam, N. M. H. N. Hashim, M. Ahmad, C. A. C. Wel, S. M. Nor and N. A. Omar, "Negative and positive impact of internet addiction on young adults: Empericial study in Malaysia," *Intangible capital*, vol. 10, no. 3, pp. 619-638, 2014, doi: 10.3926/ic.452.

- [24] D. M. Wanyoike, E. Mukulu, and A. G. Waititu, "ICT Attributes as Determinants of Internet Social Adoption by Formal Small Enterprises in Urban Kenya," *Int. J. Arts Commer.*, vol. 1, no. 7, pp. 65-75, 2012.
- [25] J. Stevens, "Internet Stats & Facts for 2016," 2016.
- [26] I. Rosdiana and A. E. Sulistyawati, "Mobile Assisted Language Learning: Practices and Readiness in EFL Speaking Class," *E-Structural*, vol. 2, no. 01, pp. 51-67, 2019, doi: 10.33633/es.v2i1.2430.
- [27] D. Zhang and P. Pérez-Paredes, "Chinese postgraduate EFL learners' self-directed use of mobile English learning resources," *Comput. Assist. Lang. Learn.*, no. September, 2019, doi: 10.1080/09588221.2019.1662455.
- [28] V. Venkatesh, M. Morris, G. Davis, and F. Davis, "User Acceptance of Information Technology: Toward a Unified View," *MIS Q.*, vol. 27, no. 3, pp. 425-478, 2003, doi: 10.2307/30036540.
- [29] V. Venkatesh, J. Y. L. Thong, and X. Xu, "Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology," *MIS Q.*, vol. 36, no. 1, pp. 157-178, 2012, doi: 10.2307/41410412.
- [30] M. S. M. Soliman, N. Karia, S. Moeinzadeh, M. S. Islam, and I. Mahmud, "Modelling intention to use ERP systems among higher education institutions in Egypt: UTAUT perspective," *Int. J. Supply Chain Manag.*, vol. 8, no. 2, pp. 429-440, 2019.
- [31] R. Li, Z. Meng, M. Tian, Z. Zhang, C. Ni, and W. Xiao, "Examining EFL learners' individual antecedents on the adoption of automated writing evaluation in China," *Comput. Assist. Lang. Learn.*, vol. 32, no. 7, pp. 784-804, 2019, doi: 10.1080/09588221.2018.1540433.
- [32] I. Ajzen, "The theory of planned behavior," *Organ. Behav. Hum. Decis. Process.*, vol. 50, no. 2, pp. 179-211 1991, doi: 10.1016/0749-5978(91)90020-T.
- [33] M. Kayali, N. Safie, and M. Mukhtar, "The Effect of Individual Factors Mediated by Trust and Moderated by IT Knowledge on Students' Adoption of Cloud Based E-learning," *Int. J. Innov. Technol. Explor. Eng.*, vol. 9, no. 2, 2019, doi: 10.1186/s40854-020-00206-0.
- [34] K.-Y. Lee, "The Impact of Privacy Concerns on Smartphone-based Ad Blocker Use Intent: Mediated Moderating Effect of Smartphone Literacy via Attitude toward Online Video Advertising," *J. Digit. Contents Soc.*, vol. 21, no. 1, pp. 111-119, 2020, doi: 10.9728/dcs.2020.21.1.111.
- [35] K. Ramesh, R. Saha, S. Goswami, and R. Dahiya, "Consumer's response to CSR activities: Mediating role of brand image and brand attitude," *Corp. Soc. Responsib. Environ. Manag.*, vol. 26, no. 2, pp. 377-387, 2019, doi: 10.1002/csr.1689.
- [36] M. Saghafi-Asl, S. Aliasgharzadeh, and M. Asghari-Jafarabadi, "Factors influencing weight management behavior among college students: An application of the Health Belief Model," *PLoS One*, vol. 15, no. 2, pp. 1-15, 2020, doi: 10.1371/journal.pone.0228058.
- [37] G. Huang and Y. Ren, "Linking technological functions of fitness mobile apps with continuance usage among Chinese users: Moderating role of exercise self-efficacy," *Comput. Human Behav.*, vol. 103, no. March 2019, pp. 151-160, 2020, doi: 10.1016/j.chb.2019.09.013.
- [38] U. Sekaran and R. Bougie, "Research methods for business: A skill building approach," John Wiley & Sons, 2016.
- [39] J. W. Lian, "Critical factors for cloud based e-invoice service adoption in Taiwan: An empirical study," *Int. J. Inf. Manage.*, vol. 35, no. 1, pp. 98-109, 2015, doi: 10.1016/j.ijinfomgt.2014.10.005.
- [40] Z. Moosavi, D. DeWitt, and Z. Naimie, "EFL Undergraduate Learners' Readiness Towards Mobile Learning," *Proceeding 4th Int. Conf. Educ.*, vol. 4, no. 1, 2019, pp. 121-128, , doi: 10.17501/24246700.2018.4215.
- [41] Hair, T. M. Hult, C. M. Ringle, and M. Sarstedt, "A primer on partial least squares structural equation modeling," 2nd ed. Thousand Oakes, 2017.
- [42] S. Alaaraj, Z. A. Mohamed, and U. S. Ahmad Bustamam, "External Growth Strategies and Organizational Performance in Emerging Markets: The Mediating Role of Inter-Organizational Trust," *Rev. Int. Bus. Strateg.*, vol. 28, no. 2, pp. 206-222, 2018, doi: 10.1108/RIBS-09-2017-0079.
- [43] P. B. Lowry and J. Gaskin, "Partial least squares (PLS) structural equation modeling (SEM) for building and testing behavioral causal theory: When to choose it and how to use it," *IEEE Trans. Prof. Commun.*, vol. 57, no. 2, pp. 123-146, 2014, doi: 10.1109/TPC.2014.2312452.
- [44] S. Alaarj, Z. A. Mohamed, and U. S. A. Bustamam, "The Effect of Knowledge Management Capabilities on Performance of Companies : A Study of Service Sector," *Int. J. Econ. Res.*, vol. 14, no. 15, pp. 457-470, 2017.
- [45] S. Alaarj, Z. A. Mohamed, and U. S. A. Bustamam, "Do Knowledge Management Capabilities Reduce the Negative effect of Environment Uncertainties on Organizational Performance? A Study of Public Listed Companies in Malaysia," *Int. J. Econ. Res.*, vol. 14, no. 15, pp. 443-456, 2017.
- [46] M. Kayali and S. Alaaraj, "Adoption of Cloud Based E-learning in Developing Countries : A Combination A of DOI, TAM and UTAUT," *Int. J. Contemp. Manag. Inf. Technol.*, vol. 1, no. 1, pp. 1-7, 2020.
- [47] S. Ouhamme and Y. Hadi, "Enhancement in resource allocation system for cloud environment using modified grey wolf technique," *Indonesian Journal of Electrical Engineering and Computer Science (IJECS)*, vol. 20, no. 3, pp. 1530-1537, 2020, doi: 10.11591/ijeecs.v20.i3.pp1530-1537.
- [48] A. Ayoub, R. Najat, and A. Jaafar, "A lightweight secure CoAP for IoT-cloud paradigm using elliptic-curve cryptography," *Indonesian Journal of Electrical Engineering and Computer Science (IJECS)*, vol. 20, no. 3, pp. 1460-1470, 2020, doi: 10.11591/ijeecs.v20.i3.pp1460-1470.
- [49] F. H. Mohammed Jawad and H. H. M. Jawad, "Economic challenges of cloud computing in Iraqi educational institutions using exploratory analysis," *Indonesian Journal of Electrical Engineering and Computer Science (IJECS)*, vol. 21, no. 1, pp. 566-573, 2021, doi: 10.11591/ijeecs.v21.i1.pp566-573.