Journal of Computer Science and Technology Studies
ISSN: 2709-104X
DOI: 10.32996/jcsts
Journal Homepage: www.al-kindipublisher.com/index.php/jcsts

JCSTS
AL-KINDI CENTER FOR RESEARCH AND DEVELOPMENT

| RESEARCH ARTICLE

Predicting EFL University Students' Acceptance of Mobile Assisted Language Learning through the UTAUT2 Model

El Mehdi Chadli[1] ✉ Mohammed Bellet[2] and Latifa Belfakir[3]

[12]PhD Student, Faculty of Letters and Human Sciences, Sidi Mohamed Ben Abdellah University, Fez-Morocco

[3]Head of the English Department, Faculty of Letters and Human Sciences, Sidi Mohamed Ben Abdellah University, Fez-Morocco

Corresponding Author: El Mehdi Chadli, **E-mail**: elmehdi.chadli@usmba.ac.ma

| ABSTRACT

This study used the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model to examine the factors influencing the acceptance of MALL by the Moroccan EFL students of Sidi Mohamed Ben Abdellah University. For this purpose, 150 undergraduate EFL students participated in the research. The survey questionnaire adapted from (UTAUT2) model showed the influence of the following factors on students' behavioral intention to use MALL: performance expectancy, effort expectancy, social impact, facilitating conditions, hedonic motivation, and habit. The findings highlighted the importance of perceived usefulness and ease of use, the need for institutional support, engaging learning experiences, and promoting MALL use as a habit. This study provides valuable insights for educators and policymakers seeking to optimize MALL adoption and improve language learning outcomes.

| KEYWORDS

MALL, UTAUT2, technology acceptance, EFL

| ARTICLE INFORMATION

ACCEPTED: 20 October 2024 **PUBLISHED:** 05 November 2024 **DOI:** 10.32996/jcsts.2024.6.5.3

1. Introduction

The integration of technology into education has fundamentally transformed teaching and learning practices. Mobile devices, with their flexibility, affordability, compact size, and user-friendliness, hold particular promise for language acquisition (Huang et al., 2012;Kukulska-Hulme & Shield, 2008). This has led to Mobile-Assisted Language Learning (MALL), a branch of Computer-Assisted Language Learning (CALL) focused on harnessing mobile technology. (Hashim, 2017). MALL offers potential benefits for English language learning, including increased motivation, engagement, and alignment with communicative approaches that promote practice both inside and outside the classroom (Chapelle, 2001;Walsh, 2019).

Understanding user acceptance is crucial before implementing new technology (Davis, 1993). Student receptiveness becomes a critical success factor for universities investing in mobile learning systems (Jakkaew & Hemrungrote, 2017). The potential of Mobile Assisted Language Learning (MALL) has been explored in various educational contexts worldwide. Morchid (2019) described factors influencing Moroccan EFL students' MALL use at the public-school level using the modified version of the UTAUT. However, its adoption and acceptance in the specific domain of Moroccan higher education has been the subject of limited scholarly investigation

This study addresses a critical gap in the literature by examining the factors influencing Moroccan EFL students' acceptance of Mobile-Assisted Language Learning (MALL). Using the Unified Theory of Acceptance and Use of Technology 2 (UTAUT 2), with its external factors, this research focuses on the English Department of Sidi Mohamed Ben Abdellah University in Fez, Morocco. It aims to construct a comprehensive explanatory model for understanding technology acceptance.

2. Literature Review

2.1 Mobile Assisted Language Learning: Key Concepts

Since its invention, mobile technology has been crucial to the telecommunications industry and has become an educational tool. The breakthrough invention of the computer has had a significant impact on education, including language learning, known as Computer Assisted Language Learning (CALL) (Yaman & Ekmekçi, 2016). The fast-paced development of technology allowed for more accessibility, flexibility, and affordability (Kukulska-Hulme, 2009). Mobile-Assisted Language Learning (MALL) attained more significant popularity across various industries and fields including education.

The MALL concept has evolved since its early development. Chinnery (2006) Emphasized the use of portable devices for learners on the move, highlighting the mobility aspect of this learning approach. Kukulska-Hulme and Shield (2008) broadened the scope of MALL to include any language learning that takes place outside of traditional fixed locations, capitalizing on the unique opportunities offered by mobile technologies. Burston (2014) drew together these perspectives, highlighting the crucial potential of MALL to provide language learning support without the constraints of time and place. These definitions highlight mobile technologies' flexibility and limitless potential and illustrate the progressive expansion of the MALL concept.

Due to the interchangeable use of such terms, and based on the focus of this study, it is relevant to note that MALL is used to refer to the use of portable mobile technologies, including but not limited to laptops, MP3/MP4 players and phones (Kukulska-Hulme & Traxler, 2005). The use of such technologies in education has shown significant influence, especially in language learning (Godwin-Jones, 2011). Research demonstrates a broad interest in the overall effectiveness of MALL concerning specific skills such as vocabulary (Deng & Shao, 2011), reading (Lan et al., 2007), and writing (Li & Hegelheimer, 2013). Thus, to ensure the effective implementation of such technologies, it is essential to consider students' attitudes towards acceptance of MALL devices. Incorporating these technologies into education has proven significantly influential, particularly in language learning (Godwin-Jones, 2011). Research highlights the widespread interest in MALL's effectiveness regarding specific skills such as vocabulary (Deng & Shao, 2011), reading (Lan et al., 2007), and writing (Li & Hegelheimer, 2013). To ensure the successful implementation of these technologies, it is crucial to consider students' attitudes and their acceptance of MALL devices.

2.2 The Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)

The field of technology acceptance seeks to understand the factors influencing users' willingness to embrace and adopt new technologies. Eight theories of technology acceptance were reviewed by (Venkatesh et al., 2003) and his research group: Theory of Planned Behavior (TPB), Theory of Reasoned Action (TRA), Theory Acceptance Model (TAM), The combination of TAM and TPB (C-TAM-TPB), Model of Utilization (MPCU), Innovation Diffusion Theory (IDT), Motivational Model (MM), and the Social Cognitive Theory (SCT). In order to combine significant elements of the previously mentioned theories and models, a new theory was proposed, commonly referred to as the Unified Theory of Acceptance and Use of Technology.

When discussing the Unified Theory of Acceptance and Use of Technology (UTAUT) model, as developed by Venkatesh et al (2003), it is essential to note that it includes three primary factors influencing behavioral intention: performance expectancy (PE), effort expectancy (EE), and social influence (SI). Performance expectancy refers to an individual's belief that a particular system will enhance their job performance. Effort expectancy involves the belief that using the system will require minimal effort. Social influence considers the impact of perceptions from significant others, such as peers, friends, teachers, and role models, on using newly adopted technology. Additionally, facilitating conditions encompass available organizational or technical support resources and the intention to use them, viewed as direct determinants of usage behavior. Venkatesh et al. (2003) also included gender, age, experience, and voluntariness as moderators.

Recent alterations of this model resulted in UTAUT2, which, according to research, showed promising results concerning predicting technology acceptance and use (Venkatesh et al., 2012). His extension added three factors. Alongside PE, EE, SI, and FC, hedonic motivation (HM), price value (PV), and habit (HB) are deemed also to have a significant effect on BI. These three determinants expand on the other factors in a way pertinent to the user. HM refers to the perceived enjoyment level when using technology (Venkatesh et al., 2012), and which is considered to be highly significant in terms of utility. While PV includes cost/price and quality, future use can be anticipated if the balance between the two aspects is met. Lastly, according to the authors, Habit is based on automaticity of behavior. This means that, in the case of online learning, a user is more likely to use technology to learn if he/she had previously done so.

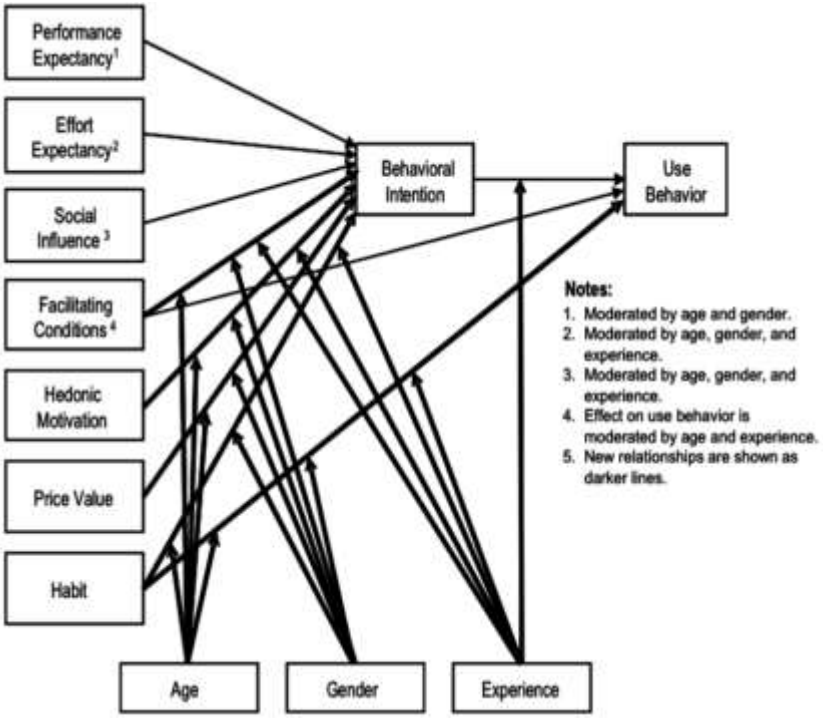

Figure 1. The UTAUT2 Model (Venkatesh, James Y.L Thong, 2012)

3. Methodology

Almaiah and Jalil (2014) emphasized that the successful implementation of mobile learning applications in higher education needs to consider factors related to accepting, using, and adapting. Mobile learning researchers have identified various factors influencing students' acceptance of mobile learning, including technological, quality, and social factors. To investigate these factors, this study applies the Unified Theories of Accepting and Using Technology 2 (UTAUT2) model developed by Venkatesh et al. (2012) (see Figure 2). The UTAUT2 model analyzes the determinants of Mobile Assisted Language Learning (MALL) acceptance among EFL students. It is important to note that the price value construct was not included in this study.

3.1 Research hypotheses

The study is based on a sample of 150 students pursuing a Bachelor of Arts (BA) degree in EFL at the University of Fez, Morocco. Of these participants, 88 were female and 62 were male. Using the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) as a theoretical framework, this study examined the factors influencing the acceptance of Mobile Assisted Language Learning (MALL) among EFL students. In this regard, a series of research hypotheses were developed to explore the relationships between critical constructs of the UTAUT2 model, such as performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit, and their impact on students' behavioral intention to use MALL.

3.1.1 Performance Expectancy (PE)

Performance expectancy refers to how much technology benefits users in accomplishing specific tasks (Venkatesh et al., 2012). Numerous studies have demonstrated a significant impact of performance expectancy on behavioral intention (Almaiah et al., 2019; Razzak & Jassem, 2021). Based on these prior findings, the first hypothesis of this study is formulated as follows:

H1: Performance expectancy significantly affects the behavioral intention to use MALL.

3.1.2 Effort expectancy (EE)

Effort expectancy is defined as the degree of simplicity and ease of system use (Venkatesh et al., 2003). This concept emphasizes the potential for technology application by highlighting all technological products and services' ease of use and simplicity (Tamrin et al., 2022). Considering this understanding, the second hypothesis of this study is articulated as follows:

H2: Effort expectancy significantly affects the behavioral intention to use MALL.

3.1.3 Social Influence (SI)

Social influence refers to the degree to which an individual perceives that referent groups, such as peers, parents, friends, or faculty, believe it is essential for him or her to use a system (Venkatesh et al., 2003). This study investigates the use of mobile-assisted

language learning (MALL) by university students, focusing on their academic perceptions influenced by the opinions of significant individuals like classmates and professors. Based on this premise, the third hypothesis is proposed as follows:

H3: Social influence significantly affects the behavioral intention to use MALL.

3.1.4 Facilitating Conditions (FC)

Facilitating conditions refer to users' perceptions of institutional support and the availability of the necessary infrastructure to support the use of a desired technology (Venkatesh et al., 2012). These conditions influence users' intentions and actual use of the technology. This study hypothesizes that students who perceive their institution as having adequate and appropriate technological and organizational infrastructure to support mobile-assisted language learning (MALL) will develop stronger behavioral intentions to use mobile learning in their academic studies. Based on this understanding, the fourth hypothesis is proposed as follows:

H4: Facilitating conditions significantly affect the behavioral intention to use MALL.

3.1.5 Hedonic motivation (HM)

Hedonic motivation is the users' pleasure from using a system (Chao, 2019). It is critical in shaping behavioral intentions to perform specific actions (Norman Rudhumbu, 2022). This study examines the relationship between hedonic motivation and the behavioral intention to use mobile-assisted language learning (MALL) among undergraduate university students. Based on this premise, the fifth hypothesis is proposed as follows:

H5: Hedonic motivation significantly affects the behavioral intention to use MALL.

3.1.6 Habit (H)

Habit refers to an individual's automatic or habitual adoption of a new technology, developed instinctively based on accumulated experience from past activities (Venkatesh et al., 2012). While few studies have specifically examined the effect of habit on behavioral intention when using mobile-assisted language learning (MALL), this study aims to investigate this relationship. Based on this premise, the sixth hypothesis is proposed as follows:

H6: Habit significantly affects the behavioral intention to use MALL.

3.2 Questionnaire design

The survey questionnaire was primarily adopted from the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model (Venkatesh et al., 2012). The instrument includes items measuring the core UTAUT2 constructs and a section to collect demographic data (gender, age, experience, and education level). Participants indicated their level of agreement using a 5-point Likert scale ranging from "strongly agree" to "strongly disagree.".

3.3 Pilot Study

A preliminary pilot test was conducted with a sample of 20 students to assess the reliability of the questionnaire items prior to the primary analysis. Internal consistency was measured using Cronbach's alpha with a threshold of 0.7. As shown in Table 1, all variables in the study exceeded this threshold.

3.4 Evaluation of the structural model

This study used structural equation modeling (SEM) to examine the structural relationships between six variables and behavioral intention to use mobile-assisted language learning. SEM, a standard quantitative multivariate data analysis method, is used to assess relationships between observed and latent variables in both exploratory and confirmatory hypothesis testing, as well as in various predictive analysis models (RVSPK et al., 2020). To analyze the SEM, a series of reliability tests were first carried out using Cronbach's alpha. The validity of the measures was then assessed using convergent and discriminant validity analyses. Confirmatory factor analysis (CFA) was then used to assess the fit indices of the research model. Finally, path analysis was carried out to test the proposed hypotheses and to analyze the path coefficients between the variables within the structural model.

3.5 Data collection

In this study, a quantitative approach was employed using a questionnaire survey. The data was collected during the summer semester of 2023/2024 by distributing self-administrated questionnaires among students at the University Sidi Mohammed ben Abdellah in Morocco. Overall, 150 questionnaires were distributed among the students. Forty-three questionnaires were dropped as hard copies to fill in, and 107 were filled out online. Accordingly, 150 questionnaires were included in the primary analysis with a response rate of 100%.

4. Results and Discussion

4.1 Demographics

A survey was conducted among undergraduate English as a Foreign Language (EFL) students at Sidi Mohammed ben Abdellah University, with 150 students participating. According to the survey, the gender distribution was reasonably balanced, with women comprising 58.67% and men representing 41.33%. Observing their academic progression, we see that 25.33% of students are represented in their first year, 40% in their second year, and 34.67% in their third, indicating a gradual decrease in representation over time. 64% of respondents are between the ages of 21-23, followed by 25.33% between the ages of 18-20, and a smaller percentage of 10.67% between the ages of 24 and 25.

4.2 Reliability and Validity

4.2.1 Reliability testing

Before initiating the primary analysis in this study, a reliability test was carried out to validate the research instrument. Cronbach's alpha (α) was used to assess the internal consistency of the items in a single construct and how well they correlated with each other. Following the standards established by (Hair, 2009), an α value above 0.7 is considered a benchmark of high reliability. The research instrument is considered reliable based on the results in Table 1, which show Cronbach's alpha values above 0.7 for all variables.

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
PE	46.7000	291.138	.783	.916
EE	46.7467	282.271	.795	.916
SI	47.7000	335.379	.769	.920
FC	46.7600	297.674	.797	.914
HM	48.5733	321.387	.771	.917
H	45.2067	290.635	.796	.914
BI	49.0333	324.006	.787	.917

Table 1 Reliability analysis testing

4.2.2 Validity testing

The results of the validity tests (table 2), as presented in the correlation analysis, show significant positive associations between the constructs of Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), Hedonic Motivation (HM), Habit (H) and Behavioral Intention (BI) to use Mobile Assisted Language Learning (MALL) applications. Specifically, the Pearson correlation coefficients ranged from 0.575 to 0.718, all significant at the 0.01 level (2-tailed), indicating strong positive relationships between the constructs. For example, the significant correlation between performance expectancy and behavioral intention (.651, $p < .01$) strongly supports the hypothesis that performance expectancy significantly influences behavioral intention to use MALL, consistent with the premises of the UTAUT2 model. These findings underscore the multifaceted nature of the factors influencing the acceptance and adoption of MALL in higher education contexts and highlight the critical role of technological, social, and motivational elements in shaping students' behavioral intentions to use technology in learning environments.

		PE	EE	SI	FC	HM	H	BI	Total
PE	Pearson Correlation	1	.698**	.707**	.646**	.641**	.668**	.651**	.853**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
	N	150	150	150	150	150	150	150	150
EE	Pearson Correlation	.698**	1	.653**	.723**	.635**	.693**	.627**	.864**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000
	N	150	150	150	150	150	150	150	150
SI	Pearson Correlation	.707**	.653**	1	.673**	.575**	.616**	.714**	.816**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000
	N	150	150	150	150	150	150	150	150
FC	Pearson Correlation	.646**	.723**	.673**	1	.703**	.654**	.668**	.858**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000

	N	150	150	150	150	150	150	150	150
HM	Pearson Correlation	.641**	.635**	.575**	.703**	1	.711**	.664**	.826**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000
	N	150	150	150	150	150	150	150	150
H	Pearson Correlation	.668**	.693**	.616**	.654**	.711**	1	.718**	.861**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000
	N	150	150	150	150	150	150	150	150
BI	Pearson Correlation	.651**	.627**	.714**	.668**	.664**	.718**	1	.837**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000
	N	150	150	150	150	150	150	150	150
Total	Pearson Correlation	.853**	.864**	.816**	.858**	.826**	.861**	.837**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	
	N	150	150	150	150	150	150	150	150

**. Correlation is significant at the 0.01 level (2-tailed).

Table 2 Validity analysis testing

4.3 Confirmatory Factor Analysis (CFA)

A confirmatory factor analysis (CFA) was conducted to evaluate the fit of the hypothesized factor model compared to a baseline model. The results demonstrated a highly significant improvement in fit for the factor model ($\chi^2(254) = 904.707$, $p < .001$), indicating that the factor structure effectively represents the underlying relationships among the observed variables (table 3). Nonetheless, a comprehensive evaluation of model fit necessitates the examination of additional fit indices to confirm the validity of the factor structure fully.

Model	X^2	df	p
Baseline model	4664.108	300	
Factor model	904.707	254	< .001

Note. The estimator is *Maximum Likelihood* ML.

Table 3 Chi-square test

4.4 Hypotheses testing of the structural model

The study aimed to investigate the influence of different factors on the behavioral intention to use Mobile Assisted Language Learning (MALL) among BA-level EFL students at the University of Sidi Mohammed Ben Abdellah in Fez, Morocco. Using the UTAUT2 framework adapted to the MALL context, the study proposed six hypotheses. The analysis strongly supports these hypotheses, as shown in Table 4. The results are as follows:

Performance expectancy: The belief that MALL will enhance language learning outcomes significantly influenced students' intentions to use the technology (beta coefficient = 0.651, p-value = 0.000). This suggests that when students perceive that MALL can improve their academic performance, they are more likely to adopt it. Therefore, emphasizing the tangible academic benefits of MALL in promotional and instructional materials could boost its adoption.

Effort Expectancy: MALL's perceived ease of use significantly shaped students' behavioral intentions (beta coefficient = 0.627, p-value = 0.000). This indicates that the more straightforward and user-friendly the technology, the more likely students will use it. Therefore, MALL applications should be designed with an intuitive interface and straightforward functionality to enhance user adoption.

Social influence: Recommendations from peers, parents, and instructors were highly influential in determining students' intentions to use MALL (beta coefficient = 0.714, p-value = 0.000). This underscores the importance of social endorsement in technology adoption. Institutions should consider leveraging social networks and endorsements from respected figures to encourage MALL usage.

Facilitating conditions: Access to necessary equipment and support resources was a key determinant of behavioral intention (beta coefficient = 0.668, p-value = 0.000). This highlights the importance of providing adequate technological and organizational infrastructure to support MALL. Educational institutions should ensure that students have access to the required devices and technical support to facilitate the effective use of MALL.

Hedonic motivation: The ability of MALL to offer an engaging and enjoyable learning experience significantly influenced students' intentions to use it (beta coefficient = 0.664, p-value = 0.000). This suggests that the more enjoyable the learning experience, the more likely students are to adopt MALL. Therefore, MALL applications should include gamified elements and interactive features to make learning more enjoyable.

Habit: Students who had already integrated MALL into their study routines were likelier to continue using it (beta coefficient = 0.718, p-value = 0.000). This indicates that habitual use plays a significant role in technology adoption. Encouraging regular and consistent use of MALL through structured activities and assignments can help build this habit.

These findings suggest that successful MALL implementation must go beyond technical considerations. It requires fostering positive expectations of improved learning, ensuring ease of use, promoting social support, providing the necessary infrastructure, designing engaging activities, and encouraging habitual use. Institutions should take a holistic approach to MALL implementation to maximize its effectiveness and student adoption.

Hypothesis	*Predictor Variable*	*Beta Coefficient*	*P-value*	*Interpretation*
H1	Performance Expectancy ←→ Behavioral intention	.651	.000	Supported
H2	Effort Expectancy ←→ Behavioural intention	.627	.000	Supported
H3	Social Influence ←→ Behavioural intention	.714	.000	Supported
H4	Facilitating Conditions ←→ Behavioural intention	.668	.000	Supported
H5	Hedonic Motivation ←→ Behavioural intention	.664	.000	Supported
H6	Habit ←→ Behavioural intention	.718	.000	Supported

Table 4 Results of path analysis of the structural model

5. Conclusion

This study, conducted at the University of Sidi Mohammed Ben Abdellah in Fez, Morocco, with 150 undergraduate EFL students, provides valuable insights into the factors that influence the adoption of Mobile Assisted Language Learning (MALL) in the classroom. Using the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) framework, six key determinants were examined: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and habit. The impact of these factors on students' behavioral intention to use MALL was rigorously assessed.

The results supported all proposed hypotheses, confirming that each factor significantly influenced students' willingness to adopt MALL. Performance expectancy and effort expectancy emerged as primary predictors, indicating that students are more likely to adopt MALL if they believe it will improve their learning outcomes (beta coefficient = 0.651, p-value = 0.000) and if they find it easy to use (beta coefficient = 0.627, p-value = 0.000). The influence of social recommendations from peers and teachers was also significant (beta coefficient = 0.714, p-value = 0.000), highlighting the role of social endorsement in technology adoption.

Furthermore, the study highlights the need for adequate resources and institutional support to successfully implement MALL (facilitating conditions: beta coefficient = 0.668, p-value = 0.000). Hedonic motivation, reflecting the enjoyment and engagement provided by MALL, was also a critical factor for sustained use (beta coefficient = 0.664, p-value = 0.000). In addition, habitual use of MALL significantly predicted continued use, highlighting the importance of integrating MALL into students' regular study practices (beta coefficient = 0.718, p-value = 0.000).

In conclusion, this study's results indicate that successful MALL integration requires a holistic approach that addresses both practical benefits and motivational aspects. The relevance of the UTAUT2 model for MALL is confirmed, providing actionable recommendations for educators, designers, and policymakers. By strategically addressing the identified factors, stakeholders can create an environment that optimizes MALL adoption, ultimately leading to improved language learning experiences and outcomes.

5.1 Recommendations

In order to maximize the adoption and effectiveness of MALL, educational institutions should invest in training programs for teachers and students to increase their technological skills and confidence in using mobile tools. In addition, integrating MALL into the curriculum should be carried out gradually to allow students to become accustomed to this new way of learning. Institutions should also ensure that technical support and infrastructure are readily available to address issues.

Engaging students through interactive and entertaining content is crucial. Educators could collaborate with app developers to create informative, engaging, and entertaining materials. Students' regular feedback should be sought to continuously improve learning tools and strategies.

5.2 Limitations

Despite the significant findings, this study has certain limitations. The sample size, limited to 150 undergraduate students from a single university, may not fully represent the broader population of EFL learners. Future research could increase the sample size and include participants from different educational backgrounds and institutions to increase the generalisability of the findings.

In addition, the study's cross-sectional design provides a snapshot of students' perceptions at a single point in time. Longitudinal studies could provide deeper insights into how these perceptions and the use of MALL evolve. Finally, although the UTAUT2 framework covers many relevant factors, additional variables such as individual learner differences and specific cultural contexts could be explored to provide a more comprehensive understanding of MALL adoption.

ORCID: https://orcid.org/0009-0007-1336-5067
Conflict of Interest: The authors declare no conflict of interest

References

[1] Almaiah, M. A., & Jalil, M. A. (2014). Investigating students' perceptions of mobile learning services. *International Journal of Interactive Mobile Technologies*, *8*(4), 31–36. https://doi.org/10.3991/ijim.v8i4.3965
[2] Almaiah, M. A., Alamri, M. M., & Al-Rahmi, W. (2019). Applying the UTAUT Model to Explain the Students' Acceptance of Mobile Learning Systems in Higher Education. *IEEE Access*, *7*, 174673–174686. https://doi.org/10.1109/ACCESS.2019.2957206
[3] Burston, J. (2014). MALL: The pedagogical challenges. *Computer Assisted Language Learning*, *27*(4), 344–357. https://doi.org/10.1080/09588221.2014.914539
[4] Chao, C.-M. (2019). Factors determining the behavioral intention to use mobile learning: An application and extension of the UTAUT model. *Frontiers in Psychology*, p. *10*, 446627.
[5] Chapelle, C. A. (2001). *Computer applications in second language acquisition*. Cambridge University Press.
[6] Chinnery, G. M. (2006). *Going to the MALL: Mobile assisted language learning*.
[7] Davis, F. D. (1993). User acceptance of information technology: system characteristics, user perceptions, and behavioral impacts. *International Journal of Man-Machine Studies*, *38*(3), 475–487.
[8] Deng, H., & Shao, Y. (2011). Self-directed English vocabulary learning with a mobile application in everyday context. *10th World Conference on Mobile and Contextual Learning: MLearn 2011 Conference Proceedings*, 24–31.
[9] Godwin-Jones, R. (2011). Mobile apps for language learning. *Language Learning & Technology*, *15*(2), 2–11.
[10] Hair, J. F. (2009). *Multivariate data analysis*.
[11] Hashim, H. (2017). *Mobile-assisted Language Learning (MALL) for ESL Learners : A Review of Sains Humanika Mobile-assisted Language Learning (MALL) for ESL Learners : A Review of Affordances and Constraints*. *March*. https://doi.org/10.11113/sh.v9n1-5.1175
[12] Huang, Y.-M., Huang, Y.-M., Huang, S.-H., & Lin, Y.-T. (2012). A ubiquitous English vocabulary learning system: Evidence of active/passive attitudes vs. usefulness/ease-of-use. *Computers & Education*, *58*(1), 273–282.
[13] Jakkaew, P., & Hemrungrote, S. (2017). The use of UTAUT2 model for understanding student perceptions using Google classroom: A case study of introduction to information technology course. *2017 International Conference on Digital Arts, Media and Technology (ICDAMT)*, 205–209.
[14] Kukulska-Hulme, A. (2009). Will mobile learning change language learning? *ReCALL*, *21*(2), 157–165.
[15] Kukulska-Hulme, A., & Shield, L. (2008). An overview of mobile assisted language learning: From content delivery to supported collaboration and interaction. *ReCALL*, *20*(3), 271–289.
[16] Kukulska-Hulme, A., & Traxler, J. (2005). Mobile learning. *Mobile Learning: A Handbook for Educators and Trainers. Oxon: Routledge*, 1–6.
[17] Lan, Y.-J., Sung, Y., & Chang, K.-E. (2007). *A mobile-device-supported peer-assisted learning system for collaborative early EFL reading*.
[18] Li, Z., & Hegelheimer, V. (2013). *Mobile-assisted grammar exercises: Effects on self-editing in L2 writing*.
[19] Morchid, N. (2019). The determinants of use and acceptance of mobile assisted language learning: The case of EFL students in Morocco. *Arab World English Journal (AWEJ) Special Issue on CALL*, *5*.
[20] Razzak, M. R., & Jassem, S. (2021). Mobile-Assisted Language Learning for EFL: A Conceptual Framework based on the Meta-UTAUT Model. *Asia-Pacific Journal of Educational Management Research*, *6*(2), 15–32. https://doi.org/10.21742/ajemr.2021.6.2.02
[21] Rudhumbu, N. (2022). Applying the UTAUT2 to predict the acceptance of blended learning by university students. *Asian Association of Open Universities Journal*, *17*(1), 15–36.
[22] RVSPK, R., Priyanath, H. M. S., & Megama, R. G. N. (2020). Methods and rules-of-thumb in the determination of minimum sample size when applying structural equation modeling: A review. *J Soc Sci Res*, *15*(2), 102–109.

[23] Tamrin, M., Latip, S., Latip, M. S. A., Royali, S. A., Harun, N. A., & Bogal, N. (2022). Students' acceptance of gamification in education: The moderating effect of gender in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, *12*(8), 1847–1860.
[24] Venkatesh, James Y.L Thong, X. X. (2012). *C onsumer SEBUAH CCEPTANCE DAN U SE OF saya NFORMASI T echnology : E XTENDING THE U NIFIED T HEORY*. *36*(1), 157–178.
[25] Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). *No Title*. *27*(3), 425–478.
[26] Walsh, R. (2019). Smartphones and CLT: Threat or opportunity? *Teaching English with Technology*, *19*(2), 59–69.
[27] YAMAN, İ., & EKMEKÇİ, E. (2016). A Shift from CALL to MALL ? İsmail YAMAN * and Emrah EKMEKÇİ. *Participatory Educational Research (PER)*, *IV*, 25–32