ISSN 1798-4769
Journal of Language Teaching and Research, Vol. 15, No. 1, pp. 271-280, January 2024
DOI: https://doi.org/10.17507/jltr.1501.30

# MALL as a Language Learning Tool for Saudi EFL University Learners: An Empirical Study With Reference to TAM

Jamilah Maflah Alharbi
Department of English, College of Education, Majmaah University, AL-Majmaah 11952, Saudi Arabia

***Abstract*—Veteran US technology writer and publisher Fred Davis defined the Technology Acceptance Model (TAM) as characterized by perceived usefulness and usefulness by users. However, these attitudes are largely determined by external variables such as age, gender, and social set up. This study aims to apply an extended conceptual framework of TAM to examine the adoption of MALL by English-major students, encompassing variables such as perceived enjoyment, instructor support, and MALL interactivity as exogenous factors. A questionnaire was administered to 392 English-major students at King Saud University, employing a cross-sectional research design. Using AMOS version 26.0, results from confirmatory factor analysis (CFA) supported the convergent and discriminant validity of the study constructs. The structural model results demonstrated a statistically significant impact of external variables – perceived enjoyment, MALL interactivity, and instructor support – on students' perceptions of MALL usefulness and ease of use. As a result, students' perceived usefulness and ease of use significantly influenced their intention to adopt MALL for language learning. The model accounted for 62% of the variance in MALL tools adoption among Saudi English major students. In conclusion, the extended TAM framework effectively explains the adoption of MALL by Saudi English major students.**

***Index Terms*—Empirical Study, Mobile-Assisted Language Learning, English-Major Students, Saudi Arabia**

## I. INTRODUCTION

Recent times have seen a surge in the popularity of mobile learning (m-learning) among students, offering a flexible and convenient alternative to conventional classroom settings (Dahal et al., 2022; Jurayev, 2023). As a pioneering e-learning method built on mobile technology, m-learning has transformed formal and informal education, granting learners the flexibility to engage in educational pursuits at their convenience (Cheon et al., 2012). Its student-centric approach has revolutionised traditional teacher-driven learning methodologies, rendering it indispensable in higher education institutions (Herring et al., 2016; Reddy et al., 2022). Consequently, m-learning has enhanced learners' attitudes towards education and accessibility to learning activities, particularly for university and college students with access to personalised mobile resources (O'bannon &Thomas, 2014). This is also supported by Diacopoulos and Crompton (2020) and Neffati et al. (2021) which held that the adoption of m-learning is more likely among university and college students who possess their own devices.

Despite extensive research on mobile learning at the university level, a research void remains concerning the use of MALL among learners in developing nations (Hoi, 2020). While previous research has shown positive outcomes of integrating mobile technologies in teaching English as a foreign language, further exploration is needed, especially in the EFL environment of Saudi Arabia (Almekhlafy, 2016; Gao & Shen, 2020). Comprehending these concerns and analysing the factors influencing MALL adoption among EFL undergraduates is vital to address this research gap (Almekhlafy, 2016; Gao & Shen, 2020). Furthermore, an insightful examination of challenges related to mobile technology use in language learning, such as multitasking distractions and proficiency level disparities, is warranted (Kacetl & Klimova, 2019). Research has indicated insufficient teacher support and training, coupled with negative attitudes towards technology use in Saudi EFL classrooms (Alahmadi & Alraddadi, 2020; Hashmi, 2016). This study strives to bridge the knowledge gap and shed light on the determinants impacting the adoption and utilization of MALL in the Saudi context by employing TAM (Rafiee & Abbasian-Naghneh, 2019; Botero et al., 2018) as a theoretical framework to highlight the intricate interplay between attitudes, intentions, and perceptions concerning MALL use. Through this comprehensive inquiry, the study seeks to provide insightful guidance for integrating MALL effectively in Saudi Arabian English language instruction, fostering innovative pedagogical strategies for mobile-assisted language learning.

## II. THEORETICAL FRAMEWORKS

The Technology Acceptance Model (TAM), formulated by Davis (1989), constitutes the conceptual underpinning of this study, widely acclaimed for its insights into user acceptance and utilization of technology. TAM posits that perceived usefulness (PU) and perceived ease of use (PEOU) are pivotal elements shaping users' inclination to adopt and engage with technology. Earlier research (Vărzaru et al., 2021; Santoso, 2017) has established that both PU and

PEOU significantly influence users' attitudes and intentions towards technology adoption. The selection of TAM as the theoretical foundation stems from several considerations. Firstly, TAM's brevity and simplicity render it an excellent choice (Drueke et al., 2021). Secondly, TAM has consistently proven its applicability in m-learning contexts (Al-Emran et al., 2018), illustrating its efficacy in assessing the acceptance of mobile learning (Khanh & Gim, 2014). TAM remains the predominant model for scrutinizing technology acceptance and utilization. Thirdly, despite its widespread application in technology adoption research, its utilization in the realm of mobile learning in Saudi universities remains limited, accentuating the need to bolster its explanatory capacity in this emerging context. The research framework for this study is visually represented in the following diagram, integrating constructs including PU, PEOU, linguistic engagement, instructor assistance, and perceived enjoyment to investigate their collective influence on MALL adoption and usage.

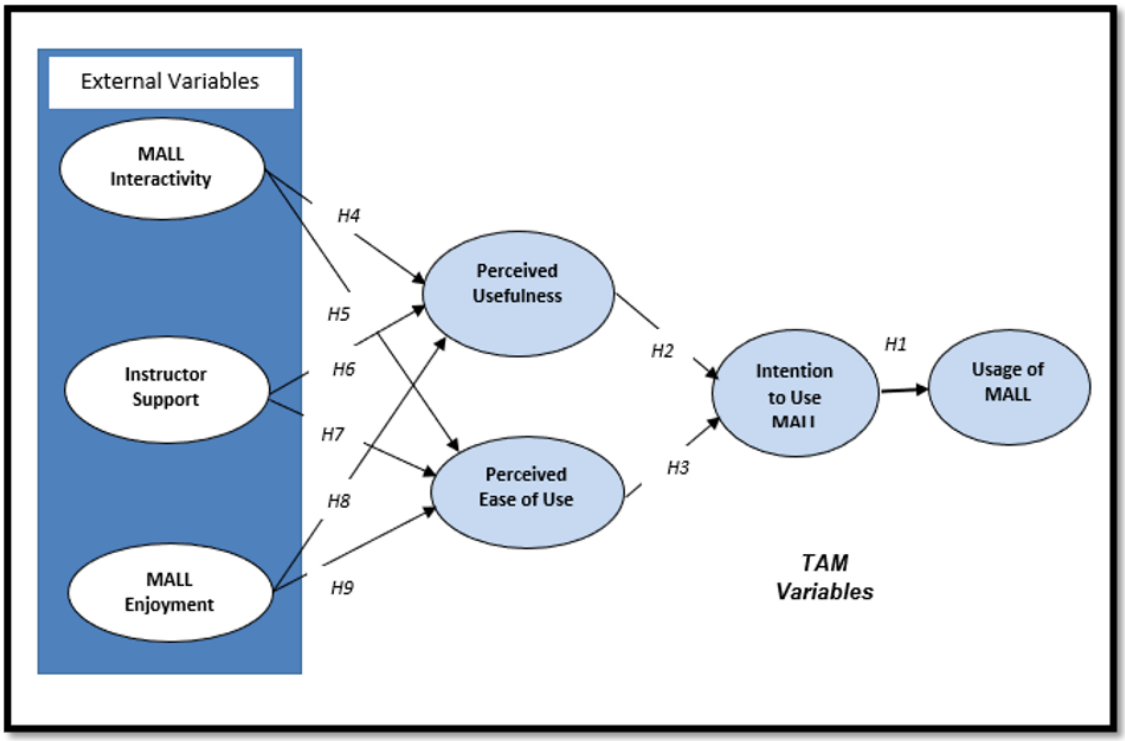


Figure 1. Hypothesized Model of the Research

**Hypothesis Development**

***TAM Variables:***

The Technology Acceptance Model (TAM) emerges as a focal point for comprehending the acceptance of e-learning systems, renowned for its robustness, reliability, and efficacy (Sumak et al., 2011; Venkatesh & Davis, 2000). Thanks to its inherent simplicity, TAM can be seamlessly extended and adapted without introducing complexity to its foundational structure (Venkatesh et al., 2003). The TAM framework encompasses three fundamental constructs: Perceived Usefulness (PU), Perceived Ease of Use (PEU), and Behavioral Intention (BI) towards technology adoption (Davis, 1989). PU signifies an individual's perception of the extent to which technology can enhance their performance. PEU gauges an individual's belief in their ability to use technology effortlessly and with minimal exertion. As opposed to this, BI denotes an individual's intention to employ technology. Previous empirical evidence concerning the adoption of various technologies (Huang & Liaw, 2018; Sun & Gao, 2019) lends credence to these constructs. Based on this theoretical foundation, the study proposes the following hypotheses:

H1: Saudi English major students' behavioral intention (BI) predicts their actual adoption of MALL.

H2: The perceived usefulness (PU) of MALL by English Major students in Saudi Arabia positively predicts their intention to adopt MALL.

H3: The perceived ease of use (PEoU) of MALL by English Major students in Saudi Arabia positively predicts their intention to adopt MALL.

***External Variables***

**MALL interactivity**

Drawing from the Technology Acceptance Model (TAM), it is evident that external factors, such as perceived interactivity, hold the potential to significantly influence users' inclination towards technology adoption. Recent investigations across diverse contexts, including MALL, have underscored a positive correlation between perceived interaction and the notions of utility and ease of use. This phenomenon is supported by contemporary studies examining online learning (Abdullah et al., 2017) and online applications (Izzani et al., 2016), where perceived interactivity exerts

a palpable influence on users' technology utilization. Notably, research on interactivity within mobile websites (Coursaris & Sung, 2012) reveals a positive interplay with perceived usefulness and usability. Likewise, in the realm of Social Networking Sites (SNSs), interactivity has been shown to enhance perceptions of value and usability (Ros et al., 2015; Pai & Yeh, 2014; Rafiee & Abbasian-Naghneh, 2019; Abdullah et al., 2017; Binyamin et al., 2019). In this context, it is reasonable to expect that Saudi Arabian students majoring in English will likely deem MALL more advantageous for their language learning endeavors if they perceive it to be engaging. Based on these observations, the following hypotheses are formulated:

H4: Students' perception of MALL interactivity positively predicts their perceived usefulness of MALL among English Major students in Saudi Arabia.

H5: Students' perception of MALL interactivity positively predicts their perceived ease of use of MALL among English Major students in Saudi Arabia.

**Instructor Support**

Guided by the Technology Acceptance Model (TAM), it becomes apparent that users' inclinations to adopt a technology can be influenced by external factors, including social influence. One such pivotal factor is the perceived support from external entities such as educators, peers, or influential figures. Within the context of MALL, the influence of teachers' support holds a significant role in shaping students' perceptions of benefits of MALL. Teachers' guidance, motivation, and feedback contribute to enhancing students' perceptions of the advantages of technology. Recent investigations have demonstrated a direct correlation between instructor support and language learners' perceptions of the value of MALL, reinforcing this premise. Notably, Mousa et al.'s (2020) study showed that university students who received heightened encouragement from language instructors to engage with a mobile app for English learning exhibited a stronger perception of the app's utility and its ease of use. In alignment with this, it is reasonable to deduce that English major students in Saudi Arabia, who receive greater encouragement from their language instructors to embrace MALL, will display an elevated inclination towards its adoption. Grounded in these observations, the ensuing hypotheses are posited:

H6: Instructors' support positively predicts Saudi English Major students' perceived usefulness of MALL.

H7: Instructors' support positively predicts Saudi English Major students' perceived ease of use of MALL.

**Perceived Enjoyment**

Perceived Enjoyment (PE), originating from the realm of intrinsic motivation, encapsulates an individual's perception of the degree of gratification derived from engaging with a specific system (Park et al., 2012). This perception of learning processes as 'enjoyable' significantly enriches learning situations and profoundly influences the acceptance of mobile learning. This phenomenon is substantiated by studies examining the acceptance and utilization of e-learning technologies (Sumak et al., 2011; Cheng, 2011). The profound interplay between PE and the key factors of Perceived Usefulness (PU), Perceived Ease of Use (PEoU), and Behavioral Intention (BI) to adopt technology is also notable (Cheng, 2011). Existing literature underscores that students' propensity to employ e-learning technologies is substantially bolstered when they perceive them to be engaging (Chen et al., 2013; Cheng, 2011; Kimathi & Zhang, 2019; Alyoussef, 2021; Ursavaş, 2014). This observation holds relevance for college students with special requirements, as their intrinsic motivation is often heightened due to their affinity to mobile tools. Against this background, the following hypotheses are formulated:

H8: Enjoyment of MALL positively predicts Saudi English Major students' perceived usefulness of MALL.

H9: Enjoyment of MALL positively predicts Saudi English Major students' perceived ease of use of MALL.

## III. Research Methodology

**Instrument**

The present study takes a quantitative approach employing a cross-sectional design for data collection. A structured questionnaire, comprising 37 items loading onto seven constructs, along with four demographic items, was used. The questionnaire items were drawn from prior research but suitably adapted to align with the specific technology and domain under scrutiny.

MALL interactivity was gauged using six items adapted from Liu et al. (2010) and Rose et al. (2015). To assess instructors' support, four items from Metheny et al. (2008) were employed, and perceived enjoyment was evaluated using five items adapted from Abdullah et al. (2017) and Teo and Noyes (2011). Further, perceived usefulness was measured through six items adapted from Davis (1989), perceived ease of use was measured using five items from Davis (1989), learners' intention to adopt MALL was assessed with four items adapted from Venkatesh and Bala (2008) and Lee et al. (2009), actual usage of MALL was quantified using seven items drawn from David (1989).

A five-point Likert Scale was employed in the questionnaire, with respondents indicating their degree of agreement or frequency for each statement that best conveyed their usage, intention to use, and perception. To establish the face validity of the measurement items, input was sought from English education professors and academic researchers across various universities. Their evaluations assessed the clarity and length of each item.

Furthermore, to validate the questionnaire, all questions and items were incorporated into a validation template and sent to five experts in the field of education. These experts were tasked with verifying the alignment of the items with the operational meanings of the constructs and offering feedback on item clarity. Finally, the internal reliability of the study model was evaluated using Cronbach's alpha for the five constructs: Actual Adoption of MALL, Intention to

Adopt MALL, Perceived Usefulness, Ease of Use, Language Interactivity, Instructors' Support, and Perceived Enjoyment.

**Research Context and Participants**

This study was conducted at King Saud University (KSU), a prominent public funded university situated in Riyadh, the capital city of Saudi Arabia. KSU holds a substantial student population of approximately 61,412 individuals enrolled in 2022, rendering it the largest university in the country. Renowned for its academic options and strategic urban location, KSU attracts students from diverse regions nationwide. Given the convergence of students from various governorates to the capital, the study's sample somewhat reflects the broader student populace across the nation.

The research sample comprised 392 Saudi English Major students from two departments within KSU: Languages and Translation (N = 235), and Arts (N = 157), comprising both male and female students aged between 20 to 24 years. These students were from different academic levels: 105 sophomores, 92 juniors, 75 seniors, and the remaining were freshmen. Simple random sampling was employed as the sampling technique. The researchers compiled a roster of English Major students from the departmental databases to establish the sampling frame. Subsequently, the required sample size was acquired by randomly selecting matriculation numbers from this frame. The sample size of 392 participants was considered sufficient to achieve the study's research objectives and enable Structural Equation Modelling (CFA) (Kline, 2023). The questionnaire was administered to every student whose number was drawn, ensuring balanced representation from both departments.

**Data Analysis**

Descriptive analysis and data screening were conducted using SPSS version 26, while the structural equation modelling (SEM) was executed using AMOS version 26.0. Subsequently, the confirmatory factor analysis (CFA) was employed to assess the initial measurement models, ensuring their construct reliability, as well as confirming their convergent and discriminant validity, in line with established methods (Hair et al., 2017; Kline, 2023). In the subsequent stage, the study's hypothesized model was evaluated using the structural model within AMOS version 26 (Kline, 2023).

## IV. RESULTS

**Measurement Validation**

In the current study, Confirmatory Factor Analysis (CFA) was employed to assess the construct validity and reliability of the model's components. The CFA was conducted on seven constructs: Actual adoption of mall, intention to adopt mall, perceived usefulness, ease of use, language interactivity, instructors' support, and perceived enjoyment, as depicted in figure 2. The primary objective of the CFA was to establish the dimensions' reliability within the studied population.

Several iterations were made to refine the measurement model and address problematic items with low loadings (AU4, PU1, PU6, PEOU2, ENJ3, IS4, LI3, and LI6), leading to their elimination. After these adjustments, the final measurement model exhibited favorable outcomes. The overall model fit was robust, demonstrated by the chi-square (X2) value of 838.806, degrees of freedom (df) = 356, and a p-value of 0.000. Additionally, the Root Mean Square Error of Approximation (RMSEA) stood at .059, well below the acceptable threshold of .08 (Hair et al., 2013). Moreover, the Comparative Fit Index (CFI) recorded .956, and the Tucker-Lewis Index (TLI) was .950, both surpassing the recommended benchmark of .90. These collective goodness-of-fit indicators affirm the excellent alignment of the measurement model with the data (refer to Figure 2).

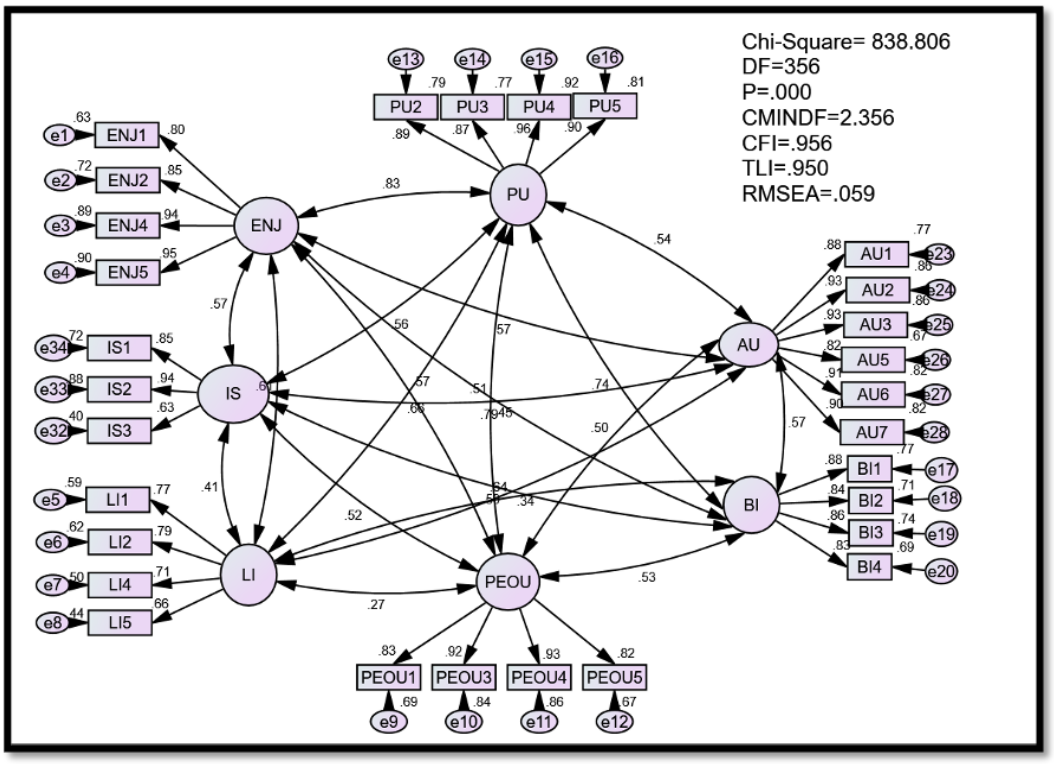


Figure 2. Study Measurement Model

The assessment of the measurement model for MALL Usage among English Major students in Saudi Arabia revealed satisfactory psychometric characteristics through the evaluation of its convergent validity, discriminant validity, and composite reliability. The loadings of the items, illustrated in Figure 1, were found to be acceptable as they surpassed the recommended threshold of 0.50. This observation indicates strong convergent validity, supported by the fact that all items exhibited loadings above 0.50, while the average variance exceeded 0.50, in accordance with the guidelines outlined by Hair et al. (2017). Furthermore, the model's reliability is firmly established, as indicated by the composite reliability (CR) values, all of which exceeded the established threshold of 0.70, aligning with the references of Hair et al. (2017) and Kline (2023) (refer to Table 1).

TABLE 1
CONVERGENT VALIDITY AND RELIABILITY OF THE MEASUREMENT CONSTRUCTS

| Construct | Item | Factor loadings | S.E. | C.R. | P | CR | AVE |
|---|---|---|---|---|---|---|---|
| Language Interactivity | LI1 | .769 | | | | 0.822 | 0.537 |
| | LI2 | .788 | 0.073 | 14.831 | .000 | | |
| | LI4 | .707 | 0.075 | 13.367 | .000 | | |
| | LI5 | .661 | 0.071 | 12.467 | .000 | | |
| Perceived Usefulness | PU5 | .897 | 0.04 | 27.034 | .000 | 0.948 | 0.820 |
| | PU4 | .958 | 0.033 | 31.846 | .000 | | |
| | PU3 | .875 | 0.038 | 25.49 | .000 | | |
| | PU2 | .890 | | | | | |
| Perceived Ease of Use | PEOU4 | .929 | | | | 0.929 | 0.767 |
| | PEOU3 | .918 | 0.032 | 30.68 | .000 | | |
| | PEOU5 | .817 | 0.036 | 23.173 | .000 | | |
| | PEOU1 | .830 | 0.036 | 24.211 | .000 | | |
| Intention to Adopt MALL | BI1 | .880 | | | | 0.914 | 0.727 |
| | BI2 | .843 | 0.04 | 22.187 | .000 | | |
| | BI3 | .858 | 0.046 | 22.94 | .000 | | |
| | BI4 | .829 | 0.046 | 21.546 | .000 | | |
| Perceived Enjoyment | ENJ4 | .943 | | | | 0.936 | 0.787 |
| | ENJ2 | .851 | 0.031 | 26.962 | .000 | | |
| | ENJ1 | .795 | 0.033 | 22.882 | .000 | | |
| | ENJ5 | .949 | 0.026 | 38.286 | .000 | | |
| Actual Adoption of MALL | AU1 | .877 | | | | 0.960 | 0.800 |
| | AU2 | .927 | 0.039 | 28.236 | .000 | | |
| | AU3 | .930 | 0.037 | 28.459 | .000 | | |
| | AU5 | .817 | 0.045 | 21.652 | .000 | | |
| | AU6 | .906 | 0.041 | 26.758 | .000 | | |
| | AU7 | .903 | 0.04 | 26.563 | .000 | | |
| Instructors' support | IS3 | .630 | 0.057 | 13.603 | .000 | 0.854 | 0.667 |
| | IS2 | .940 | 0.052 | 20.99 | .000 | | |
| | IS1 | .850 | | | | | |

Table 2 presents the Average Variance Extracted (AVE) values diagonally, effectively showcasing divergent validity. Squared inter-factor correlation values, which signify shared variance, situated above the diagonal, while inter-factor correlations are positioned below it. Notably, none of the inter-factor correlations surpass the threshold of 0.8, offering robust evidence in favor of discriminant validity, consistent with the references of Hair et al. (2017) and Kline (2023). Moreover, the presence of divergent validity is distinctly observed, as each AVE factor exhibits a higher value compared to its squared inter-correlations with all other factors. This observation underscores the distinctiveness of the study's factors, revealing minimal overlap and reinforcing their effective measurement of the intended constructs.

TABLE 2
CORRELATION MATRIX AND AVERAGE VARIANCE EXTRACTED VALUES

| Construct | LI | ENJ | PEOU | BI | AU | PU | IS |
|---|---|---|---|---|---|---|---|
| LI | 0.733 | | | | | | |
| ENJ | 0.609 | 0.887 | | | | | |
| PEOU | 0.275 | 0.573 | 0.876 | | | | |
| BI | 0.640 | 0.793 | 0.526 | 0.853 | | | |
| AU | 0.339 | 0.575 | 0.501 | 0.570 | 0.894 | | |
| PU | 0.658 | 0.829 | 0.506 | 0.736 | 0.538 | 0.906 | |
| IS | 0.413 | 0.573 | 0.522 | 0.588 | 0.455 | 0.557 | 0.817 |

*Note*: Square root of average variance extracted (AVE)

**Evaluation of the Structural Model and Hypothesis Testing**

The validation and reliability assessment of the measurement model were performed, followed by the transformation of the model into a hypothesized structural model, wherein hypothesized causal paths were introduced to replace correlations between dimensions. Adhering to established best practices (Kline, 2023; Byrne, 2013), only the exogenous constructs were allowed to retain correlations to address any potential covariance between dimensions. The results, based on 365 degrees of freedom, revealed a chi-square value of 962.276, a CMIN/df ratio of 2.636, a comparative fit index (CFI) of .945, and a Tucker-Lewis index (TLI) of .939. All these indices surpassed the recommended threshold of .90, signifying their robustness. Additionally, the root mean square error of approximation (RMSEA) value of .065 fell within the acceptable range of .08. These findings collectively indicated strong consistency with the hypothesized model, affirming that the structural model was a suitable fit for the data, as it aligned with Kline (2023) (refer to Figure 3).

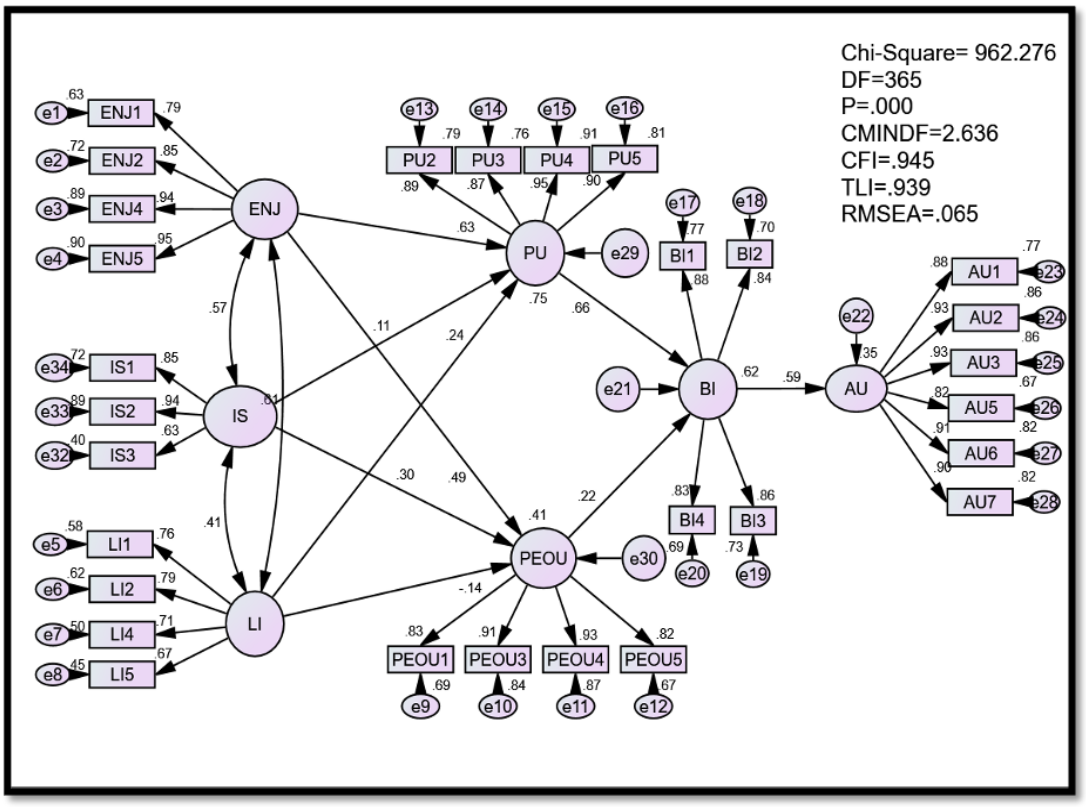


Figure 3. Study Structural Model

Figure 3 and Table 3 depict the outcomes of the finalized structural model, presenting standardized path coefficients. The results highlight that 35% of the variance in students' Actual Adoption of Mobile-Assisted Language Learning (MALL) can be elucidated by factors encompassing intention to adopt MALL, perceived usefulness, ease of use, language interactivity, instructors' support, and perceived enjoyment.

As observed in Figure 3 and Table 5, the direct and significant influence of Saudi English Major students' intention to adopt MALL tools ($\beta = .593$, $p < 0.05$) on their actual adoption of MALL is evident. This intention, in turn, is directly and significantly shaped by their perceived usefulness ($\beta = .660$, $p < 0.05$) and ease of use ($\beta = .218$, $p < 0.05$).

Moreover, Figure 3 shows that perceived language interactivity, instructor support, and enjoyment distinctly foster the positive perception of usefulness ($\beta = .237$, $p < 0.05$), ($\beta = .107$, $p < 0.05$), and ($\beta = .634$, $p < 0.05$), respectively. Moreover, perceived language interactivity, instructor support, and enjoyment also positively impact ease of use ($\beta = .143$, $p < 0.05$), ($\beta = .303$, $p < 0.05$), and ($\beta = .494$, $p < 0.05$), respectively.

As a result, the model substantiates all nine hypotheses put forth in this study, corroborating the hypothesized relationships between the variables.

TABLE 3
THE DIRECT HYPOTHESES

| Structural Path | | □ (>.2) | C.R (>.196) | P-value | Decision |
|---|---|---|---|---|---|
| H1 | BI → AU | .593 | 11.946 | 0.000 | supported |
| H2 | PU → BI | .660 | 13.743 | 0.000 | supported |
| H3 | PEOU → BI | .218 | 5.076 | 0.000 | supported |
| H4 | LI → PU | .237 | 5.344 | 0.000 | supported |
| H5 | LI → PEOU | -.143 | -2.305 | 0.021 | supported |
| H6 | IS → PU | .107 | 2.784 | 0.005 | supported |
| H7 | IS → PEOU | .303 | 5.407 | 0.000 | supported |
| H8 | ENJ → PU | .634 | 13.146 | 0.000 | supported |
| H9 | ENJ → PEOU | .494 | 7.526 | 0.000 | supported |

## V. DISCUSSION AND IMPLICATIONS

To gain a comprehensive understanding of the process of technology acceptance and human decision-making, this study employs an extended Technology Acceptance Model (TAM) that integrates three external factors: language interactivity, instructor support, and perceived enjoyment. This extended TAM model augments the conventional TAM by offering a more comprehensive insight into the deliberate processes driving behavioral choices. The primary

objective of this study is to uncover the determinants that influence the adoption of MALL by Saudi Arabian students majoring in English and to examine their perceptions and intentions regarding MALL technology usage.

The extended TAM model underwent thorough validation through Structural Equation Modeling (SEM) analysis, revealing robust support from the data. The outcomes demonstrate that the additional factors—Language Interactivity, Instructor Support, and Perceived Enjoyment—hold significant influence over students' perceptions of the value and ease of use of learning tools, consequently affecting their behavioral intent to employ MALL. Furthermore, the extent to which students genuinely embrace MALL tools is shaped by their behavioral intention. Remarkably, the expanded TAM model accounted for 35% of the variance in students' actual MALL adoption and a remarkable 62% of the variance in their behavioral intention. Thus, the primary research objective has been met, and the expanded TAM model has provided a comprehensive elucidation of the factors motivating Saudi English Major students to utilize MALL tools in language learning.

In this study, the authors investigated the interplay between Saudi Arabian English major students' intentions to adopt mobile-assisted language learning (MALL) and their actual adoption behavior. A test of Hypothesis 1 revealed a meaningful correlation between students' intention to adopt MALL and their eventual MALL adoption behavior, in line with empirical evidence from similar technology adoption studies (Huang & Liaw, 2018; Sun & Gao, 2019). The research also scrutinized the impacts of three external factors—linguistic interactivity, instructor support, and subjective enjoyment—on Saudi English Major students' engagement with (MALL). These factors were introduced as external variables in the technology acceptance model (TAM), thus expanding its scope. Both Hypotheses 4 and 5, investigating the relationship between linguistic interactivity and students' perceptions of usefulness and ease of use, were found to be statistically significant. This aligns with earlier technology acceptance studies (Rafiee & Abbasian-Naghneh, 2019; Abdullah et al., 2017; Binyamin et al., 2019; Izzani et al., 2016), which emphasize the influence of students' perceptions of language interactivity on the perceived utility of MALL tools.

The focus of Hypotheses 7 and 8 was the connection between instructor support and students' assessment of usefulness and ease of use, both of which exhibited significant associations. This outcome resonates with findings from technology acceptance research that highlight the impact of students' perceptions of instructor support on the perceived benefits of MALL tools (Mousa et al., 2020). Similarly, Hypotheses 9 and 10, which explored the relationship between students' perceptions of perceived usefulness and ease of use and their perceived enjoyment, yielded statistically significant results. These findings are in harmony with empirical data from other technology acceptance studies (Chen et al., 2013; Cheng, 2011; Kimathi & Zhang, 2019; Alyoussef, 2021), which underscore the influence of students' perceived enjoyment on their perceptions of the utility of MALL tools.

The implications of this study span theoretical, methodological, and practical domains. The theoretical contribution lies in the utilization of an expanded Technology Acceptance Model (TAM) that incorporates three additional factors—Language Interactivity, Instructor Support, and Perceived Enjoyment—pertaining to the adoption of Mobile Assisted Language Learning (MALL) among English major students. This expansion focuses on perceived utility and ease of use, which are core TAM constructs. The extended TAM model effectively predicts MALL adoption by Saudi Arabian English Major students by capturing both the additional constructs and the core ones.

Moreover, this study contributes to empirical research and application by assessing the applicability of the TAM model, originally validated in a Western cultural context, and confirming its relevance in a non-Western cultural milieu. This implies that the extended TAM model can be successfully applied in Middle Eastern societies, elucidating the interplay among primary dimensions within the technology acceptance model.

Furthermore, this research sheds light on the limitations of the original TAM by showcasing how Language Interactivity, Instructor Support, and Perceived Enjoyment serve as antecedents to perceived ease of use, perceived usefulness, behavioral intent to adopt MALL, and the actual adoption of MALL tools within the hypothesized model. These factors collectively shape the adoption of MALL tools by English students in Saudi Arabia, thus holding substantial implications for future MALL uptake. It is noteworthy that the integration of these variables into the TAM enhances its explanatory power in clarifying the factors influencing English Major students' acceptance of MALL tools. Additionally, this research contributes to the academic discourse by presenting insights into the present-day MALL adoption among English Major students at King Saud University in Saudi Arabia. The findings hold potential for creating awareness about the significance of MALL in enhancing English instruction in Saudi universities, both among educators and the Ministry of Higher Education. Incorporating MALL into the traditional educational framework of the nation could be facilitated by these insights, thereby expanding the knowledge base in the field of language learning, instruction, and policy formulation.

## VI. CONCLUSIONS

In conclusion, a thorough analysis of the findings demonstrates the successful achievement of the study objectives. This research aimed to investigate the factors influencing Saudi English Major students' prospective adoption of MALL tools in their educational journey. The results suggest that contrary to the perceived ease of use, students' perceptions of the utility of MALL tools emerge as stronger predictors of their inclination to utilize these resources. Furthermore, the study establishes that the incorporation of Language Interactivity, Instructor Support, and Perceived Enjoyment as supplementary variables into the TAM model directly impacts the mediating variables of the model, namely perceived usefulness, and ease of use. The focal points of this research lie in assessing the applicability of an extended TAM

framework in a country characterized by a non-Western culture, thus challenging the prevailing assumption that most TAM theories exhibit cultural and social biases favoring western nations.

## VII. LIMITATIONS

Despite its unique findings, this study has certain limitations. To begin with, the research scope is restricted to factors associated with the adoption of MALL tools among Saudi English Major students. Other pertinent variables, such as motivation, self-efficacy, privacy, and institutional support, were excluded due to constraints related to time and financial resources. Additionally, the outcomes solely pertain to the perceptions of university-level English Major students and cannot be generalized to encompass EFL students in pre-university settings or university students from diverse fields. However, this limitation was the outcome of a deliberate choice by the researcher to maintain the study's focus and scope. Lastly, the study participants were confined to a single public university in Saudi Arabia, namely King Saud University, and exclusively comprised English Major students. Consequently, caution should be exercised when attempting to extrapolate the findings of this study to other universities across Saudi Arabia. Yet, it must be stated that this restriction was the result of certain local developments posing challenges to the collection of more extensive samples of Saudi English Major students from universities located in different cities.

## ACKNOWLEDGMENTS

The author would like to thank the Deanship of Scientific Research at Majmaah University for supporting this work under Project No. R-2023-647.

## REFERENCES

[1] Abdullah, D., Jayaraman, K., Shariff, D. N., Khairil Anuar, B., & Norfezah, Md. N. (2017). The effects of perceived interactivity, perceived ease of use, and perceived usefulness on online hotel booking intention: A conceptual framework. *International Academic Research Journal of Social Science*, *3*(1), 16-23. International Academic Research Journal (IAR Journal). http://doi.org/10.1016/S2212-5671(16)30109-5

[2] Dahlan Abdullah, K. Jayaraman, D.N. Shariff, Khairil Anuar Bahari, and Norfezah Md Nor. (2017). The Effects of Perceived Interactivity, Perceived Ease of Use and Perceived Usefulness on Online Hotel Booking Intention: A Conceptual Framework. *International Academic Research Journal of Social Science*, *3*(1), 16-23.

[3] Alahmadi, N. S. & Alraddadi, B.M. (2020). The Impact of Virtual Classes on Second Language Interaction in the Saudi EFL Context: A Case Study of Saudi Undergraduate Students. *Arab World English Journal*, *11*(3), 56-72.doi.org/10.24093/awej/vol11no3.4.

[4] Almekhlafy, A., & Alzubi, A. A. F. (2016). Mobile- Mediated communication a tool for Language Exposure in EFL Informal Learning Settings. *Arab World English Journal*, *7*(1), 388- 407. https://doi.org/10.2139/ssrn.2804018

[5] Alyoussef, I. (2021). E-Learning Acceptance: The Role of Task–Technology Fit as Sustainability in Higher Education. *Sustainability*, *13*, 6450. 1–15. https://doi.org/10.3390/su13116450

[6] Alzahrani, H. (2016). Examining the effectiveness of utilizing mobile technology in vocabulary development for language learners. *Arab World English Journal (AWEJ), Vol, 6*. https://dx.doi.org/10.24093/awej/vol6no3.7

[7] Binyamin, S. S., Rutter, M., & Smith, S. (2019). Extending the Technology Acceptance Model to Understand Students' Use of Learning Management Systems in Saudi Higher Education. *International Journal of Emerging Technologies in Learning (IJET)*, *14*(03), pp. 4–21. https://doi.org/10.3991/ijet.v14i03.9732

[8] Botero, G. G., Questier, F., Cincinnato, S., He, T., & Zhu, C. (2018). Acceptance and usage of mobile assisted language learning by higher education students. *Journal of Computing in Higher Education*, *30*(3), 426–451. https://doi.org/10.1007/s12528-018-9177-1

[9] Byrne, B. M. (2013). Structural equation modeling with AMOS: Basic concepts, applications, and programming. Routledge. *Journal of Personality and Social Psychology*, *51*(6), (1986), pp. 1173-1182, 10.1037/0022-3514.51.6.1173

[10] Cheng, Y. M. (2011). Antecedents and consequences of e-learning acceptance. *Information Systems Journal*, *21*(3), 269–299. https://doi.org/10.1111/j.1365-2575.2010.00356.x

[11] Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012). An investigation of mobile learning readiness in higher education based on the theory of planned behavior. *Computers & Education*, *59*, 1054–1064. doi: 10.1016/j.compedu.2012.04.015

[12] Coursaris, C. K., & Sung, J. (2012). Antecedents and consequents of a mobile website's interactivity. *New Media & Society*, *14*(7), 1128–1146. http://doi.org/10.1177/1461444812439552.

[13] Dahal, N., Manandhar, N. K., Luitel, L., Luitel, B. C., Pant, B. P., & Shrestha, I. M. (2022). ICT tools for remote teaching and learning mathematics: A proposal for autonomy and engagements. *Advances in Mobile Learning and Education Research*, *2*, 289–296. doi: 10.25082/AMLER.2022.01.01

[14] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, *13*, 319–340.

[15] Diacopoulos, M. M., & Crompton, H. (2020). A systematic review of mobile learning in social studies. *Computers & Education*, *154*, 103911. doi: 10.1016/j.compedu.2020.103911.

[16] Drueke, B., Mainz, V., Lemos, M., Wirtz, M., & Boecker, M. (2021). An Evaluation of Forced Distance Learning and Teaching Under Pandemic *Conditions Using the Technology Acceptance Model. Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.701347.

[17] Gao, C., & Shen, H. (2020). Mobile-technology-induced learning strategies: Chinese University EFL students learning English in an emerging context. *ReCALL*, *33*(1), 1-18. https://doi:10.1017/S0958344020000142

[18] Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (2nd ed.). Sage Publications Inc.
[19] Hashmi, N. (2016). Computer-Assisted Language Learning (CALL) in the EFL Classroom and its Impact on Effective Teaching-learning Process in Saudi Arabia. *International Journal of Applied Linguistics and English Literature*, *5*, 202-206. https://doi.org/10.7575/AIAC.IJALEL.V.5N.2P.202.
[20] Herring, M. C., Koehler, M. J., & Mishra, P. (2016). *Handbook of technological pedagogical content knowledge (TPACK) for educators*. London: Routledge.
[21] Hoi, V. N. (2020). Understanding higher education learners' acceptance and use of mobile devices for language learning: A rasch-based path modeling approach. *Computers & Education*, *146*, 103761. doi: 10.1016/j.compedu.2019.103761.
[22] Hoi, V., & Mu, G. (2020). Perceived teacher support and students' acceptance of mobile-assisted language learning: Evidence from the Vietnamese higher education context. British Journal of Educational Technology. *Computer Assisted Language Learning Electronic Journal (CALL-EJ)*, *23*(1), 466-491, 2022
[23] Huang, H. M., & Liaw, S. S. (2018). An analysis of learners' intentions toward virtual reality learning based on constructivist and technology acceptance approaches. *International Review of Research in Open and Distributed Learning*, *19*(1), 91-115. https://doi.org/10.19173/irrodl.v19i1.2503.
[24] Jurayev, T. N. (2023). The use of mobile learning applications in higher education institutes. *Advances in Mobile Learning and Education Research*, *3*, 610–620. doi: 10.25082/AMLER.2023.01.010.
[25] Kacetl, J., & Klimova, B. F. (2019). Use of smartphone applications in English language learning—a challenge for foreign language education. *Education Sciences*, *9*(3), 179-187. https://doi.org/10.3390/educsci9030179
[26] Khanh, N., & Gim, G. (2014). Factors Influencing Mobile-Learning Adoption Intention: An Empirical Investigation in High Education. *Journal of Social Sciences*, *10*, 51-62. https://doi.org/10.3844/JSSP.2014.51.62.
[27] Kimathi, F. A., & Zhang, Y. (2019). Exploring the general extended technology acceptance model for e-learning approach on student's usage intention on e-learning system in University of Dar es Salaam. *Creative Education*, *10*(1), 208-223.
[28] Klimova, B. (2018). Mobile phones and/or smartphones and their apps for teaching English as a foreign language. *Education and Information Technologies*, *23*(3), 1091–1099.
[29] Kline, R. B. (2023). *Principles and Practice of Structural Equation Modeling* (5th ed.). New York, NY: The Guilford Press.
[30] Lee, B.-C., Yoon, J.-O., & Lee, I. (2009). Learners' acceptance of e-learning in South Korea: Theories and results. *Computers & Education*, *53*(4), 1320–1329.
[31] Liu, I. F., Chen, M. C., Sun, Y. S., Wible, D., & Kuo, C. H. (2010). Extending the TAM model to explore the factors that affect Intention to Use an Online Learning Community. *Computers and Education*, *54*(2), 600–610. http://doi.org/10.1016/j.compedu.2009.09.009
[32] Metheny, J., McWhirter, E. H., & O'Neil, M. E. (2008). Measuring perceived teacher support and its influence on adolescent career development. *Journal of Career Assessment*, *16*(2), 218–237. https://doi.org/10.1177/1069072707313198.
[33] Mousa, A. H., Mousa, S. H., Mousa, S. H., & Obaid, H. A. (2020). Advance acceptance status model for E-learning based on university academics and students. In IOP Conference Series: *Materials Science and Engineering*, *671*(1), 012031. https://doi.org/10.1088/1757-899X/671/1/012031
[34] Neffati, O. S., Setiawan, R., Jayanthi, P., Vanithamani, S., Sharma, D. K., Regin, R., et al. (2021). An educational tool for enhanced mobile e-learning for technical higher education using mobile devices for augmented reality. *Microprocessors and Microsystems*, *83*, 104030. doi: 10.1016/j.micpro.2021.104030.
[35] O'Bannon, B. W., & Thomas, K. (2014). Teacher perceptions of using mobile phones in the classroom: Age matters! *Computers & Education*, *74*, 15 25. https://doi.org/10.1016/j.compedu.2014.01.006
[36] Rafiee, M., & Abbasian-Naghneh, S. (2019). E-learning: development of a model to assess acceptance and readiness of technology among language learners. *Computer Assisted Language Learning*, *2*(6), 1–21. https://doi.org/10.1080/09588221.2019.1640255
[37] Reddy, G., Murthy, V. N., & Vergassola, M. (2022). Olfactory Sensing and Navigation in Turbulent Environments. *Annual Review of Condensed Matter Physics*, *13*(1), 191–213. https://doi:10.1146/annurev-conmatphys-031720-032754.
[38] Sun, Y. & Gao, F. (2019). An investigation of the influence of intrinsic motivation on students' intention to use mobile devices in language learning. *Educational Technology Research & Development*, *68*(3), 1181-1198. https://doi.org/10.1007/s11423-019-09733-9

**Jamilah Maflah Alharbi** is an Assistant Professor at the Department of English Language, Majmaah University. She has taught Semantics, Linguistics, Sociolinguistics and second language acquisition. She is interested in English as a second/foreign language learning and teaching and second language vocabulary acquisition. She is also interested in Sociolinguistics and the general area of second language acquisition. She has published primarily in the areas of vocabulary learning strategies and language teaching and learning. **Email: jm.alharbi@mu.edu.sa**