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| RESEARCH ARTICLE

Examining the Impact of Demographics on Students' Perceptions of Mobile-Assisted Language Learning

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| ABSTRACT
Mobile-assisted language learning (MALL) has witnessed significant development, with a growing number of university learners relying on their mobile devices for language learning. However, limited research has been conducted on the influence of demographics, including age, gender, and university level, on students' perceptions of MALL. Addressing this research gap, the current study was conducted at the University of Sidi Mohamed Ben Abdellah, in Morocco, focusing on English department students. The study employed a quantitative approach, utilizing a questionnaire to collect data from 164 students. Through the examination of variables such as gender, age, and university level, the findings indicated that gender did not significantly impact students' acceptance of MALL while age and university level emerged as influential factors in shaping students' preferences. These findings highlight the potential effectiveness of MALL as a language learning tool. The results are particularly relevant for informing policymakers considering the implementation of MALL-based systems in higher education. Furthermore, educators are invited to consider their student cohorts' diverse age and university-level characteristics and adapt MALL activities accordingly.

| KEYWORDS
mobile-assisted language learning; MALL; perceptions; demographics

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1. Introduction

Learning a foreign language has become a top priority for today's youth, especially in Morocco, where recent reforms by the Ministry of Education require students to master English and enhance their digital skills. In addition to traditional classroom learning, Moroccan university students are gradually interested in the affordances that MALL offers as a new type of language learning. For instance, Stockwell (2010) found that mobile devices enhance language acquisition by allowing students to access materials anytime, anywhere. Similarly, Dashtestani (2016) showed that mobile devices increase students' motivation when academically utilized. This interest in leveraging MALL is also reflected in the trend of Moroccan higher education relying more and more on language learning apps like Rosetta Stone to enhance students' linguistic skills (For more on app-based learning, see Essafi et al., 2024). This trend aligns with the broader educational shifts in Morocco, where the integration of digital tools is encouraged to ameliorate students' academic excellence and meet the urgent demands of the job market (Adoui, 2024).

In Morocco, the growing interaction with information and communication technologies (ICT), especially in English language learning, has been accelerated in the aftermath of COVID-19. As such, embracing these ICT advancements is increasingly seen by students of this era as an effective vaccine against lagging behind. Hence, learning from the lessons of the pandemic and putting into practice this learning in readiness for potential implementation of a MALL-based system in higher education, are two key

priorities for any research that seeks to subscribe to the ongoing changes targeting Moroccan institutions and mindsets. The modern educational system in Morocco is betting on the integration of advanced technology into instructional practice to support students' academic participation and performance (Ejjami, 2024). Furthermore, the adoption of ICT-based projects and programs reflects a trend where the Moroccan Ministry of Education encourages the use of advanced digital tools as contingency plans for emergencies (Outoukarte et al., 2023).

This study attempts to add to the stock of knowledge by exploring students' perceptions of MALL. This main objective can be subdivided into three interrelated aims: (i) to determine if gender has any significant effect on students' willingness to adopt MALL; (ii) to see if there are any significant statistical differences between a student's age and their acceptance of MALL; and last, (iii) to test the impact of students' university level on their acceptance of MALL. Based on this, the following research questions and hypotheses can be formulated:

a. Is there any significant impact of students' gender on their acceptance of MALL?
→ **H1:** There is a significant impact of students' gender on their acceptance of MALL.

b. Is there any significant impact of students' age on their acceptance of MALL?
→ **H1:** There is a significant impact of students' age on their acceptance of MALL.

c. Is there any significant impact of students' university level on their acceptance of MALL?
→ **H1:** There is a significant impact of students' university level on their acceptance of MALL.

2. Literature Review

2.1 MALL Definition

Before tackling the issue of MALL, it is necessary to contextualize it and clearly define it. Based on that, I have chosen in this section to start with mobile learning (the parent) before moving on to tackle MALL and CALL (the siblings).

To adequately approach MALL, let us first take a look at mobile learning also called m-learning. Researchers still differ in defining mobile learning, though they seem to agree that mobile learning ought not to be reduced to learning with mobile devices. Lan and Sie (2010) define mobile learning as a new wave of learning model that allows learners to receive learning materials anytime and anywhere through wireless technology and the internet. As for Vavoula and Sharples (2002), they argue that learning can be considered mobile in terms of three criteria: time, space, and areas of life. El-Hussein and Cronje (2010) propose a different triad, succinctly categorizing the term 'learning mobility' into three interconnected areas: mobility of technology, mobility of learning, and mobility of learners.

Done with mobile learning, let us zoom in on MALL. This type of learning is a vision of language learning that is implemented through the use of mobile gadgets. It is worth mentioning that since the invention of the term MALL by Chinnery in 2006, the use of mobile devices to enhance language learning has expanded speedily. Moreover, MALL has generally been seen as an offshoot of both mobile learning (ML) and computer-assisted language learning (CALL). Nonetheless, according to Kukulska-Hulme and Shield (2008), MALL differs from CALL in its reliance on personal handheld devices, which enable novel approaches to language acquisition and provide access to information and communication anytime, anywhere.

2.2 MALL Pillars

It is beyond doubt that a solid foundation in learning theories will lead to better learning outcomes. Therefore, taking into account what each of the following learning theories—behaviorism, cognitivism, constructivism, social constructivism, and connectivism—is best at teaching, we can effectively make use of MALL to expand the learner's academic competencies skills.

The first theory that we will tackle here is behaviorism. The behaviorist theory claims that learning occurs as a result of stimulus-response associations, which can be strengthened or weakened based on the frequency of reinforcement and punishment (Anwar et al., 2024). To put theory into practice, MALL is highly compatible with behaviorism as it stimulates learners to learn, collects learners' responses, and reinforces their correct attempts by providing them with the appropriate feedback (Naismith et al., 2004).

As behaviorism failed to explain cognition, a new theory was born, namely cognitivism. The cognitivist theory focuses on how information is received, organized, stored, and retrieved by learners. Within this model, Chastain (1988) views learning as a psychological system through which learners attempt to make language mental schemas of their own. Mind-mapping, microworld games, smart watches, telecommunications, and GPS mobile apps are some of the technologies that are resonant with cognitivist approaches and which can foster students' knowledge and skills.

The constructivist theory, of Jean Piaget, claims that learning is founded upon previous knowledge (learner's schemata), through establishing a balance between assimilation and accommodation (Piaget, 1971). In this model, students are encouraged to discover things on their own; this is known as self-directed learning. Mobile technology enables learners to self-construct their learning

experiences by giving them the chance to immerse themselves in authentic settings, aided by technological devices (Naismith et al., 2004).

In 1978, Vygotsky proposed a paradigm, named social constructivism, defining meaning as a social and cultural product. Vygotsky (1978) asserted that knowledge is collectively structured before being individually incorporated. According to his theory, knowledge thrives in groups as it is with the help of others and for the sake of interacting with them that language patterns can be produced and cultivated. Mobile language learning is highly compatible with social constructivism as it promotes communication and collaboration (Noguera, 2022).

Another pillar of MALL is connectivism. This theory was developed by Siemens (2004), who stated that learning can reside outside of ourselves. All learners need to do, therefore, is take responsibility for their learning by looking for online resources and making the necessary connections. The same concept is promoted by Pettenatti & and Cigognini (2007), who claim that knowledge is constructed via connections learners establish with each other through social networks and with technology itself.

2.2 MALL Targets

Having covered MALL's underpinning theories, let us now look into how MALL can help learners develop language skills. Given that, in this section, the focus will be on the language skills/areas of grammar, vocabulary, listening, speaking, reading, and writing, respectively.

In MALL, grammar lessons can be dealt with in a web-based or mobile medium—an app, for instance—in which students learn the rules first, then move on to tackle MC-based exercises and activities. Explanations and feedback can be provided to students either vocally or in a written form (e.g., SMS). In Iran, Baleghizadeh & and Oladrostam (2010) conducted a research project, in which they tried to explore the impact of handheld technology on learners' grammatical accuracy. The findings of the study revealed that using mobile technology to learn enabled students to improve their linguistic competence.

Done with Grammar, there are two ways in which mobile devices are used to learn vocabulary: through SMS, and via installing apps on the device, preferably those assessed using app evaluation rubrics (Essafi et al., 2024). According to Tayebeh & and Amin (2012), interacting via SMS and emails is a common way to expand one's lexicon. Similarly, Basoglu & Akdemir (2010) examined the effectiveness of relying on mobile apps to acquire English vocabulary. The results indicated that using flashcards on mobile phones had significantly enhanced learners' vocabulary acquisition than paper-based flashcards. Besides, vocabulary apps were found to be of high significance for developing vocabulary repertoire (Niño, 2015).

One of the major skills that can be significantly developed by MALL is listening. According to Bowen et al. (1985), good listening means being able to detect language orally and globally, split it into speech units, re-group these sounds into meaningful combinations, and grasp the meaning behind them. To connect with mobile technology, many studies provided evidence of the effectiveness of app-based learning in developing students' listening skills. For example, Kim (2013) conducted a semester-long study on college students and found that contextualized MALL practice can improve students' listening skills.

The speaking skill is the ability to express our ideas, feelings, thoughts, and needs orally. Speaking is also a challenging skill as it is composed of five elements, namely comprehensibility, pronunciation, lexis, grammar, and fluency. Apps such as WeChat (Xu & Peng, 2017) can develop students' abilities to detect and correct mistakes, as well as to speak with autonomy and confidence. Moreover, apps like WhatsApp can significantly help students to speak, especially psychologically, as they reduce anxiety and increase self-confidence (Han & Keskin, 2016).

Reading comprehension is the act of understanding what you are reading. It is important because without it the reader will miss all written information. MALL helps to develop the reading comprehension of learners. This finding was confirmed by Chang & Hsu (2011), who discovered that learners who worked collaboratively on an annotating process to supplement their reading had significantly outpaced those who worked individually. Likewise, the use of advanced technologies, such as AR (augmented reality) enabled learners to transcend the text by engaging interestingly with videos through scanning relevant in-text information, as revealed by Antonopoulos (2016).

Academic writing is the nightmare of most students. It is so, because it requires, not only learning how to state one's ideas but also developing them using, among other skills, paraphrasing and summarizing. In 2021, Dwigustini et al. carried out a study to see if students could leverage MALL to enhance their writing skills. The results revealed that MALL writing applications can help promote students' writing skills, as demonstrated by the test score increase along with students' participation. In the same vein, Al-Shehab (2020) carried out a study on native Arabic-speaking students. The findings indicated that the use of mobiles for learning had a significant effect on both learning outcomes and learner autonomy.

3. Methodology

3.1 Research Design

In this study, I adopted a cross-sectional design to investigate participants' attitudes and perceptions at a specific point in time (Creswell, 2014). In alignment with this design, a quantitative method was chosen as the aim here is to test variables, such as gender, age, and university level to determine whether each of these variables has any significant effect on students' perceptions of MALL.

3.2 Research Sample

The population of this study are students in the English department at the University of Sidi Mohamed Ben Abdellah, in Morocco. From this population, 164 respondents were sampled. The respondents willingly chose to take part in the study as it was clearly stated that the questionnaire was anonymous; that respondents' information would be kept confidential; and that if they have questions, respondents may ask for clarification.

The sampling method used in this study was convenience sampling. In this type of sampling, researchers select the participants who are most readily available (Fraenkel et al., 2012; Ruane, 2005). I used this technique since it is efficient in terms of cost and time, and because it is easy to carry out, compared to probability sampling, with few rules governing how the sample should be collected.

3.3 Research Instrument

In concord with the quantitative aspect of this study, I used the survey as a tool for data collection. In this respect, paper-based questionnaires, reinforced by techniques to maximize survey response rate, were handed out to a sample of 164 students to fill out. The survey tool was composed of four sections: demographics, mobile technology ownership, MALL acceptance, and digital skills.

First, the initial section comprised the demographics of gender, age range (18-20; 21-23; 24 and above), and university level (undergraduate; graduate; postgraduate). Each of these items represented the independent variable in this study. The second section revolved around mobile device ownership, attempting to answer two dichotomous questions about the devices that students own (smartphones; laptops) as well as the type of internet connection (WIFI; 4G) they rely on. In the third section, a 5-point Likert scale was used to investigate students' perceptions in relation to ten statements about MALL. These statements were inspired by the constructs of the Unified Theory of Acceptance and Use of Technology 2, namely performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), self-management of learning (SML), hedonic motivation (HM), and price value (PV). The last section of the survey tool was an invitation for participants to self-assess their proficiency in using Word, Excel, and PowerPoint via a 5-degree scale.

3.4 Reliability and Validity

Cronbach's alpha was used to ensure that the questionnaire was internally reliable. The obtained coefficient revealed a very good score of 0.865 for items on the MALL acceptance scale. The survey instrument was pilot-tested on seven university students, and observations from the pilot test helped in modifying some of the survey's items, guaranteeing that these items are clearer, and ensuring that the data collection procedures are conducted easily, comfortably, and within a reasonable amount of time.

3.5 Data Analysis

To meet the main objective of this research, I utilized one of the most common methods in data analysis, specifically the Statistical Package for the Social Sciences (SPSS). I chose this software because it processes data for descriptive and inferential analyses, identifies trends, checks reliability, and presents information in various formats and visualizations. I applied the independent sample t-test to the grouping variable of gender, and the one-way ANOVA to the independent variables of age and university level, comparing in all cases the score of each independent variable with the mean score of the items in the MALL acceptance section.

4. Results

This study aims to investigate the influence of students' demographics (gender, age, and university level) on their acceptance of MALL. To achieve this, the main research question was divided into three specific questions about the impact of gender, age, and university level on students' acceptance of MALL.

To assess students' readiness for MALL, the Likert scale was utilized, and its five options: "strongly disagree," "disagree," "neutral," "agree," and "strongly agree," were assigned values from 1 to 5, respectively. Participants were asked to indicate their level of agreement with ten MALL-related statements, as shown in Table 1.

Table 1. Frequencies of Students' Perceptions of MALL Based on Likert Scale Responses

Survey Constructs and Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean Score
1. Engaging with MALL is useful for my learning (performance expectancy).	2 (1.2%)	7 (4.3%)	36 (22.0%)	86 (52.4%)	33 (20.1%)	3.86
2. The use of MALL will enhance my grades (performnace expectancy).	2 (1.2%)	12 (7.3%)	61 (37.2%)	67 (40.9%)	22 (13.4%)	3.58
3. It will be easy for me to become skillful at using MALL (effort expectancy).	2 (1.2%)	7 (4.3%)	39 (23.8%)	85 (51.8%)	31 (18.9%)	3.83
4. I will use MALL if the majority of my peers used it (social influence).	5 (3.0%)	9 (5.5%)	29 (17.7%)	77 (47.0%)	44 (26.8%)	3.89
5. I will use MALL if my teacher is helpful in using it (social influence).	3 (1.8%)	26 (15.9%)	31 (18.9%)	69 (42.1%)	35 (21.3%)	3.65
6. I will use MALL if provided training and help when needed (facilitating conditions).	3 (1.8%)	18 (11.0%)	29 (17.7%)	70 (42.7%)	44 (26.8%)	3.82
7. I will use MALL if the cost associated with it is reasonable (price value).	4 (2.4%)	28 (17.1%)	30 (18.3%)	65 (39.6%)	37 (22.6%)	3.63
8. In terms of studying, I am a self-directed person (self-management of learning).	3 (1.8%)	5 (3.0%)	22 (13.4%)	82 (50.0%)	52 (31.7%)	4.07
9. In terms of studying, I am a self-disciplined person (self-management of learning).	5 (3.0%)	31 (18.9%)	33 (20.1%)	57 (34.8%)	38 (23.2%)	3.56
10. Using MALL will make my study time fun and enjoyable (hedonic motivation).	1 (0.6%)	1 (0.6%)	2 (1.2%)	91 (55.5%)	69 (42.1%)	4.38

Based on interviewees' responses, a great number of students expressed positive attitudes toward the academic use of mobile technology. The majority (M=3.86) agreed that MALL benefits their studies, with 72.5% of participants indicating that it is useful for their learning. In the same line, the belief that MALL would boost grades was the opinion of 89 participants (M=3.58), although there was a count of 61 neutral respondents. This highlights the perceived value of mobile technology in bringing about positive change in students' learning outcomes and experiences. Regarding the ease of becoming skillful in using mobile technologies, 70.7% of participants agreed (M=3.83), which reflects their confidence in leveraging the potential of these technologies. Peer pressure (M=3.89) has also a positive impact on students' adoption of MALL, in that 121 participants admitted that they would use it if the majority of their peers did. Continuing with social influence, a relatively lower mean score was recorded for using mobile technology if teachers are supportive (M=3.65), indicating that while teacher influence is important, it may not be as impactful and crucial as peer influence.

'Facilitating conditions' was also a significant factor, with more than two-thirds of the participants agreeing they would use MALL if provided training and help (M= 3.82). The cost associated with mobile technology should be reasonable (M=3.63), as highlighted by 102 of the respondents, for them to use MALL. This suggests that financial issues might be a barrier to MALL acceptance for approximately two out of three students. Regarding learner autonomy, a high mean score of 4.07 was recorded for self-directed learning, suggesting that 134 of the students feel intrinsically motivated to study. However, the same cannot be said about self-discipline (M=3.56), in that only 95 declared being able to resist distractions. Remarkably, "Using MALL will make my study time fun and enjoyable" received the highest mean score of 4.38, with 97.6% of the participants expressing their agreement with this item of hedonic motivation. This shows that the playful aspect of MALL is a significant predictor of students' acceptance to engage in m-learning projects and initiatives.

4.1. Research Question 1

Is there any significant impact of students' gender on their acceptance of MALL? →

H1: There is a significant impact of students' gender on their acceptance of MALL.

In this section, I will test the study's first hypothesis to determine if there is a significant statistical difference between males and females in students' acceptance of MALL. To do this, I will draw on an independent samples t-test. But before this, let us do some group statistics.

Table 2. Acceptance of MALL Based on Gender (Group Statistics)

	1. Select your gender	N	Mean	Std. Deviation	Std. Error Mean
Acceptance_Mean	Male	70	3.7957	.66298	.07924
	Female	94	3.8489	.60067	.06195

As evident from Table 2, the frequency of females (=94) is greater than that of males (=70). This can be attributed to males' relative reluctance to participate in research studies in general, compared to females. It is also indicated that the mean score of females (M = 3.84) regarding the acceptance of MALL is slightly higher than that of males (M=3.79). However, we need a t-test to see if this difference is statistically significant or not.

Table 3. Acceptance of MALL Based on Gender (Independent Samples Test)

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Acceptance_Mean	Equal variances assumed	1.225	.270	-.537	162	.592	-.05322	.09914	-.24899	.14255
	Equal variances not assumed			-.529	140.256	.598	-.05322	.10059	-.25208	.14564

Table 3 presents the results of both Levene's test and the t-test. Starting with the results of Levene's test, the p-value is calculated at 0.27, which is greater than the alpha value of 0.05. This indicates that the variances are not significantly different from each other, meaning that the homogeneity assumption of the variance is met. Moving on to the results of the t-test, the mean difference is 0.05, and the t-value is reported as t(162) = 0.53, with a corresponding significance value greater than the alpha value (0.59 > 0.05). As a result, the alternative hypothesis is rejected, indicating that gender has no significant impact on students' acceptance of MALL.

4.2. Research Question 2

Is there any significant impact of students' age on their acceptance of MALL?

→ **H1:** There is a significant impact of students' age on their acceptance of MALL.

Having rejected the first hypothesis, I will now proceed to examine whether there are any significant differences in students' acceptance of MALL based on their age. To accomplish this, I will utilize one-way ANOVA. But before moving on to inferential analysis, let us commence by doing some descriptive statistics.

Table 4. Acceptance of MALL Based on Age (Descriptive Statistics)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
18-20	88	3.9545	.63298	.06748	3.8204	4.0887	2.00	5.00
21-23	56	3.6571	.66054	.08827	3.4802	3.8340	1.70	5.00
24 & above	20	3.7350	.31834	.07118	3.5860	3.8840	3.20	4.20
Total	164	3.8262	.62659	.04893	3.7296	3.9228	1.70	5.00

As indicated in Table 4, the age factor was divided into three groups: "18-20", "21-23", and "24 and above", with corresponding frequencies of 88, 56, and 20, respectively. These frequencies reflect the sample's representation, in line with the three university levels considered in this study. The mean scores for the three age groups were as follows: the "18-20" age group has the highest mean score (M=3.95), the "24 and above" age range falls in the middle (M=3.73), and the "21-23" age group has the lowest mean score (M=3.65). At this point, we observe differences between the three age groups. However, further analysis is needed to determine if age has any significant influence on students' acceptance of MALL.

Table 5. Acceptance of MALL Based on Age (One-way ANOVA)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.216	2	1.608	4.260	.016
Within Groups	60.781	161	.378		
Total	63.997	163			

From Table 5, it is evident that there are significant disparities within and between the three age groups under study, with F(2,161) = 4.26, p = .01. As a result, the alternative hypothesis is supported. In light of this, a Scheffe's Post Hoc test is required to determine which specific age group(s) differ(s) significantly from the others.

Table 6. Acceptance of MALL Based on Age (Scheffe's Post Hoc Test)

(I) 2. Select your age range	(J) 2. Select your age range	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
18-20	21-23	.29740*	.10503	.020	.0379	.5569
	24 & above	.21955	.15220	.356	-.1565	.5956
21-23	18-20	-.29740*	.10503	.020	-.5569	-.0379
	24 & above	-.07786	.16005	.888	-.4733	.3176
24 & above	18-20	-.21955	.15220	.356	-.5956	.1565
	21-23	.07786	.16005	.888	-.3176	.4733

After testing each pair of the study's age groups, as displayed in Table 6, we notice the following: the p-value is only significant (p= .020) when the "18-20" and "21-23" age groups are compared; in the other two cases, significance is not reached as the p-value in both cases is greater than the theoretical value of 0.05. This means that students' acceptance of MALL is generally higher among younger students and that a significant difference is noted between when the "18-20" and "21-23" age groups.

4.3. Research Question 3

Is there any significant impact of students' university level on their acceptance of MALL?

→ **H1:** There is a significant impact of students' university level on their acceptance of MALL.

With the first hypothesis rejected, and the second hypothesis supported, let us test hypothesis 3 for any possible statistical significance between the independent and dependent variables under study. As with the second hypothesis, I will rely on one-way ANOVA to analyze the 'university level' variable, both descriptively and inferentially.

Table 7. Acceptance of MALL Based on University Level (Descriptive Statistics)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Undergaduate	98	3.9418	.62143	.06277	3.8172	4.0664	2.00	5.00
Graduate	46	3.6435	.67516	.09955	3.4430	3.8440	1.70	5.00
Postgraduate	20	3.6800	.38058	.08510	3.5019	3.8581	3.00	4.20
Total	164	3.8262	.62659	.04893	3.7296	3.9228	1.70	5.00

To make sure that the study sample is relatively representative of each of the population's sub-groups, the frequencies 98, 46, and 20 were assigned to the "undergraduate," "graduate," and "postgraduate" groups, respectively. Therefore, it is quite apparent from Table 7 that there are noticeable differences between the mean scores of the three groups under study, with the "undergraduate" group led the ranking (M = 3.94), the group of graduates ranked the lowest (M = 3.64), and the "postgraduate" group located in between (M = 3.68). Based on that, a test is needed to test the significance of these differences between the three mean scores.

Table 8. Acceptance of MALL Based on University Level (One-way ANOVA)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.274	2	1.637	4.340	.015
Within Groups	60.724	161	.377		
Total	63.997	163			

As shown in Table 8, there are significant discrepancies between the three groups under study, with F(2,161) = 4.34, p = .01. Consequently, the alternative hypothesis is supported, indicating that the university level significantly influences students' acceptance of MALL. However, to determine which pair of groups is the most significantly impacted, further testing, using Scheffe's Post Hoc test, is required.

Table 9. Acceptance of MALL Based on University Level (Scheffe's Post Hoc Test)

(I) 3. Select your university level	(J) 3. Select your university level	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Undergaduate	Graduate	.29836*	.10976	.027	.0272	.5695
	Postgraduate	.26184	.15069	.224	-.1105	.6341
Graduate	Undergaduate	-.29836*	.10976	.027	-.5695	-.0272
	Postgraduate	-.03652	.16449	.976	-.4429	.3699
Postgraduate	Undergaduate	-.26184	.15069	.224	-.6341	.1105
	Graduate	.03652	.16449	.976	-.3699	.4429

As evident from Table 9, undergraduate students have a higher mean acceptance score than graduate students, with a mean difference of 0.29, which is significant at the 0.05 level (p = 0.02). This significance is absent when the group of postgraduates is

compared with both the undergraduate and the graduate groups, as in both cases the mean differences of 0.26 and 0.03 are not significant, with (p=0.22) and (p=0.97), respectively. The results indicate that undergraduates, and to a lesser extent postgraduates (with no recorded significance), display a higher readiness to adopt and use MALL than their graduate counterparts.

5. Discussion

In this research, the first question explored the impact of gender on students' acceptance of MALL. The results of the independent sample t-test showed that there is no significant difference in students' acceptance of MALL based on their gender. This finding matches previous studies that found no significant difference between male and female students' regarding the acceptance of using technology for language learning. For instance, Warschauer and Healey (1998) examined gender differences in the use of computer-based writing tools in a college writing course and found no significant gender-based variations between students. In line with this, many studies reported no significant difference between male and female students' attitudes toward mobile learning (Al-Emran et al., 2016; Yurdagül & Öz, 2018).

That said, some studies have found that gender does influence technology acceptance in language learning. For example, Al-Jarf (2004) showed that male students had more positive attitudes toward the use of CALL than female students. Similarly, Sultan (2019) found the same result when examining the perceptions of university students of mobile learning. Overall, the results of the current study suggest that gender is not a significant factor in predicting students' acceptance of MALL. However, more research is needed to explore the relationship between gender and MALL further. Additionally, future studies could consider other factors that may influence students' attitudes toward educational mobile technology, such as familiarity with technology and cultural background.

Done with research question one, the second research question investigated the impact of age on students' acceptance of MALL. The research results indicated that there is a significant impact of students' age on their willingness to engage in MALL. The study used one-way ANOVA to test the hypothesis and found that the mean scores of the three age groups differed significantly. These findings are in line with similar research studies in the field, which also found that age is an important factor in the acceptance of using technology in education. For instance, a study by Kukulska-Hulme and Shield (2008) demonstrated that younger learners were more likely to use mobile devices for language learning than their older learners. These results are consistent with those of Wang, et al.'s (2011), who found that younger learners had more positive attitudes toward MALL than their older counterparts.

On the other hand, other studies, though significantly fewer, suggested no significant relationship between age and MALL acceptance. For example, a study by Zheng and Warschauer (2015) found that age did not significantly predict learners' attitudes toward MALL. Likewise, a study by Donaldson (2010) discovered that age was not a significant predictor of students' acceptance of leveraging mobile technologies for language learning. Instead, the study found that factors such as performance expectancy, social influence, perceived playfulness, and voluntariness of use were more important in determining students' acceptance. Overall, the results of this study suggest that age is an important factor to consider when implementing MALL in educational settings. Educators should take into account the different age ranges of their students and tailor their MALL activities to suit their learners' needs and preferences.

The third question examined the impact of students' university level on their acceptance of MALL. The results revealed that the university level has a significant impact on students' acceptance of MALL. This finding is consistent with previous studies, which showed educational level to be a significant predictor of students' adoption of technology. For example, Al-Emran et al. (2016) suggested that graduate students were more likely to use mobile learning applications for language learning than undergraduate students. Similarly, Burton-Jones and Hubona (2006) revealed that a higher educational level leads to the same previous results since it reduces technology anxiety and improves the overall attitude toward a technology-enhanced learning environment.

However, some opposing research studies have found no significant relationship between university level and technology acceptance. For example, a UTAUT-based study by Al Masarweh and Afandi (2022), examined MALL adoption and found educational level to have no substantive impact on students' acceptance. In the same vein, a study by Elogie et al. (2015) argued that there was no significant relationship between the level of study and smartphone adoption. In brief, the study at hand indicated that the university level can impact students' acceptance of MALL, but mixed findings in the literature suggest that individual differences in technology readiness may also play a role. Educators therefore should be mindful of these factors when designing language learning activities and strive to create a positive attitude toward MALL.

6. Conclusion

The study aimed to investigate the impact of demographics, such as gender, age, and university level on students' acceptance of MALL. The results indicated that gender did not have a significant impact on students' acceptance of MALL. Age, on the other hand, was found to be an important factor, with the mean scores of the three age groups differing significantly. Furthermore, university level was also found to be a significant factor, with undergraduate students being more likely to use mobile technology for language learning.

However, this study has some limitations. First, the use of convenience sampling may limit the generalizability of the results, as the sample may not be representative of the population (Xodabande & Boroughani, 2023). Moreover, the study focused on a single context, which could restrict the applicability of the findings. Future research could address these limitations by increasing the sample size and including multiple case studies. Another limitation is the reliance on self-reported data, which could introduce bias (Choi & Pak, 2005). Future studies could integrate more objective measures to provide a more accurate picture.

The study underscores the need to take into account the demographics of age and university level when launching a MALL-based project. This entails taking two important measures, be it in theory or practice. First, courses can be designed in a graded manner (introductory, intermediate, and advanced); with flexible learning paths, allowing students to select courses and modules that best align with their needs, interests, and existing knowledge. Second, teachers should change their teaching practices by differentiating their instruction, offering customized assignments, encouraging peer mentoring, and fostering shared learning.

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