Acceptance and Use of Mobile-Assisted Language Learning for Vocational College Students

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Abstract. Few research reports can claim that students have accepted MALL (Mobile-assisted language learning). Exploring the key influencing factors of students 'mobile language learning will promote the ultimate effect of students' language learning. However, there are little researches on MALL of students, especially vocational students. This study aims to explore the factors that influence the acceptance and use of MALL of Chinese vocational college students. UTAUT (Unified Theory of Acceptance and Use of Technology) was used to propose a behavioral model for the acceptance of MALL by vocational students. The questionnaire data were analyzed through SPSS25 and SmartPLS3, and the factors affecting the acceptance of MALL by vocational students were evaluated. The results show that ATT (Attitude towards behavior) and SI (Social influence) were the key influencing factors of BI (Behavior intention) and FC (Facilitating conditions) were the key influencing factors of BI and ATT. Recommendation: The relevant stakeholders of mobile language learning in higher vocational colleges should promote the convenience of MALL, influence higher vocational students, and improve the learning effect of MALL through community influence.

Keywords: MALL · UTAUT · Vocational college students · SmartPLS3 · Influence factor

1 Introduction

Mobile-Assisted Language Learning (MALL) is considered a method of using mobile devices to support and enhance language learning. Mobile devices have created a new research field related to language learning and mobile technology. Learners can independently learn a second language (L2) anytime, anywhere. Mobile learning and MALL have become the focus (Cakmak 2019). These emerging studies have begun to focus on different aspects of language learning, Such as there have been related acceptance (Hoi 2020), reading (Gutiérrez-Colón et al., 2020), vocabulary, listening, and speaking, writing (Al-Shehab 2020), pronunciation, memory (Ozer and Kılıç 2018). Many studies have shown that mobile devices can be ideal language learning tools (Nasr and Abbas

S. Shi et al. (Eds.): 6GN 2021, LNICST 439, pp. 573–589, 2022.
https://doi.org/10.1007/978-3-031-04245-4_50

2018). New technologies such as 5G will continue to enrich the connotation of the education scene, promote the transformation of the education scene, and become the driving force of China's education information innovation. The changes brought about by new technologies such as 5G will also bring new experiences to university education (Baratè et al. 2019; Lee and Kim 2020).

However, few studies report student acceptance of MALL (Azli et al. 2018; Shadiev et al. 2020). Today, the scale of China's higher vocational education ranks first in the world, with more than 1,400 higher vocational schools and more than 15 million students. According to the data currently available to the author, the research on MALL in higher vocational colleges in my country started relatively late, and empirical research accounts for a relatively low proportion. There are relatively few studies on the acceptance and use of MALL by higher vocational students.

The UTAUT model is becoming popular with educational research (Salloum and Shaalan 2018; Kayali and Alaaraj 2020). UTAUT provides a theoretically enhanced research framework, It can study the determinants of technology use and acceptance in different contexts. For example, Botero (2018) Research on the acceptance and use of MALL by higher education students based on the UTAUT model. Morchid (2019) studied the determinants of Morchid students ' use and acceptance of MALL based on the UTAUT model. In addition, many studies in the educational environment incorporate ATT (Attitude towards behavior) into the UTAUT model. Their research found that ATT (Attitude towards behavior) is an important factor affecting acceptance of MALL (Liebenberg et al. 2018). At the same time, in the MALL research, many scholars have adopted the SEM research method (Ozer and Kılıç 2018; Loewen et al. 2019).

City College of Huizhou is the largest vocational school in Huizhou City, with more than 15,000 students. Students in the business and international Department need to study professional English for three years. They all have experience in using mobile terminals to learn English. Construct a behavioral model suitable for Chinese vocational students' acceptance of MALL, and explore the influence that affects vocational students' acceptance of MALL, so that vocational education can make better use of MALL, and MALL can help vocational students to better improve their professional English. We will adopt quantitative analysis methods. Search out the factors that affect the acceptance and use of MALL by vocational college students. Therefore, the main goals of this research are as follows:

(i) Based on the UTAUT model, put forward a model of Chinese higher vocational students accepting MALL, and develop and statistically verify MALL-specific tools.
(ii) Assess the dimensions that affect the behavioral intentions of vocational students and the actual use of MALL.
(iii) Determine the influencing factors of Chinese higher vocational students' acceptance of MALL. Provide reference for developing countries and college students who have never received formal introduction or training from MALL, and provide reference for higher vocational English education in China.

2 Literature Review

2.1 UTAUT

UTAUT was first proposed in 2003 by Venkatesh, Morris, and Davis. UTAUT is a synthesis of eight acceptance models. This model integration can explain behavioral intentions better than any single technology acceptance model (Marchewka et al. 2007). The UTAUT model is a synthesis of eight theories: IDT (Innovation Diffusion Theory) and SCT (Social Cognition Theory), TRA (Rational Action Theory), MPCU (PC Usage Model), TPB (Planned Behavior Theory) and TAM (Technology Acceptance Model), MM (Motivation Model) (Venkatesh et al. 2003). UTAUT provides a theoretically scalable research framework that can examine the determinants of technology use and acceptance in different circumstances. Figure 1 shows the UATUT model.

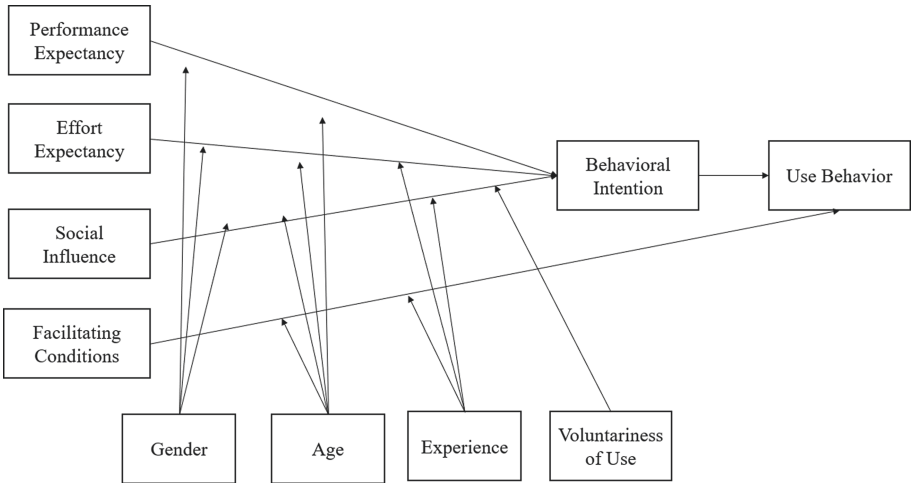

Fig. 1. The UTAUT model (Venkatesh et al. 2003, p. 447)

See Fig. 1, the UTAUT model is configured to supply PE (Performance expectancy), EE (Effort expectancy), SI (Social influence), and the impact on FC (Facilitating conditions) on BI (Behavioral intention) and use behavior. In addition, these connections are also influenced through gender, age, experience, and voluntary use. The basic structure of UTAUT has been verified many times.

The model is suitable for research in multiple scenarios, including mobile payment (Raza et al. 2019; Patil et al. 2020; Al-Saedi et al. 2020), e-learning (Persada et al. 2019). According to research reports on mobile learning, UTAUT has been used to estimate the acceptance of mobile learning in higher education (Aliaño et al. 2019) to investigate the acceptance in developing countries (Dwivedi et al. 2020). UTAUT is becoming more and more popular in the educational environment, but the research on MALL is still limited.

The UTAUT model integrates research on technology use and acceptance, it can measure behavior patterns in different contexts by extending the framework. Since MALL is a branch of mobile learning, this research on MALL can draw on UTAUT's research results in mobile learning and e-learning, including its related research results to analyze the acceptance of developing countries.

In summary, this research on the acceptance and use of MALL by Chinese vocational students chooses UTAUT as the benchmark research model. In addition, based on similar research in mobile learning environments, the model is expanded by adding attitude towards behavior (Liebenberg et al. 2018; Chao 2019; Kayali and Alaaraj 2020).

2.2 Research on Mobile-Assisted Language Learning

Based on different perspectives, scholars have researched the use of MALL. Mooneeb Ali (2020) explored the mentality of private university students to learn English through MALL and found that learning English through MALL also helps them increase their confidence in other fields. Sun (2018) explored the relationship between intrinsic motivation, key variables related to technology adoption, and students' behavioral intentions in MALL. Yang (2020) research in MALL shows that the lack of motivation of unsuccessful learners is the main obstacle to their self-regulated learning. This research attempts to analyze an important part of learners' motivation. The results of Miqawati (2020) in MALL show that MALL is very important and can be used as a choice to promote students' pronunciation learning. (Butarbutar et al. 2020) analysis results show that the use of MALL can effectively stimulate students' motivation, establish self-learning language, help enrich vocabulary, and promote speaking, grammar, and listening skills. Some scholars have explored the characteristics of students' English learning behavior in the mobile technology environment and grasped the students' learning habits and learning path from the behavioral level. There have also been researches aimed at higher vocational students, and investigations have been conducted from the overall current situation, group differences, and influencing factors of the higher vocational student MALL. Gonulal (2019) proved that the MALL application is an effective mobile language learning tool. Cakmak proposed the design principles of MALL in 2019 and proposed the conceptual framework of MALL. Kan (2018) research shows that in the eyes of students, the role of teachers is very limited, and students expect more support from teachers for MALL in extracurricular activities.

According to the literature, the related research on mobile language learning has roughly gone through four stages.

(i) Research on information interaction methods such as the organization of English teaching content and the design of teaching tasks.
(ii) Build an intelligent mobile learning system.
(iii) Study on learning effectiveness and satisfaction.
(iv) The development of mobile language learning theory research.

There are few MALL kinds of research on vocational students. In addition, vocational students have a relatively poor foundation, relatively poor initiative, and relatively poor learning ability. The research content of MALL is relatively inclined to the effectiveness

of the MALL system and pays more attention to the research of system-level design and development. Reports on the acceptance of MALL by higher vocational students are still lacking. There is no report claiming to fully reflect the actual situation of higher vocational students' acceptance of MALL.

It is very important to study the acceptance and use of MALL by students. To this end, this article will conduct research on the acceptance of MALL by higher vocational students based on UTUAT theory. For this reason, taking vocational students as the research object, a multi-dimensional questionnaire was designed to extract the current situation of vocational college students' acceptance of MALL learning English, aiming to pick up the important factors that appertain the acceptance and use of MALL by vocational students. Expand UTAUT model research in the field of Chinese higher vocational English education, and provide empirical references for related MALL users.

2.3 Research Model and Hypothesis

UTAUT provides a theoretically scalable research framework that can examine the determinants of technology use and acceptance in different circumstances. Scalability happens to be a key feature of UTAUT. So in this study, the internal structure of the UTAUT model is reconfigured and expanded, ATT (Attitude towards behavior) variables are introduced into the UTAUT model to adapt to the reality of the City College of Huizhou. Figure 1 shows a research model, which will be used to explain the usage of MALL by vocational students and the hypothetical relationship between variables.

Performance Expectancy (PE)
In the UTAUT model, Venkatesh et al. (2003) defined PE as the degree to which the individual feels that using the system can improve work performance. In this study, PE is further defined as the degree to which vocational students subjectively believe that MALL can improve English learning performance. Many reports acknowledge the importance of PE acceptance research in the educational environment (Salloum and Shaalan 2018; Chao 2019).

Effort Expectancy (EE)
Venkatesh et al. (2003) defined EE as the amount of effort an individual must put in to use the system. In this study, EE is defined as the degree to which higher vocational students believe that using MALL to achieve their goals can save effort.

Social Influence (SI)
A program that people who have an important personal impact think that using the system is important. In different acceptance models, it is expressed as a "subject specification." Venkatesh et al. (2003) distinguished between mandatory and non-mandatory social impacts in the environment because they found it to be meaningful in the former case, but not important in the latter case. Subsequent studies found similar trends (Shukla 2020).

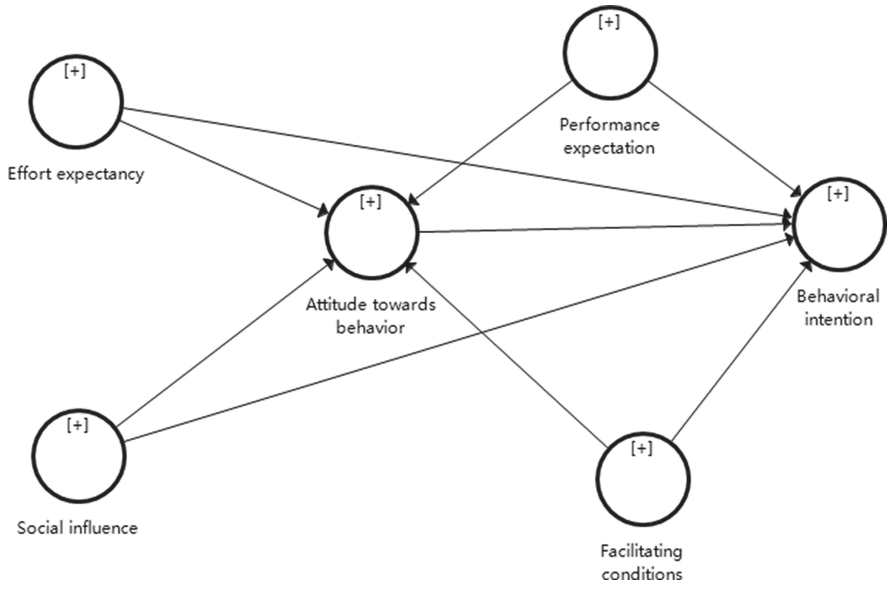

Fig. 2. The research model of accepting and using MALL by Chinese higher vocational students

Facilitating Conditions (FC)
Venkatesh et al. (2003) pointed out that FC has no added value to PE and EE when predicting intent. However, other studies have shown this relationship (Alsswey and Al-Samarraie 2019). FC also has a positive impact on the use of UB (Kemp et al. 2019; Bervell and Arkorful 2020). Here, FC is defined as the degree to which higher vocational students subjectively believe that the currently available software and hardware technologies and equipment support the use of MALL.

Behavioral Intention (BI)
In theory, BI has a significant positive impact on the use of technology. This relationship has been confirmed in many educational technologies research.

Attitude Towards Behavior (ATT)
ATT is an assessment of how much an individual likes or dislikes performing a certain behavior (Fishbein and Ajzen 1975). This study is based on the ATT as the degree of love or dislike of MALL for higher vocational students.

Cumulative studies have shown that many research and education literature has incorporated ATT into the UTAUT model and regarded it as a necessary factor for acceptance. Therefore, the following assumptions are made:

H1: ATT positively affects BI
H2: EE positively affects ATT
H3: EE positively affects BI
H4: FC positively affects ATT
H5: FC positively affects BI

H6: PE and ATT are positively correlated.
H7: PE and BI are positively correlated.
H8: SI and ATT are positively correlated.
H9: SI and BI are positively correlated.
H10: Through ATT, PE has a mediating effect on BI.
H11: Through ATT, EE has a mediating effect on BI.
H12: Through ATT, SI has a mediating effect on BI.
H13: Through ATT, FC has a mediating effect on BI.

3 Methodology

Students from the business and international departments of the school have experience in MALL. The subjects of this survey are students from these two departments. The questionnaire will quote items from MALL-related literature. In the pre-test stage of the questionnaire, use SPSS25 software to inspect the reliability and validity of the questionnaire. After confirming the formal questionnaire, publish it on the Internet, allowing students to fill in the questionnaire via the Internet. The results of the questionnaire will use quantitative analysis methods, mainly using SmartPLS3 for analysis. Measure and evaluate the proposed model. Including reliability and validity measurement, including path analysis, mediation effect test, and hypothesis test.

3.1 Measuring Instrument

Respondents are from City College of Huizhou students in the three grades in 2018, 2019, and 2020, and they are students with a mobile language learning experience. Because in the department of business and international, the English courses of the international department and the business department are corresponding professional courses, and talent training goals are closely related. Therefore, the subject of this survey will be targeted at vocational students in the three grades in the international department and the business department of our school. Respondents were randomly selected from two departments; through the questionnaire, members of this course group produced and designed questionnaires including demographic attributes, ATT, SI, PE, EE, FC, BI, frequency, and experience.

The questionnaire adopted and modified the PE, EE SI, FC, ATT, and BI items of the predecessors. The questionnaire uses a Likert scale. The scale is set from 1–7, from "strongly disagree" to "strongly agree", with 1–7 points in turn.

3.2 Partial Least Square Structural Equation Modeling (PLS-SEM)

PLS is an analysis technology used to detect models. In addition, PLS can also analyze predictive models. PLS is better than general linear structural relationship models (such as LISREL). PLS can handle multiple dependent variables and multiple independent variables, PLS can overcome the problem of multicollinearity, PLS effectively handles interfering data and missing values, PLS input response variables have a large impact on potential variables, and PLS Reflectance and formative indicators can be processed

at the same time, especially PLS is suitable for small samples, and PLS is not limited by data distribution.

The SmartPLS software was developed by Ringle, Wende & Will in 2005. This study uses the SmartPLS3 to analyze the data, uses the partial least squares method to estimate the reliability and validity of the measurement model and the path coefficient of the structural model, and uses the bootstrap method to repeatedly sample 5,000 Secondly to verify the significance of all estimated parameters. Since PLS can not only handle multiple dependent variables and multiple independent variables, but also the latent variable estimation of an observed variable, it can also overcome the problem of multivariate collinearity, and it has strong handling of interfering data and missing values. the reactive index variable has a strong ability to predict potential variables, and more importantly, it is not restricted by data allocation (Henseler and Chin 2010; Sarstedt, Wong 2019), so it is suitable for the variable characteristics of this study.

The PLS analysis of this study has two steps: first, test the reliability and validity of the measurement model; second, test the significance and predictive ability of the path coefficient. Structural model (Wong 2019).

3.3 Items Validity and Reliability

At the pre-testing stage of the questionnaire, we collected 100 valid questionnaires. The CR value of all question items passed the test. The VIF values of EE4, EE5, and FC3 are all greater than 5, So EE4, EE4, and FC3 have been deleted. The final formal questionnaire was determined to be 5 questions in the PE dimension, 5 questions in the EE dimension, 4 questions in the SI dimension, 5 questions in the FC dimension, 5 questions in the ATT dimension, and 3 questions in the BI dimension. ATT is the intermediate variable, and BI is the target variable. Use the Likert seven-point scale to obtain data from the target sample, adopt quantitative analysis research methods, and use SPS25 and SmartPLS3.

3.4 Population and Sample

In the formal questionnaire stage, we collected 352 questionnaires, of which 18 questionnaires had a response time lower than the normal range, and 12 questionnaires had repeated options of 70%. After processing, there are 322 valid questionnaires. The effective response rate of the questionnaire was 91%, which met the measurement requirements of SPSS25.0 and SmartPLS3.0.

For the returned questionnaire, SPSS25 was used for preliminary analysis. There are 181 first-year college students, accounting for 56.21%, 102 s-year college students, accounting for 31.69%; 29 third-year college students, accounting for 12.11%; 112 boys, accounting for 34.78%, and 210 girls. Accounted for 65.22%; 100 people aged 18 and below, accounting for 33.06%; 107 people aged 19, accounting for 32.23%; 76 people aged 20, accounting for 23.6%; 27 people aged 21, accounting for 8.39%; 22 years old and 12 people above the age, accounting for 3.73%; among the respondents who use mobile learning English every day, 89 people, accounting for 27.02%, 35 people using it 3 times a week, accounting for 10.87%; those using it twice a week There were 77 people, accounting for 23.91%; 84 people used it once a week, accounting for 26.09%;

39 people used it once every half month, accounting for 12.11%; among the respondents, 110 people had less than 3 months 34.16% of the use experience; 56 people have 3 to 6 months of use experience, accounting for 17.39%; 52 people have 6 months to 1 year of use experience, accounting for 16.15%; 28 people have 1 year to 2 years of experience, accounting for 8.7%; 76 people have more than 2 years of experience, accounting for 23.6%.

4 Findings and Discussion

4.1 Measurement Model Analysis

Measurement model verification includes three aspects: internal consistency, convergence validity and discriminative validity.

J. Nunnally and Bernstein (1994) pointed out that exploratory research can accept a CR (composite reliability) value between 06 and 0.7, and for exploratory research, the CR value greater than 0.7 and less than 0.9 is considered very appropriate. The CR value must be higher than 0.7 to guarantee enough internal consistency (Hair et al. 2016; Gefen, Straub, and Boudreau 2000). An indicator to measure the reliability of structured projects is that the value of Cronbach's Alpha α is greater than 0.7 (Nunnally and Bernstein 1994). The details of CR and Cronbach's Alpha α in this study are shown in Table 1.

See Table 1, CR (ATT = 0.936; BI = 0.951; EE = 0.949; FC = 0.941; PE = 0.947; SI = 0.943), the smallest CR value obtained for each construct is 0.936, and the largest CR value is 0.957. Cronbach's Alpha α (ATT = 0.915; BI = 0.923; EE = 0.933; FC = 0.921; PE = 0.930; SI = 0.918). The smallest Cronbach's Alpha α is 0.915 and the largest is 0.933. CR is greater than 0.7 and Cronbach's Alpha a is greater than 0.7. They are acceptable values. These 6 sub-constructors (ATT, SI, PE, EE, FC, and BI) and formation structures have a high degree of internal consistency and reliability.

Convergence validity is evaluated by three tests: external load, CR, and extracted average variance (AVE). External load value > 0.7, AVE value > 0.5 (Hair et al. 2016).

See Table 1 and Table 3. The AVE values of all structures in this study (ATT = 0.745; BI = 0.866; EE = 0.789; FC = 0.761; PE = 0.781; SI = 0.805) all exceed 0.5 (Bartlett, Kotrlik, and Higgins 2001), their CR values (ATT = 0.936; BI = 0.951; EE = 0.949; FC = 0.941; PE = 0.947; SI = 0.943) all exceed 0.7 (Hair et al. 2016). The external load exceeds 0.7.

Perform discriminant validity analysis to assess how discrepancy the experiment structure is from other structures. This analysis can judge the degree of correlation between one structure and another and how many items can express a single structure (Hair et al. 2016). This study uses cross-loading, Kriteria Fornell & Larcker to estimate discriminant validity.

See Table 2. The value of the square root of AVE is greater than the other structural correlation values, indicating that the measurement model this time has good discriminative validity (Hair et al. 2016).

The measurement has good convergent validity and discriminative validity.

Table 1. Basic results of the measurement model

Construct	Items	Factor loading	Cronbach's Alpha	CR	AVE
ATT	ATT1	0.867	0.915	0.936	0.745
	ATT2	0.874			
	ATT3	0.873			
	ATT4	0.859			
	ATT5	0.844			
BI	BI1	0.943	0.923	0.951	0.866
	BI2	0.934			
	BI3	0.915			
EE	EE1	0.891	0.933	0.949	0.789
	EE2	0.878			
	EE3	0.881			
	EE6	0.907			
	EE7	0.884			
FC	FC1	0.804	0.921	0.941	0.761
	FC2	0.893			
	FC4	0.890			
	FC5	0.906			
	FC6	0.864			
PE	PE1	0.837	0.930	0.947	0.781
	PE2	0.892			
	PE3	0.917			
	PE4	0.888			
	PE5	0.884			
SI	SI1	0.904	0.918	0.943	0.805
	SI2	0.929			
	SI3	0.921			
	SI4	0.831			

Table 2. Fornell & Larcker

	1	2	3	4	5	6
ATT	**0.863**					
BI	0.814	**0.931**				
EE	0.756	0.793	**0.888**			
FC	0.815	0.853	0.821	**0.872**		
PE	0.676	0.72	0.882	0.722	**0.884**	
SI	0.76	0.819	0.877	0.839	0.801	**0.897**

Table 3. The result of cross–loadings

	1	2	3	4	5	6
ATT1	**0.867**	0.65	0.623	0.672	0.569	0.633
ATT2	**0.874**	0.634	0.589	0.62	0.556	0.609
ATT3	**0.873**	0.584	0.609	0.67	0.518	0.594
ATT4	**0.859**	0.849	0.736	0.767	0.647	0.742
ATT5	**0.844**	0.742	0.674	0.757	0.602	0.673
BI1	0.768	**0.943**	0.772	0.824	0.681	0.795
BI2	0.741	**0.934**	0.744	0.76	0.694	0.775
BI3	0.763	**0.915**	0.698	0.796	0.635	0.715
EE1	0.655	0.67	**0.891**	0.685	0.81	0.721
EE2	0.626	0.694	**0.878**	0.662	0.804	0.734
EE3	0.664	0.701	**0.881**	0.728	0.758	0.755
EE6	0.692	0.708	**0.907**	0.781	0.772	0.827
EE7	0.715	0.748	**0.884**	0.783	0.785	0.848
FC1	0.652	0.686	0.643	**0.804**	0.553	0.668
FC2	0.726	0.712	0.753	**0.893**	0.658	0.759
FC4	0.706	0.732	0.736	**0.89**	0.645	0.73
FC5	0.764	0.85	0.778	**0.906**	0.701	0.798
FC6	0.7	0.727	0.661	0.864	**0.582**	0.695
PE1	0.542	0.581	0.72	0.56	**0.837**	0.662
PE2	0.593	0.633	0.777	0.648	**0.892**	0.729
PE3	0.61	0.658	0.803	0.637	**0.917**	0.742
PE4	0.622	0.674	0.797	0.684	**0.888**	0.721
PE5	0.616	0.632	0.806	0.655	**0.884**	0.686

(*continued*)

Table 3. (*continued*)

	1	2	3	4	5	6
SI1	0.7	0.727	0.86	0.769	0.782	**0.904**
SI2	0.697	0.756	0.807	0.76	0.758	**0.929**
SI3	0.67	0.737	0.799	0.756	0.718	**0.921**
SI4	0.659	0.717	0.675	0.724	0.613	**0.831**

4.2 Structural Model Analysis

In this study, PLS was used for structural model verification, and the bootstrap method was used to repeatedly sample 5,000 times to verify the path coefficient and significance of the structural model.

R^2 value refers to the part that can be explained in the total variance of a variable. If its value is approximately 0.67, it is considered to be large, approximately 0.333 is considered to be moderate, and approximately 0.19 is considered to be weak. Figure 2 shows the analysis result of the structural model. The value in the circle is the R^2 value.

As shown in Fig. 3, it can be seen that the results of this study found that PE, EE, SI, FC explain the variation of ATT to 69.1%, and performance The explanatory power of PE, EE, SI, FC, and ATT to the variation of BI is 79.2%. As far as Chin (1998) and Ringle (2004) are concerned, the explanatory power of the relevant variables of this model can be said to be quite large.

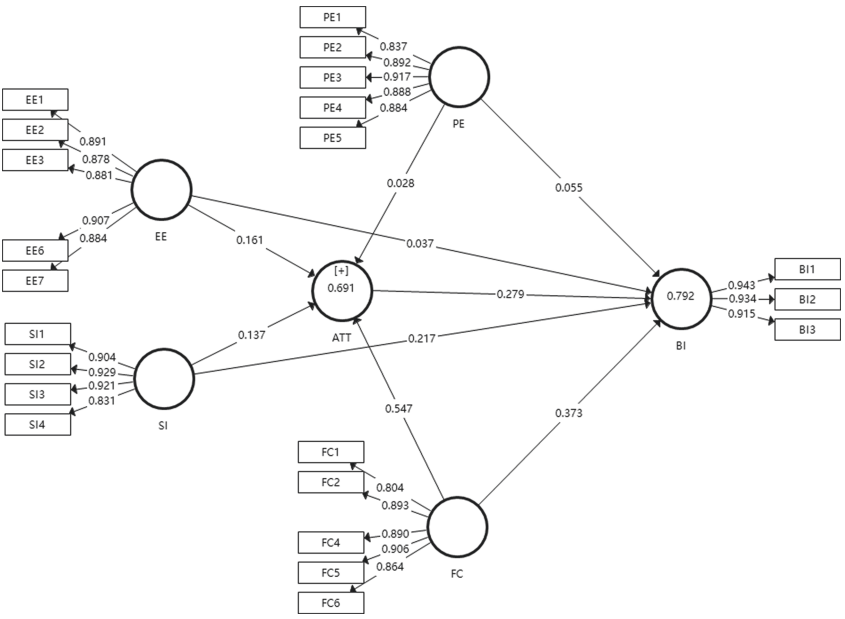

Fig. 3. PLS algorithm results

See Table 4, it can be seen that H1(ATT-> BI) ($\beta = 0.279$,$T = 4.298$, $p < 0.01$), so H1 is established, that is, ATT has a significant impact on BI. H2 (EE-> ATT) ($\beta = 0.161$, $T = 2.185$, $p < 0.05$), so H2 is established, that is, EE has a significant effect on ATT. H3 (EE-> BI) ($\beta = 0.037$, $T = 0.524$, $p > 0.05$), so H3 does not hold, that is, the effect of EE on BI is not significant. H4 (FC-> ATT) ($\beta = 0.547$, $T = 8.095$, $p < 0.01$), so H4 is established, that is, FC has a significant effect on ATT. H5 (FC-> BI) ($\beta = 0.373$, $T = 4.187$, $p < 0.01$), so H5 is established, that is, FC has a significant effect on BI. H6 (PE-> ATT) ($\beta = 0.028$, $T = 0.46$, $p > 0.05$), so H6 is not valid, and PE has no significant effect on ATT. H7 (PE-> BI) ($\beta = 0.055$, $T = 1.087$, $p > 0.05$), so H7 does not hold, that is, the effect of PE on BI is not significant. H8 (SI-> ATT) ($\beta = 0.137$, $T = 2.012$, $p < 0.05$), so H8 is established, that is, SI has a significant effect on ATT. H9 (SI-> BI) ($\beta = 0.217$, $T = 2.694$, $p < 0.05$), so H9 is established, that is, SI has a significant impact on BI.

Table 4. The result of relationship

Hypothesis	Path	β	T	P	Yes/No
H1	ATT -> BI	0.279	4.298	0.000	Yes
H2	EE -> ATT	0.161	2.185	0.029	Yes
H3	EE -> BI	0.037	0.524	0.600	**No**
H4	FC -> ATT	0.547	8.095	0.000	Yes
H5	FC -> BI	0.373	4.187	0.000	Yes
H6	PE -> ATT	0.028	0.460	0.646	**No**
H7	PE -> BI	0.055	1.087	0.277	**No**
H8	SI -> ATT	0.137	2.012	0.044	Yes
H9	SI -> BI	0.217	2.694	0.007	Yes

4.3 Analysis of Intermediary Effect

See Table 5, the mediating effect of EE on BI through ATT, (EE-> ATT-> BI) ($\beta = 0.045$, $T = 1.86$, $p > 0.05$), the mediating effect is not significant. FC has a mediating effect on BI through ATT, (FC-> ATT-> BI) ($\beta = 0.153$, $T = 3.729$, $p < 0.01$). The mediating effect of PE on BI through ATT, (PE- > ATT-> BI) ($\beta = 0.008$, $T = 0.426$, $p > 0.05$), the mediating effect is not significant. SI can mediate BI through ATT, (SI- > ATT-> BI) ($\beta = 0.038$, $T = 1.711$, $p > 0.05$), and the mediation effect is not significant.

VAF is further calculated by the relationship between direct effect and indirect effect (explained variation ratio = indirect effect/recombination effect), because VAF > 80% is a complete mediation; VAF between 20% and 80% is a partial mediation; VAF < 20% Means that there is no mediating effect. FC has an intermediary effect on BI through ATT, that is, the VAF of (FC-> ATT-> BI) is 29%, so there is a partial intermediary effect.

Table 5. The result of intermediary effect

Path	β	T	P
EE -> ATT -> BI	0.045	1.860	0.063
FC -> ATT -> BI	0.153	3.729	0.000
PE -> ATT -> BI	0.008	0.426	0.670
SI -> ATT -> BI	0.038	1.711	0.087

5 Conclusions and Recommendations

5.1 Conclusion

This research is based on the UTAUT model and combined with Attitude and Behavior (ATT) to construct a model of influencing factors of mobile language learning (MALL) for vocational students. And taking 3 grade students with mobile language learning experience in City College of Huizhou as a sample, using quantitative analysis methods, analyzing data through structural equation modeling, extracting key influencing factors that affect the use of MALL by vocational students, and exploring its possibilities Existing relationships, including mediation effects, etc. The findings of this discussion:

(i) Attitude towards behavior (ATT) has a significant impact on behavioral intention (BI), ($\beta = 0.279$, $T = 4.298$, $p < 0.01$); effort expectation (EE) has no significant impact on attitude behavior (ATT), ($\beta = 0.161$, $T = 2.185$, $p < 0.05$); Expectation of effort (EE) has no significant impact on behavioral intention (BI), ($\beta = 0.037$, $T = 0.524$, $p > 0.05$); Facilitating conditions (FC) on behavioral attitude. The influence of ATT is significant, ($\beta = 0.547$, $T = 8.095$, $p < 0.01$); Facilitating conditions (FC) have a significant influence on behavior intention (BI), (FC- > BI) ($\beta = 0.373$, $T = 4.187$, $p < 0.01$); the effect of performance expectation (PE) on ATT is not significant, ($\beta = 0.028$, $T = 0.46$, $p > 0.05$); the effect of performance expectation (PE) on BI, The effect is not significant, ($\beta = 0.055$, $T = 1.087$, $p > 0.05$); the influence of Social influence on ATT is significant, ($\beta = 0.137$, $T = 2.012$, $p < 0.05$); Social influence (SI) has a significant impact on BI, (SI- > BI) ($\beta = 0.217$, $T = 2.694$, $p < 0.05$).

(ii) FC's mediating effect on BI through ATT, (FC-> ATT-> BI) ($\beta = 0.153$, $T = 3.729$, $p < 0.01$), The mediating effect of BI is exists, and the VAF of (FC-> AT-> BI) is 29%, so there is a partial mediating effect.

(iii) PE, EE, SI, and FC can explain up to 69.1% of the variation of ATT; PE, EE, SI, FC, and ATT can explain the variation of BI reached 79.2%.

This research shows that FC and SI form the most critical factors in the use of MALL by higher vocational students. ATT and FC are the key factors that determine the continuous use of MALL by vocational students.

5.2 Research Limitations

In terms of research, research always has certain limitations. In this study, this study used subjective measures collected through self-reports, so students' responses may be biased. Moreover, this research is non-experimental, and acceptance is only measured at a certain point in time. However, as individuals gain experience, perceptions will change over time. Repeated research on measures will enable people to better understand and analyze the causality of variables, and at the same time can provide insights into the possible changes in acceptance over time. In addition, the data collected only come from the relevant students of City College of Huizhou International department and Business department. As a regional higher vocational college, City College of Huizhou has certain representativeness. Next, we need to further understand the understanding and acceptance of MALL by vocational students from different regions and vocational students from different majors. Future research should also include other potential and moderating variables, and research related factors from different mobile language learning platforms.

5.3 Recommendations

Higher vocational schools continue to carry out relevant research on mobile language learning, to further grasp the needs of higher vocational for MALL and related promotion of privacy, conduct more objective quantitative research on the goals of MALL, and provide more and more effective empirical evidence, Furthermore, more English teachers are encouraged to recommend MALL to students to improve the effect of mobile language learning for vocational students.

Give full play to the driving force of community influence. Stakeholders of higher vocational education, namely MALL industry and English language teachers should be widely MALL.

Vocational education stakeholders, that is, MALL industry and higher vocational school managers, and related policy makers, need to further improve and optimize the convenience of using MALL in higher vocational schools. As the status of mobile language learning in education continues to improve, and behavior intentions are mainly affected by convenience, community influence, and behavior attitude, vocational students believe that MALL will help them achieve their learning goals.

We suggest: The relevant stakeholders of mobile language learning in higher vocational colleges should promote the convenience of MALL, influence higher vocational students, and improve the learning effect of MALL through community influence.

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