



Test takers' attitudes of using exam-oriented mobile application as a tool to adapt in a high-stakes speaking test

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Abstract

Mobile-assisted Language Learning (MALL) has been widely adopted in teaching and learning, yet there has been scant research concerning speaking test adaptation. An emerging type of mobile application is designed to facilitate test takers' performance in a high-stakes speaking test (e.g., the International English Language Testing System (IELTS)). Such an exam-oriented mobile application provides customized learning opportunity with automatic feedbacks through artificial intelligence (AI) technology for users to enhance their speaking skills. This study aims to explore the attitudes of test takers on using exam-oriented mobile application to adapt in testing environment as influenced by their perceptions through the theory of Technology Acceptance Model. 235 Chinese IELTS test takers with experience of using such applications were invited to fill out an online questionnaire. Collected data were analysed through statistical method, textual analysis, word cloud approach, and sentiment analysis. Results revealed that test takers' perceived usefulness and perceived ease of use towards the exam-oriented mobile application explained their attitudes to use such an application. They also expressed the concern of personalized AI function to support speaking test adaptation. Implications for educators, test taker, and application developers are provided.

Keywords Mobile-assisted language learning · Mobile application · High-stakes speaking test · Artificial intelligence · Test takers' attitudes

1 Introduction

Mobile-assisted Language Learning (MALL) that combines digital technology and language learning, refers to language learning could be undertaken with mobile devices without place or time restriction (Kukulska-Hulme, 2009; Traxler

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& Kukulska-Hulme, 2015). The technical development has an impact on language learning (Ahmed et al., 2022; Ahn & Lee, 2016; Leinonen et al., 2016) since the use of digital technology and internet influence the way on how learners master language learning (Mazer et al., 2007). For instance, language learners have an easy access to download numerous applications on their portable devices to practice language skills at their own pace (Gangaiamaran & Pasupathi, 2017). The research on integrating technology in English as a foreign and second language learning has been explored in listening skill (Kim, 2013), speaking proficiency (Tonekaboni, 2019), reading comprehension (Chen & Hsu, 2008), and grammar exercises in writing (Li & Hegelheimer, 2013), which has been witnessed its effectiveness comparing from traditional language learning (Golonka et al., 2014; Mihaylova et al., 2022).

Among four basic language skills (i.e., listening, speaking, reading, and writing) in an English-as-a-foreign-language (EFL) context, speaking competence has been considered the most difficult skill in language teaching (Ounis, 2017) and learning (Rao, 2019). In terms of speaking assessment, students tend to receive lower scores comparing to that in listening (Metwally et al., 2022) and reading tests in the International English Language Testing System (IELTS) Academic (Official IELTS Website, 2022). A possible explanation is that speaking is a productive skill (Ounis, 2017) involving a combination of multiple skills such as fluency, lexis, grammar, and pronunciation (Ahmad et al., 2019). This linguistic competence is also the standard assessment criteria in IELTS speaking test (Nakatsuhara et al., 2016). Prior research has explored a positive effect of using mobile application on improving different components of speaking, including fluency (Jung, 2011), lexical resources (Hwang et al., 2022), grammatical accuracy (Baleghizadeh & Oladrostam, 2010), and pronunciation practice (Ducate & Lomicka, 2009). Since speaking competence is a form of language output concerning the use of multiple skills at the same time (Evans & Green, 2007), the overall speaking performance with the use of mobile application remains a doubt.

To overcome students' difficulty in speaking, MALL serves as an alternative and effective approach for teaching and self-learning. A systematic review on mobile applications improving English speaking skill conducted by Rajendran and Yunus (2021) found that MALL cultivates a stress-free and user-friendly speaking learning environments with a support for situated learning in class. In addition, students reported that using mobile application after class reinforces their English speaking skill without the distress of being judged (Zou & Li, 2015). Previous evidence has explored the effectiveness of MALL in speaking class and after class (Rajendran & Yunus, 2021; Zou & Li, 2015), whereas few studies investigate the fully self-regulated MALL in adapting to formal high-stakes speaking tests such as IELTS. According to the British Council's IELTS report released in 2019, the latest number of test takers grew to 3.5 million each year (British Council, 2019). With the large number of candidates taking part in IELTS, the exam-oriented mobile application helps test takers to practice speaking skill and prepares for the high-stakes assessment (Lestary, 2020). Exam-oriented speaking mobile application, as its name implies, provides users with speaking exam-related learning materials (Li, 2020).

Taking IELTS speaking test as a representative example, test takers need to have a face-to-face speaking assessment with examiner on site (Nakatsuhara et al., 2016).

Even though the arrangement of speaking test has been influenced by the global pandemic, test centres still provide an online video-conferencing speaking test mode for test takers to have an oral test with an examiner individually (Nakatsuhara et al., 2021). Test takers were found to be more anxious when attending a speaking test with an examiner than responding to a machine with the absence of an examiner (Andujar & Cruz-Martínez, 2020). Although Alsatuey (2011) found that mobile application lowers students' speaking anxiety in language class, this might not apply to the test environment. Considering the demand from test takers in preparation for a speaking test, artificial intelligence (AI) integrated applications emerged to provide personalized content, feedback, and learning path (Karakaya & Bozkurt, 2022). AI function not only helps test takers to adapt to a high-stakes speaking test, but also affords a mocked test environment with the purpose of enhancing language input, output, and interaction (Zou et al., 2020). A systematic review on the use of AI in language teaching and learning conducted by Sharadgah and Sa'di (2022) showed that AI in English language learning is still in its infancy. With the availability of AI integrated mobile applications in the market, it is interesting to explore test takers' attitudes of using such applications for the purpose of high-stake test preparation.

2 Literature review

2.1 Mobile assisted language assessment (MALA)

Mobile devices with relevant applications have been used in various contexts of language learning and assessment. For example, Gromik (2012) engaged university students to use English and the video recording function in cell phone to express their topic of interest for a duration of 14 weeks. He found that video recording feature is a possible way to evaluate learners' speaking skills. Tarighat and Khodabakhsh (2016) explored the feasibility of using common social network application 'WhatsApp' to evaluate students' speaking proficiency by sharing students' recorded speech with classmates and teacher. They concluded that this approach provided an opportunity for students to practice their speaking skills. In another study, Loewen et al. (2019) studied the effectiveness of using a commercial second language learning applications 'Duolingo'. The learning gains of using 'Duolingo' was mixed. However, a meta-analysis study conducted by Burston (2015) found only three studies with the focus on speaking skills. In the most recent systematic review, Chen and Lin (2023) found that the assessment tasks in mobile technology followed paper and pencils assessment with a focus on vocabulary acquisition. The lack of interpersonal communication is one of the weaknesses of current mobile technology. Existing MALA studies seems to show that mobile technology is a possible approach in language learning and assessment.

2.2 Test takers' attitudes of using MALL in preparation for speaking test

Students' attitudes of using mobile application in preparing for speaking test have recently attracted the attention of scholars. For example, Saritepeci et al. (2019) investigated Turkish participants' perspectives toward the use of mobile application 'WhatsApp' to prepare for a national academic language exam. By adopting content analysis method to analyze the data from the interviews, learners reflected their satisfaction and motivation towards mobile devices. Students may practice speaking skill without restriction on time and location (Lestary, 2020). Students also prefer the flexible and gamified affordance of mobile technology (Loewen et al., 2019). Despite the potential of mobile technology in preparation for speaking test, students also voiced out its limitation in terms of internet connection issues and insufficient speaking activities (Saritepeci et al., 2019), lack of speaking partners (Tarighat & Khodabakhsh, 2016), and no immediate feedback (Lestary, 2020).

2.3 AI in exam-oriented speaking mobile application: potentials and challenges

AI in exam-oriented mobile application refers to the integration of AI into the mobile application designing for test preparation. Example of such application in the market is 'Liulishuo', a leading mobile application with AI technology for students to practice English speaking in China (Li, 2020). 'IELTS Liulishuo' is designed to help students in IELTS examination based on exam-oriented learning materials and a simulation speaking environment. After the student completes the conversation with the AI examiner, such application generates an immediate and detailed report in terms of pronunciation, vocabulary, fluency, grammar, and score. Practicing speaking skills in AI-based exam-oriented application enables student to talk interactively and becomes familiar with the high-stakes speaking test environment (Mei et al., 2022). This may reduce their anxiety in actual situation (Luo & Cheng, 2020).

Although there is a potential of AI in language education, the current AI-based exam-oriented application is still limited in its AI function. For example, the speaking applications could only recognize basic pronunciation of words (Kholis, 2021). Another limitation of such application is the pre-designed nature of learning materials which may not provide a highly interactive environment for student to talk. Such system suffers from the fact that it is unable to distinguish every utterance and recognize all words with high accuracy (Li & Zou, 2022). This in turn affects the quality of individualized feedback provided to the student (Li, 2020). In fact, a systematic review of AI in language education confirmed AI has great potentials in language education but it is still in the developing stage (Chen & Lin, 2023).

2.4 Theoretical framework

This research was based on the theory of Technology Acceptance Model (TAM). TAM is a widely used theory in illustrating personal attitudes of information technology, which is determined by perceived ease of use and perceived usefulness (Davis, 1989). Perceived ease of use refers to the simplicity of using a system,

whereas perceived usefulness is the efficiency of working with a system (Davis, 1989). Ma and Liu (2004) systematically concluded that perceived ease of use and perceived usefulness predict the attitudes of information technology based on 26 empirical studies. Several empirical studies investigated TAM to support the attitudes of MALL for English vocabulary learning (Chung et al., 2015), oral practice (Hsieh et al., 2017), and language learning (Azli et al., 2018) since learners showed agreement on perceived ease of use and perceived usefulness of MALL. The reason for using TAM to conduct this research is that students were found to initially start with self-preparation for language tests (Knoch et al., 2020). Self-study is the most frequent choice selected by test takers to optimize their test performance (Lei, 2021). However, the limitation of self-preparation for speaking test is insufficient opportunities provided to engage with English speaking community (Alzahrani, 2019). Therefore, it is necessary to investigate whether the TAM model explains test takers' attitudes of using mobile application as influenced by their perceptions to prepare for a high-stake speaking test.

3 Purpose of the study

In China, lots of students plan to study abroad (Chen, 2017) and these students have to take an international English language test such as IELTS. Due to the huge market in this area, there are lots of exam-oriented language mobile applications such as Duolingo (Wagner, 2020), Liulishuo (Li, 2020), and RealSkill (Zou et al., 2020) available in the market. A recent systematic review of mobile application in Chinese EFL context by Zhou (2021) also endorsed the popularity of MALL in China. It is interesting and relevant to explore Chinese test takers' attitudes of using exam-oriented application for speaking test preparation as influenced by their perceptions. The study has the potential to provide concrete evidence for applications developers to design better functions for the exam-oriented application. Due to the infancy of AI in English speaking test, this study may provide empirical evidence of test takers' perception of using AI integrated exam-oriented mobile application in English language learning. The following research questions guided the current study:

1. What are the attitudes of test takers using exam-oriented mobile application as influenced by their perceptions based on the theory of Technology Acceptance Model?
2. What are the main advantages and disadvantages of exam-oriented mobile application?
3. What are the attitudes of test takers towards the AI function in exam-oriented mobile application?

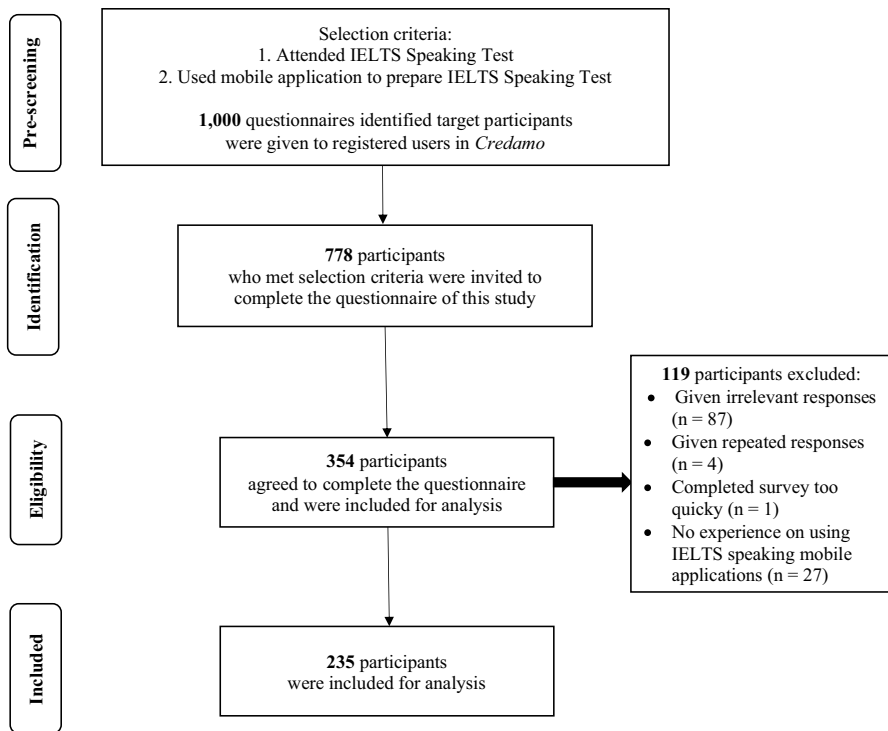


Fig. 1 Participants selection

4 Methodology

4.1 Participants

As shown in Fig. 1, the first online questionnaire with particular selection criteria was randomly distributed through Credamo, which is an online survey platform with more than three million registered users. There were 1000 Chinese respondents with 778 participants who met the criteria of attendance in IELTS speaking test and adoption of mobile application to prepare for the speaking test in IELTS. The second online questionnaire was sent to these 778 participants. A financial incentive of 2 RMB was given to all 354 individual participants who agreed to take part in the study via Credamo. The exclusion criteria for identifying invalid responses questionnaire were adapted from Dewitt et al. (2019). There were 119 invalid responses with the reasons of irrelevant responses (i.e., answering “yes” to the question of “how many hours of using mobile application(s)”), repeated response (i.e., providing identical answers to the questions of “advantage and disadvantage of using mobile application(s) to prepare for IELTS speaking test”), quick response time (i.e., the survey of this study included more than 30 questions which was impossible to be completed within three minutes), and no relevant experience of using

mobile application(s) to prepare for IELTS speaking test. It is noted that “experience of using mobile application(s) to prepare for IELTS speaking test” was set up in the pre-screening stage of the first questionnaire. The reason for asking the same question in the second questionnaire was to ensure the trustworthiness of recruiting eligible participants in this study. The result turned out as 27 participants remaining ineligible ones. In total, 235 participants were included for analysis in this research.

Among these participants, their first language were all Chinese with 83 males and 152 females. The mean age of them was 26.94 years. The included 235 participants were from 28 out of 31 provincial-level administrative regions in mainland China, which represent the diversity of the data to reveal Chinese IELTS test takers’ attitudes on using mobile applications to prepare for IELTS speaking test. Test takers spent a daily average of 2.36 h (ranging from 30 min to 6 h) preparing for IELTS speaking test with exam-oriented mobile application. The majority of respondents (47%) reported using exam-oriented speaking mobile application 3–5 times per week, followed by more than 5 times per week (30%), and 1–2 times per week (23%) for IELTS speaking test preparation. With regard to the most popular IELTS speaking mobile application, 41.01% test takers of this study chose New Oriental

Table 1 Likert scale and open-ended survey questions

Measurement Questions	Variable
Learning to operate IELTS speaking mobile application(s) is easy for me	PEOU1
Using IELTS speaking mobile application(s) is easy and understandable	PEOU2
IELTS speaking mobile application(s) can easily fulfill my needs for practice	PEOU3
Interacting with IELTS speaking mobile application(s) is clear and understandable	PEOU4
Using IELTS speaking mobile application(s) is easy for me to become skillful	PEOU5
IELTS speaking mobile application(s) is easy for me to use	PEOU6
Using mobile application(s) enables me to adapt to IELTS speaking test more quickly	PU1
Using mobile application(s) improves my IELTS speaking test performance	PU2
Using mobile application(s) increases my productivity on adapting to IELTS speaking test	PU3
Using mobile application(s) enhances my effectiveness on adapting to IELTS speaking test	PU4
Using mobile application(s) makes it easier for me to adapt to IELTS speaking test	PU5
Mobile application(s) is useful for me to adapt to IELTS speaking test	PU6
The overall attitudes of using mobile application(s) to prepare for IELTS speaking test	ATT
Open-ended questions	
What advantage does speaking mobile application(s) have during preparing for an IELTS speaking test?	
What disadvantage does speaking mobile application(s) have during preparing for an IELTS speaking test?	
How do you feel when practicing IELTS speaking test with an AI examiner ^a ?	
What word comes to your mind when you hear “AI examiner” ^a ?	

This table presents the questions in the survey of this study. PEOU = Perceived Ease of Use; PU = Perceived Usefulness; ATT = Attitude

^aAs the word “AI examiner” is used in a majority of exam-oriented mobile applications, the word “AI examiner” is used in the survey

IELTS Pro. The other preferable mobile applications to prepare IELTS speaking test were Liulishuo IELTS (33.33%), followed by IELTS Bro (14.03%), Xiaozhan IELTS (7.24%), Yangtuo IELTS (3.95%), and two other mobile applications naming KeKe English and WantWords (0.44%) were mentioned by participants.

4.2 Survey instrument

All items used to measure the variables (Table 1) based on TAM were adapted from previous research (Ghani et al., 2019; Lewis, 2019). The 7-point Likert-scale questions (from “1 = extremely unlikely” to “7 = extremely likely”) regarding mobile application(s) were perceived ease of use, perceived usefulness, and attitude toward the speaking mobile application(s). Four open-ended questions about advantage and disadvantage of using mobile application(s) during speaking test preparation, feeling of AI examiner, and one word comes to mind concerning AI examiner were also designed in this questionnaire.

4.3 Data analysis

To investigate IELTS test takers’ attitudes on using mobile application to adapt in speaking test environment, both quantitative and qualitative analyses were conducted. The quantitative data for research question 1 was entered into the Statistical Package for Social Sciences (SPSS) version 26 and analysed by using multiple linear regression. The qualitative data for research question 2 was examined by the method of textual analysis and manually categorized by two authors of this manuscript carefully with an agreement. The qualitative data for research question 3 was analysed on Divominer to perform sentiment analysis and was visualized with word cloud approach by utilizing WordArt platform.

5 Results

5.1 Perceptions and attitudes of test takers using exam-oriented mobile application based on TAM

Table 2 displays the descriptive statistics for the constructs of survey questions based on the theory of Technology Acceptance Model. There were no missing data for perceived ease of use, perceived usefulness, or attitude. All statements of perceived ease of use and perceived usefulness ranked highly with an average of 5.72 and 5.70 out of 7.00 respectively. Participants ranked “Using IELTS speaking mobile application(s) is clear and understandable” the highest among others in terms of perceived ease of use at 5.89, while six statements were almost scored the same in perceived usefulness. Participants’ attitudes of using mobile application(s) to prepare for IELTS speaking test was strong with 5.79 out of 7.00.

Table 2 Descriptive statistics of constructs based on the TAM model

	Mean	Std. Dev	Min	Max	N	Missing
Perceived Ease of Use (PEOU)						
Learning to operate IELTS speaking mobile application(s) is easy for me	5.71	0.78	2	7	235	0
Using IELTS speaking mobile application(s) is easy and understandable	5.89	0.84	3	7	235	0
IELTS speaking mobile application(s) can easily fulfill my needs for practice	5.63	0.88	3	7	235	0
Interacting with IELTS speaking mobile application(s) is easy and understandable	5.60	0.87	3	7	235	0
Using IELTS speaking mobile application(s) is easy for me to become skillful	5.73	0.93	2	7	235	0
IELTS speaking mobile application(s) is easy for me to use	5.75	0.90	2	7	235	0
Perceived Usefulness (PU)						
Using mobile application(s) enables me to adapt to IELTS speaking test more quickly	5.59	1.01	2	7	235	0
Using mobile application(s) improves my IELTS speaking test performance	5.76	0.89	3	7	235	0
Using mobile application(s) increases my productivity on adapting to IELTS speaking test	5.62	0.86	3	7	235	0
Using mobile application(s) enhances my effectiveness on adapting to IELTS speaking test	5.75	0.79	3	7	235	0
Using mobile application(s) makes it easier for me to adapt to IELTS speaking test	5.70	0.84	3	7	235	0
Mobile application(s) is useful for me to adapt to IELTS speaking test	5.75	0.83	3	7	235	0
Attitude (ATT)						
The overall attitudes of using mobile application(s) to prepare for IELTS speaking test	5.79	0.77	3	7	235	0

Table 3 Measurement model fit indices of the TAM

Variable	Corrected Item-total Correlations	Variance Extracted	Cronbach's Alpha
PEOU1	0.50	0.67	0.72
PEOU2	0.41	0.69	
PEOU3	0.50	0.66	
PEOU4	0.42	0.69	
PEOU5	0.35	0.71	
PEOU6	0.54	0.65	
PU1	0.51	0.70	0.74
PU2	0.46	0.72	
PU3	0.50	0.70	
PU4	0.38	0.73	
PU5	0.54	0.69	
PU6	0.51	0.70	

Reliability of the survey items was measured using Cronbach's alpha coefficients (Table 3). All values for perceived ease of use and perceived usefulness were found to exceed 0.70, which are considered good for strength of association (Taber, 2018).

The first objective of this study was to explore test takers' attitudes towards using exam-oriented mobile application in preparing for IELTS speaking test. Variation inflation factors (VIF) was initially measured. The VIF range when comparing each independent variable ranged between 1.00 and 1.85, representing that multicollinearity was not an issue in this study. A multiple regression analysis was used to test two hypotheses based on the TAM model. The first hypothesis is whether perceived

Table 4 Result of regression analysis^a

Model	B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig
(Constant)	1.106	0.460		2.406	0.017
PEOU	0.437	0.101	0.319	4.309	0.000
PU	0.384	0.098	0.290	3.911	0.000

PEOU = Perceived Ease of Use; PU = Perceived Usefulness; ATT = Attitude

^aIndependent variables are PEOU and PU, and dependent variable is ATT

Table 5 Result of regression analysis^a

Model	B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig
(Constant)	1.698	0.286		5.937	0.017
PEOU	0.699	0.050	0.677	14.038	0.000

PEOU = Perceived Ease of Use

^aIndependent variable is PEOU, and dependent variable is PU

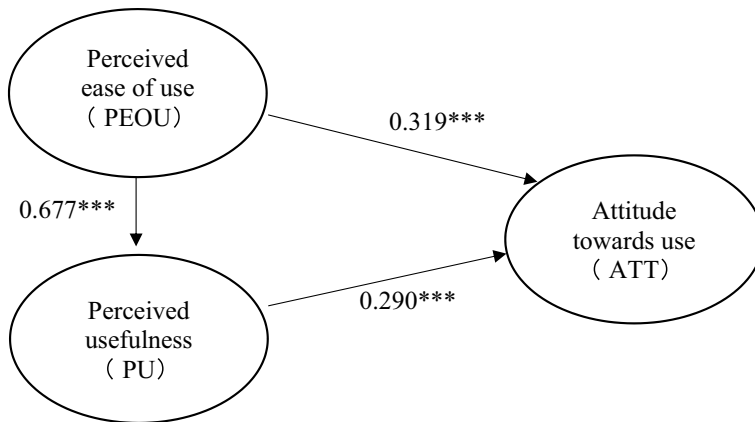


Fig. 2 Results of the TAM model (Standardized Coefficients). *Note.* *** $p < 0.001$

ease of use and perceived usefulness predict attitude towards use, and the second hypothesis is whether perceived ease of use predicts perceived usefulness. As shown in Table 4, perceived ease of use and perceived usefulness were significant predictors of attitudes towards using exam-oriented mobile application in preparing for IELTS test. As presented in Table 5, perceived ease of use significantly predicted perceived usefulness.

Based on the results presented in Tables 4 and 5, Fig. 2 presents the results of the analysis based on the TAM model. It can be observed that perceived ease of use largely influenced perceived usefulness. Although perceived ease of use and perceived usefulness were both significant predictors of attitude, perceived ease of use had a greater prediction of attitude than perceived usefulness. In general, the result of TAM in this study implies that test takers' attitudes toward using exam-oriented mobile application to adapt to the high-stakes IELTS speaking test were positive,

Table 6 Advantages of using exam-oriented speaking mobile application identified by participants

Theme	Advantages	Frequency	%
Features	No restriction on time and place with convenience	126	53.62%
	Easy to use	13	5.53%
	Low cost/free use	4	1.70%
Functional Uses	Test preparation	42	17.87%
	Abundant resources	29	12.34%
	Improvement on speaking proficiency level	16	6.81%
	Feedback and score	5	2.13%

Table 7 Disadvantages of using exam-oriented speaking mobile application identified by participants

Theme	Disadvantages	Frequency	%
Technical issues	System and network problems	44	18.72%
	Distractions	32	13.61%
	Tiny screen	3	1.28%
	Storage capacity	2	0.85%
Material and learning platform issues	Poor interaction or no test feeling	53	22.55%
	Insufficient resources	33	14.04%
	Lack of personalized or immediate feedback	19	8.09%
	Language problem	11	4.68%
	Scoring issue	9	3.83%
Financial issue	Expensive charge	15	6.38%
Health issue	Harmfulness on eyes and ears	8	3.40%
No identified issue	No shortcomings	6	2.55%

which were greatly influenced by the perceived ease of use, followed by the perceived usefulness of exam-oriented speaking mobile application.

5.2 Evaluation of exam-oriented speaking mobile application

In order to gain additional insights, the second objective of this study was to understand the main advantages and disadvantages of exam-oriented mobile application that have been of concerns to IELTS speaking test takers. Textual analysis is to describe, interpret, and understand texts (McKee, 2014).

There were two themes and seven aspects of advantages being recognized by 235 participants, which were summarized in Table 6. The advantage of features (60.85%) in mobile application had greater preferences embraced by respondents than its functional uses (39.15%). Of the 235 participants, the highest positive feedback was related to no restriction on time and place with convenience (53.62%), whereas the low cost/ free use was the advantage least mentioned by only 4 participants. Although the feedback concerning advantage in functional uses of exam-oriented speaking mobile application was less than the positive opinions of features, test preparation was the second largest positive feedback (17.87%) received from participants. Participants evaluated exam-oriented speaking mobile application with abundant resources (12.34%), improvement on speaking proficiency level (6.81%), and receiving feedback and score (2.13%) that contributed to test preparation as functional uses.

Table 7 categorizes five themes and twelve disadvantages of utilizing a mobile application to prepare for the IELTS speaking test as reported by exam-oriented mobile application users. Material and learning platform issues received the most complaints (53.19%), including poor interaction or no test feeling, insufficient resources, lack of personalized or immediate feedback, language problem, and scoring issue. Technical concerns were highlighted by participants as the second largest

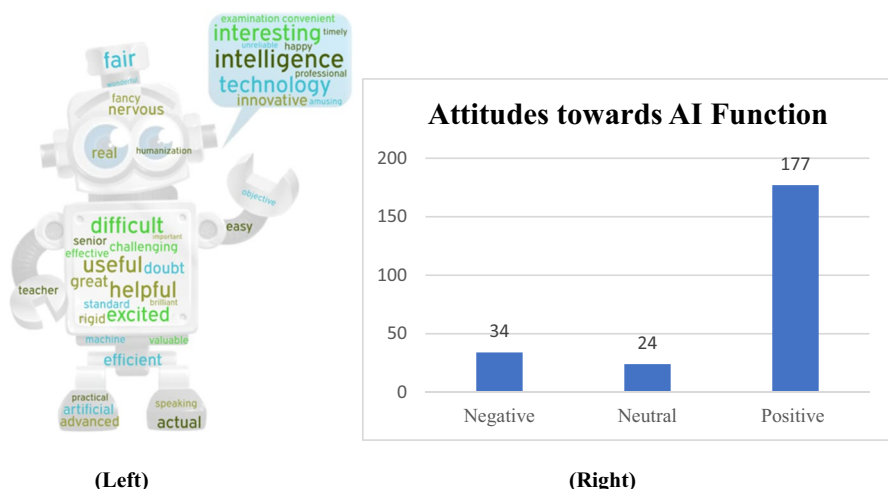


Fig. 3 Word cloud and sentiment analysis of AI function in exam-oriented mobile application

drawback (34.45%). System and network problems, distractions, a tiny screen, and storage capacity were to blame. Financial and health issues were the two additional concerns expressed by 23 respondents. Six participants were silent about the identification of the disadvantage.

5.3 Attitudes of test takers towards AI function in exam-oriented speaking mobile application by word cloud and sentiment analysis

With regard to the emerging AI function in exam-oriented speaking mobile application, it is important to explore test takers' attitudes by adopting word cloud approach to visualize the frequency and importance of their one-word comment. Word cloud, a visual representation of frequency, identifies the importance of certain words and vary in word size (Singh, 2012). In other words, words with greater mentioned frequency indicate its importance and present in a larger size (DePaolo & Wilkinson, 2014). The word cloud in Fig. 3 (Left) for research question 3 depicts that "Intelligence" is the word which was mentioned the most frequently (33 times) by respondents followed by other words with greater frequency such as "interesting (14 times), technology (12 times), useful (10 times), and helpful (9 times)". This implies that participants realize that AI examiner is an intelligent and interesting by-product of technology, which is useful and helpful for them to prepare for IELTS speaking test. Apart from the mentioned word with greater frequency, 3 participants considered the feedback and scores provided by AI examiner was "fair" with 2 participants regarded it as a tool with "humanization".

On performing a sentiment analysis for the third research question, the graph in Fig. 3 (Right) showed that a positive attitude was embraced by 75% participants, while nearly 15% respondents held negative opinion and 10% of them kept neutral perception. This indicated that a majority of test takers feel that AI function

in exam-oriented speaking mobile application helps them adapt to IELTS speaking test.

6 Discussions

The findings of this study reported that the use of speaking mobile application in test preparation is directly determined by test takers' attitudes based on their perceived usefulness and perceived ease of use. Overall, the result of this study implied that perceived ease of use was the greater predictor of the test takers' attitude toward the adaptation of exam-oriented mobile application in the high-stakes IELTS speaking test than perceived usefulness. Although the literature review suggests studies looking at exam-oriented speaking mobile application within a fully learner-led based on TAM are relatively rare, the findings of this study were in accordance with Hsieh et al.'s (2017) study. Both indicated that perceived ease of use is a stronger predictor of attitude than perceived usefulness in terms of mobile application for speaking practice.

Test takers revealed the advantages and problems of using mobile application for test preparation. The greatest advantage of using mobile application to prepare for IELTS speaking test is "no restriction on time and place with convenience", which was consistent with the benefits proposed by Lestary (2020) who also found that the main benefit of using mobile application is to practice speaking skill without consideration of time and place. This study also adds the functional use of speaking mobile application that test takers consider it helpful. In the theme of functional use of speaking mobile application, the use of test preparation has been recognized as the highest function. This indicates that test takers agree the potential influence of mobile application to aid speaking test preparation. The disadvantages associated with using mobile application for IELTS speaking test preparation, such as internet connection issues and insufficient resources, were found to be consistent with the findings from Saritepeci et al.'s (2019). Test takers were not satisfied with the interactive feature of the exam-oriented mobile application which they did not find the simulated environment authentic. This might be due to the problem of existing limitation of mobile application in recognizing test takers' speech (Kholis, 2021), the lack of immediate and relevant feedback (Lestary, 2020; Li, 2020). This finding is distinctive as it shows the need of test takers in test preparation.

The attitude of test takers towards the AI function in exam-oriented mobile application is quite positive as the word "intelligent" and "interesting" were the two highest frequency word that test taker responded. They may be comfortable and curious with the smart functions provided in the speaking mobile application. In addition, "technology", "useful", and "helpful" were additional mentioned words with considerable frequency in this study, which were consistent to students' perception on using mobile application to practice speaking skill after class (Zou et al., 2020). This implies that AI function integrated in mobile application has been regarded as a useful technology to help both test takers and learners to enhance speaking performance. This may explain why such application is

common in China (Huang & Li, 2020). Since AI provides a stimulating speaking test environment with an animated examiner on mobile application (Li, 2020), participants considered this AI function as “humanization”. This research is the first to explore test takers’ attitudes on the use of AI function in exam-oriented speaking mobile applications. The findings indicate that a majority of participants expressed positive agreement prevailed over their disagreement and neutral opinions. This aligns with the idea that using mobile application facilitates test adaptation, as supported by Zhang and Zou’s (2020) study. Since AI in speaking mobile application is an emerging tool in test adaptation (Zou et al., 2020), test takers may have different perceptions with the development of the tool. Even though this study reveals that test takers still expect improvement in such application, they are also keen to use it in test preparation.

7 Implications and directions for future study

Findings of this study may help test takers, educators, and application developers. Exam-oriented mobile application may serve as an alternative learning tool for test takers. They should search for the appropriate functions in the exam-oriented mobile applications to optimize their test preparation time. Language educators may consider incorporating such application to provide an interactive speaking partner for students to practice oral skills and build up confidence in speaking (Tarighat & Khodabakhsh, 2016). Feedback provided by the mobile application may serve as a reference for language teachers to devise relevant teaching instruction in the speaking classes. Application developers are informed of test takers demand of exam-oriented speaking mobile applications. They may improve the features and functionality of mobile applications accordingly.

Findings of this study are based on the test preparation experiences of Chinese test taker using the exam-oriented mobile applications developed in China through an online questionnaire. More in-depth study is needed to understand test takers’ practice and attitudes towards such application. In addition, it is interesting if similar findings are located in other countries where functions of similar applications may be different.

8 Conclusion

Since the research on exploring MALL in speaking test is scarce, this research is innovative in exploring test takers’ attitudes on using exam-oriented mobile application to adapt to the high-stake IELTS speaking test as influenced by their perceptions based on TAM. Test takers are quite positive in using such application for speaking test preparation. They prefer to have an easy and useful tool during their self-learning process. In addition, test takers also recognized that no time or place restriction and effectiveness are the advantages of exam-oriented speaking mobile application, while internet connections, resources, test feelings,

and personalized feedback are the main problems. Finally, a majority of test takers had a positive attitude towards the intelligent AI function, indicating the potential for test takers to use AI examiner to get familiar with the high-stakes IELTS speaking process and environment in advance.

Data availability The datasets used in the current study are available from the corresponding author on reasonable request.

Declarations

Conflict of interest None.

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