Understanding instructors' tablet adoption for note-taking in interpreting: insights from the GETAMEL model

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With the rise in popularity of tablets, professional interpreters were among the early adopters who integrated them into their workflow. Tablets have also become an indispensable tool for students, including those studying interpreting, who utilize them in the classroom for various purposes, such as note-taking. However, despite this growing trend, the traditional practice of pen-and-paper note-taking remains prevalent. Additionally, current interpreting textbooks primarily focus on teaching pen-and-paper note-taking skills. As interpreting instructors, it is crucial for us to familiarize ourselves with the use of tablets for note-taking in consecutive interpreting (CI). This will enable us to adapt our teaching methods accordingly and cater to the needs of the "iPad Kids" generation. The purpose of this study is to use quantitative method to examine the factors that contribute to the adoption of tablets for note-taking by instructors in the classroom environment. A questionnaire was developed based on the General Extended Technology Acceptance Model for E-learning (GETAMEL) framework. The questionnaire was distributed to teachers at prominent foreign language universities, foreign language faculties in select comprehensive universities and translation training institutions across Chinese Mainland and Macao Special Administrative Region of China. To provide comprehensive insights into the variables under study, descriptive statistics were generated using both SPSS 25.0 and Excel. These tools facilitated the production of detailed data summaries, offering valuable insights into the research variables. The obtained results provide insights into various aspects, including instructors' knowledge levels and usage of tablet interpreting in university classrooms, their attitudes toward integrating tablet interpreting into teaching, and the key factors that influence their decisions to adopt tablet interpreting in their classroom practices. The findings suggest the existence of additional external factors that could be incorporated into the existing model. The paper concludes with recommendations on how to promote the integration of technology into teaching practices for interpreting instructors.

1 Introduction

Under the influence of new information technologies such as big data and generative artificial intelligence (AI) systems represented by ChatGPT, interpreting teaching is experiencing unprecedented changes and challenges. The use of tablets has become more common in recent years, both in university interpreting classes and in the interpreting industry. Early in 2015, the world's largest interpreting service, the European Commission

Directorate-General Interpretation (SCIC) (2015), published technical support on how to use tablets in interpreter training. The increased digital access of the new generation of students must not be overlooked by interpreting teachers and trainers. Instead, it demands careful reflection and response.

Tablets can assist in various aspects of interpreting, such as collecting background information on the topic and the speaker, creating term lists, drafting mock speeches before the interpreting task, providing note-taking tools and prompt terms during the task, and organizing and sorting reference materials afterward. However, this study specifically focuses on note-taking during the interpreting task. Therefore, tablet interpreting note-taking (INT) is defined as the process in which the interpreter uses tablet as a note-taking tool during interpreting.

The main objective of the present study is to understand interpreting instructors' perceptions toward tablet INT. To achieve this goal, we employed a quantitative research approach. A designed questionnaire was distributed to 204 university-based interpreting teachers and interpreting trainers in the field. The analysis focused on the perceptions and attitudes of the respondents, using the GETAMEL as framework.

To further clarify this objective, the study specifically aims to address the following research questions regarding interpreting teachers and trainers:

1) Under the GETAMEL framework, identify the key external factors that influence the instructors' adoption of tablet for INT;
2) Under the GETAMEL framework, identify the key internal factors that influence the instructors' adoption of tablet for INT;
3) Examine the perceived challenges and advantages of using tablets for INT in the classroom context.

2 Literature review

2.1 Interpreting and technology

In the era of big data and rapid technological advancements, information technology and language services are intricately intertwined, posing new competence requirements for interpreters. The evolving dynamics among interpreters, clients and interpreting technology has emerged as a focus of interpreting research, as scholars seek to understand how these tools reshape the profession. The following sections explore major themes in this research, ranging from the general interplay of interpreting and technology to the specific use of tablets in interpreting.

Early works in this area focus broadly on the intersection of interpreting and technology, investigating how digital tools transform interpreting processes. Fantinuoli (2018) edited the groundbreaking book *Interpreting and Technology*, the first comprehensive work dedicated entirely to the intersection of interpreting and technology. This pioneering volume aims to delve into key issues, approaches, and challenges within a domain that remains relatively underrepresented in the field of Interpreting Studies. Contributions to this book are centered around computer-assisted and remote interpreting, exploring

applications in conference and court settings, and presenting findings from experimental studies. More recently, Pastor and Defrancq (2023) edited *Interpreting Technologies: Current and Future Trends*, which consolidates contributions focusing on interpreting technologies. This book aims to empower interpreters by providing insights and stimulating discussions on the evolving landscape of technology within the interpreting industry, encouraging contemplation on future advancements.

Empirical studies provide further context on the adoption and application of specific technologies in interpreting practice. For example, Wang et al. (2018) examined interpreters' technology competence, identifying three main research areas: introductory overviews of interpreting technology, its use in teaching and learning, and applications in interpreting practice (e.g., telephone/videoconferencing, terminology tools, smartpen technology). Their study revealed a significant gap between technology adoption and promotion; for instance, 76.4% of respondents never used terminology tools, despite 76.8% expressing a willingness to learn new technologies. This highlights a discrepancy between current adoption rates and enthusiasm for technological advancement in interpreting. This gap underscores a broader challenge in promoting technological competence within the field.

Several studies examine the use of technology in specific interpreting contexts, such as healthcare and education. Masland et al. (2010) conducted a thorough examination of published and unpublished literature, exploring the adoption of telephonic and video interpretation methods aimed at enhancing healthcare communication for individuals with limited English proficiency in the United States. Their findings highlighted the potential for significant advancements in these initiatives through increased support from governmental and foundation sources, as well as enhanced collaboration among healthcare providers. In a similar vein, Dahlsten (2020) investigated the user experience of mobile interpretation services among parents with immigrant backgrounds in Finland. His study focused on how these services facilitate home-school collaboration, aiming to strengthen support for children's learning. Specifically, Dahlsten explored how mobile interpretation services can foster effective communication between parents and schools, ultimately benefiting the educational outcomes of the students. These studies emphasize the value of technology in specialized settings, offering parallels to the use of tablets in interpreting.

Research also points to factors influencing the adoption of interpreting technologies in educational environments. Dianati et al. (2022) employed mixed methods to investigate the factors influencing the adoption of translation and interpreting (T&I) technologies among university instructors in Australia. Their qualitative analysis aimed to identify the specific technologies currently utilized in Australian universities, including web-search tools, computer-assisted translation (CAT) software, mobile apps, tablets, and language lab equipment. Despite encountering various challenges, instructors who perceived T&I technologies as beneficial expressed a strong inclination to continue using them in their teaching practices.

The literature about interpreting and technology provides critical insights into the adoption and use of technology in interpreting, which significantly informs the study of understanding instructors' tablet adoption for note-taking in interpreting. While previous studies have highlighted the broader trends and barriers in technology adoption, further research is needed to investigate how and why

instructors adopt tablets for note-taking purposes in interpreting, and how these tools can be leveraged to enhance interpreting pedagogy.

2.2 Tablet interpreting

The use of tablets for note-taking in interpreting has attracted growing attention since 2010. As digital technologies continue to evolve, interpreters and researchers have examined both the benefits and challenges of adopting tablets as a tool for consecutive interpreting. This section explores the advantages and limitations of tablets in interpreting practice and education, highlighting studies and practitioner experiences that provide insights into the use of digital devices in the profession.

Professional interpreters have shared their experiences using tablets for note-taking, offering a mix of perspectives on the effectiveness and practicality of these devices. Behl (2013a, 2013b) described her experiences using tablets for note-taking in her professional blog and showed some limitations of using digital devices, for example, worries of apps or devices crashing and losing notes, which could be an extra stress for interpreters.

As technology continues to progress, an increasing number of professional interpreters are sharing positive experiences online about using tablets as an alternative to traditional pen and paper for note-taking. Sbaccanti (2021), for instance, has shared very positive experiences about using tablets for INT. They highlight the advantages of tablets, including the ease of color switching and page turning, as well as the convenience of storing notes in other apps like Dropbox.

One of the most influential voices in the field of tablet interpreting is Goldsmith, a United Nations and European Union-accredited translator and professional interpreter. Through his platform "Techforword," Goldsmith offers practical guidance on selecting and using tablets for consecutive interpreting. His studies (Goldsmith, 2018; Goldsmith and Drechsel, 2016) involve interviews with interpreting practitioners, and provide a comprehensive examination of the software, tools, and technology presently employed by interpreters. Most interpreters interviewed found tablets to be as effective as pen and paper, and one-third even believed that tablets were more effective for note-taking. These findings highlight the growing trust in tablets as a viable tool in professional interpreting settings.

Beyond professional practice, researchers have explored the use of tablets in interpreting education. Napier et al. (2013) implemented an action research project to examine the utilization of iPads among interpreting students. The project conducted regular evaluation cycles to assess the efficacy of utilizing iPads in this educational setting. Suggestions are provided on how iPads can be utilized in a novel and creative manner to help interpreting students across different language combinations.

Wang et al. (2023) also examined interpreting students' perceptions of using tablets for INT. They employed a mixed-method approach, incorporating quantitative methods based on Gile's two-phase effort model of consecutive interpreting to assess respondents' experiences and perceptions. Additionally, they used qualitative methods to explore the differences between professionals and beginners in terms of their preferences and user experiences with note-taking tools. The study found that only a relatively small percentage of users reported benefiting from these features,

underscoring the need to guide beginners or those who may be inexperienced in integrating technology into a new skillset such as interpreting. While students generally preferred using tablets for other tasks, such as general class note-taking, only about one-third favored digital devices over traditional methods specifically for INT purposes.

Arumí and Sánchez-Gijón (2019), in a survey interviewed college teachers about introducing digital device in consecutive note-taking. Based on the evaluation of their experience, teachers are hesitant to embrace the use of digital media due to concerns about restrictions, but they do recognize and articulate some of the educational benefits that the digital media could offer.

The literature on tablet use in interpreting practice and education offers valuable insights into the factors influencing the adoption of this technology. While many professional interpreters and students recognize the advantages of tablets, such as convenience and organization, there remains a degree of reluctance, particularly in educational settings. By understanding the varied experiences of practitioners and students, my study aims to build on this body of research, focusing on the factors that influence interpreting instructors' adoption of tablets for note-taking.

2.3 GETAMEL

Extensive research on the theoretical framework of technology adoption and acceptance has been conducted in recent years. These theories aid in systematically understanding and addressing the complexities of adopting new technologies, ultimately resulting in more effective implementation and utilization of technological innovations. Some of the most prominent ones include Technology Acceptance Model (TAM) by Davis (1986, 1989), Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2003), Theory of Planned Behavior (TPB) by Ajzen (1991), and Motivational Model (MM) by Davis et al. (1992). These models serve as foundational tools for exploring how users accept and utilize new technologies.

TAM, established by Davis (1986, 1989), is one of the most widely utilized theories for elucidating the factors that drive users to accept specific technologies. The factors can be categorized into two types: factors related to user motivation, which include perceived ease of use (PEU), perceived usefulness (PU), and attitude toward technology (ATT), and factors related to outcome, including behavioral intention (BI) to use the technology and actual usage (AU). Subsequently, the TAM has undergone further expansion to include the Extended Technology Acceptance Model, which considers social and organizational factors and also incorporates the concept of "perceived enjoyment" as a crucial factor (Venkatesh and Davis, 2000; Venkatesh and Bala, 2008).

Based on the TAM Model, Abdullah and Ward (2016) proposed the GETAMEL model, which is an extended version of the TAM model, including two main components: internal constructs and five distinct external influences. The internal constructs are based on the TAM model with factors namely PU, PEU, ATT, BI, AU. After reviewing over 100 studies on the acceptance of digital learning, it was discovered that researchers had proposed 152 external influences, with a focus on the factors affecting university students' willingness to adopt digital learning systems. These were then statistically analyzed to determine the effects of these influences on experience (XP),

subjective norms (SN), enjoyment (ENJ), computer anxiety (CA) and self-efficacy (SE).

Under GETAMEL model, XP is believed to be a significant factor in explaining why people adopt a technology. Those with more experience are more likely to have positive perceptions of the PEU and PU. Studies showed that XP can momentarily lessen anxiety to some extent (Hung et al., 2018). SN relates to the degree to which an individual believes that significant individuals or social environment think they should or should not engage in a specific activity. Abdullah and Ward's (2016) review discovered that SN holds a positive association with PU and PEU. ENJ refers to the degree to which a user finds pleasure in using a technology or digital system. ENJ is an important factor in explaining the adoption and perception of technology because it significantly affects users' PEU and PU, increasing their willingness to adopt a technology. CA refers to apprehension or worry about the consequences of using a device or technology, such as the potential loss of valuable data or making other errors. It is also found that CA has a negative association with PEU. Higher levels of anxiety are linked to avoiding or reducing the use of computers and technology. SE is the degree to which an individual is confident in their ability to utilize skills to accomplish a particular task. A high level of self-efficacy is associated with strong self-motivation and is correlated with the PU and PEU of using learning technologies.

GETAMEL is currently the most effective predictive model for e-learning and digital device acceptance. Jiang et al. (2021) confirmed the validity of the GETAMEL model using survey data collected from an online English as a foreign language class during the lockdown period caused by COVID-19 pandemic. The findings indicated that students' perceived utility of the online learning system was not influenced by their attitude, suggesting that attitude toward technology plays a minimal role in the model. Also, under the GETAMEL framework, Zhang and Yang (2024) examined the factors influencing teachers' adaptation to new learning environments, specifically during the shift to an online format. They identified the key characteristics that influence teachers' utilization of digital technology. The research findings indicate that teachers who possess a higher level of confidence in utilizing online resources and delivering lessons are more likely to observe a swift adaptation by students, without a notable decline in learning efficacy.

Although there is a substantial body of literature focused on student acceptance of technology or digital learning under GETAMEL, there is limited research examining how teachers might effectively implement these strategies. Studying teachers' attitudes toward using technology is particularly important since teachers can significantly influence students' attitudes and their perception of any suggested e-learning technology. If teachers do not encourage students to adapt to a new learning format, it may significantly decrease students' enjoyment of using new technologies in the learning process.

Given the limited research on how interpreting instructors adopt digital tools like tablets, applying the GETAMEL model in this context is particularly relevant. The model's focus on external factors such as experience, enjoyment, and self-efficacy can help explain why some instructors may be hesitant to adopt tablets for note-taking, while others may embrace this technology. By understanding these factors, we can identify ways to better support instructors in integrating digital tools into their teaching practices, ultimately enhancing the learning experience for interpreting students.

We have selected the GETAMEL model as the main theoretical framework for our study because of its established effectiveness in predicting the acceptance of e-learning and digital devices.

3 Methodology

This study aimed to explore interpreting instructors' perceptions and attitudes toward using tablets for INT and to examine the factors influencing their adoption of tablet interpreting. A quantitative approach was employed, utilizing a specifically designed questionnaire to collect data relevant to the research questions. The questionnaire, adapted from the GETAMEL model to assess participants' technological acceptance and perceptions, was chosen as the primary data collection instrument due to its efficiency in gathering substantial data from a diverse population.

3.1 Participants

This study included 204 participants, all of whom were interpreting teachers in higher education and professional interpreting trainers. They were from 52 different higher education institutions or organizations across Chinese mainland and Macao Special Administrative Region of China. Notable institutions represented include Peking University, Tsinghua University, Nankai University, Tianjin Foreign Studies University, Beijing Language and Culture University, Xi'an International Studies University, Macao Polytechnic University, University of Macau, Legislative Assembly of Macao, as well as freelance interpreting trainers.

Of all participants, 70.6% were female and 29.4% were male. The participants ranged in age from 21 to 61 years old: 33.3% were aged 21–30, 29.4% were 31–40, 29.4% were 41–50, 5.4% were 51–60, and 2.5% were over 60. Most respondents were aged between 21 and 50. Regarding educational qualifications, 22.5% held a bachelor's degree, 49.5% held a master's degree, and 28.0% held a doctorate. Additionally, 78.5% of them target undergraduate students, 29.5% teach postgraduate students, and 13.2% are trainers of non-degree programs. Note that some teachers instruct both undergraduate and master's degree courses, hence the percentages do not total 100% (Table 1).

3.2 Questionnaire design

The questionnaire design primarily drew inspiration from the work of Jiang et al. (2021) and Wang et al. (2023), with the former providing the overall framework and the latter contributing interpreting-specific factors. In the first part of the questionnaire, demographic data were collected through six questions, covering age, gender, academic degree, affiliation, teaching years and teaching levels (undergraduate, postgraduate or training course). The purpose of gathering this data is to construct a comprehensive profile of the study participants. The second section is adapted from the GETAMEL model, developed to examine the attitudes and perception of teachers and trainers toward tablet for INT. By using a five-point Likert scale with responses ranging from 1 (strongly disagree) to 5 (strongly agree), we measured internal constructs, including PU, PEU, ATT, AU, and BI. We also measured external constructs, including XP, SN,

TABLE 1 Respondents' demographic profile.

Demographic characteristic	Frequency	Percentage
Gender		
Female	144	29.4%
Male	60	70.6%
Age		
21–30	68	33.3%
31–40	60	29.4%
41–50	60	29.4%
51–60	11	5.4%
61 and above	5	2.5%
Academic degree		
Bachelor	46	22.5%
Master	101	49.5%
Doctoral	57	28.0%
Teaching level		
Undergraduate	160	78.5%
Postgraduate	60	29.5%
Non-degree	27	13.2%

SE, ENJ, CA, and facilitating conditions (FC). To align with our focus on tablets specifically, we will rename computer anxiety as technology anxiety, abbreviated as TA for this study.

Two open-ended questions were included at the end of the questionnaire to explore the perceived challenges and advantages of tablet INT. These questions allow participants to express their views without the constraints of predefined answer choices, providing richer insights into their thoughts, feelings, and experiences, and revealing other possible opinions.

The questionnaire was initially designed in English and then translated into Chinese. Prior to the official implementation of the survey, we sought input from five university interpreting teachers to ensure the questionnaire's reliability. A pilot test was conducted on these teachers, and based on their feedback, along with consultation and pre-test results, certain measurement questions with lower reliability were excluded. The wording of the questions was also modified to produce the final version.

We evaluated the internal reliability of our survey by calculating Cronbach's alpha for the overall scale and each distinct construct using SPSS. The overall survey's Cronbach's alpha was determined to be 0.964, reflecting substantial internal consistency. Following the exclusion of invalid data, the Cronbach's values of the internal constructs, namely PU, PEU, ATT, BI and AU were 0.955, 0.935, 0.964, 0.952 and 0.890, respectively. Following the elimination of invalid data records, the Cronbach's values of the external constructs, namely XP, SN, TA, SE and ENJ were 0.89, 0.658, 0.932, 0.764 and 0.773, respectively. Although the reliability estimates of SN, at 0.658, falls below the commonly accepted threshold of 0.7, as there are no comparable measures available, the current model with a slightly lower reliability might still be valuable for gaining preliminary insights into a construct.

In addition to the aforementioned subscales, as outlined in the study on students' acceptance of tablet note-taking for interpreting (Wang et al., 2023), a new external construct named facilitating conditions (FC) has been incorporated into the model (Figure 1). This subscale comprises three items, yielding a Cronbach's alpha value of 0.840.

The reliability analysis of the model, presented in Table 2, showed α coefficients ranging from 0.658 to 0.964. The highest reliability was noted in ATT, while the lowest was associated with SN. These results suggest that the items within each construct demonstrate effective correlation and precisely gauge the underlying constructs pertinent to interpreting teachers' adoption of tablet interpreting.

In statistical analysis, Confirmatory Factor Analysis (CFA) is a specialized method within factor analysis, predominantly applied in social science studies. Its primary objective is to determine the alignment between the measurements of a particular construct and the researcher's conceptual framework. Essentially, CFA examines whether empirical data conforms to a proposed measurement model, which is based on theoretical foundations or prior empirical findings. In our present investigation, we employed CFA to evaluate the extent to which survey questions accurately capture the intended constructs, or construct validity.

CFA was conducted using SPSS AMOS for this research. Initially, we assessed the validity of six external constructs by calculating their factor loadings using standardized estimates. To clarify further, the values of items within each construct were computed separately. The conclusion of the CFA indicates that factor loadings ranging from 0.5 to 1 are typically deemed acceptable in academic research. The factor loadings demonstrate significant coherence, confirming their statistical significance and the relevance of the items to their respective constructs.

However, the factor loadings associated with the construct SN (item no. 3 of subjective norm), and SE (items no. 1 and no. 4 of self-efficacy) are notably divergent. As these loadings fall out of the acceptable range of 0.5–1, this suggests a potential minimal contribution of the items to their respective constructs, indicating issues that may need further investigation or model adjustment.

SN3 states, "At our university, it is essential for faculty members to adopt new technologies." While SN1 and SN2 are both direct observations about colleagues' or students' behaviors or attitudes within the educational process, SN3 has a broader institutional perspective and more strategic in nature. SE1 states, "I can skillfully use pen and paper for interpreting note-taking." SE2 states, "I am good at reading notes on a tablet." SE1 and SE4 specifically target individual tools, underscoring expertise in utilizing designated mediums for both note-taking and note recognition tasks. On the other hand, SE2 and SE3 focus on mastering technological processes and applications, demonstrating a more extensive engagement with and adaptation to technology. As these items capture different facets of the respective constructs, it leads to divergence in their factor loadings.

Using the same approach, we assessed the validity of five internal constructs: PU, PEU, ATT, BI, and AU. Each construct was analyzed by calculating its factor loadings through standardized estimates. The values for the items within each construct were computed separately for clarity. They show a high degree of consistency among the items within internal constructs, indicating that the factor loadings are statistically significant. This confirms the strong relevance of the items to their corresponding constructs.
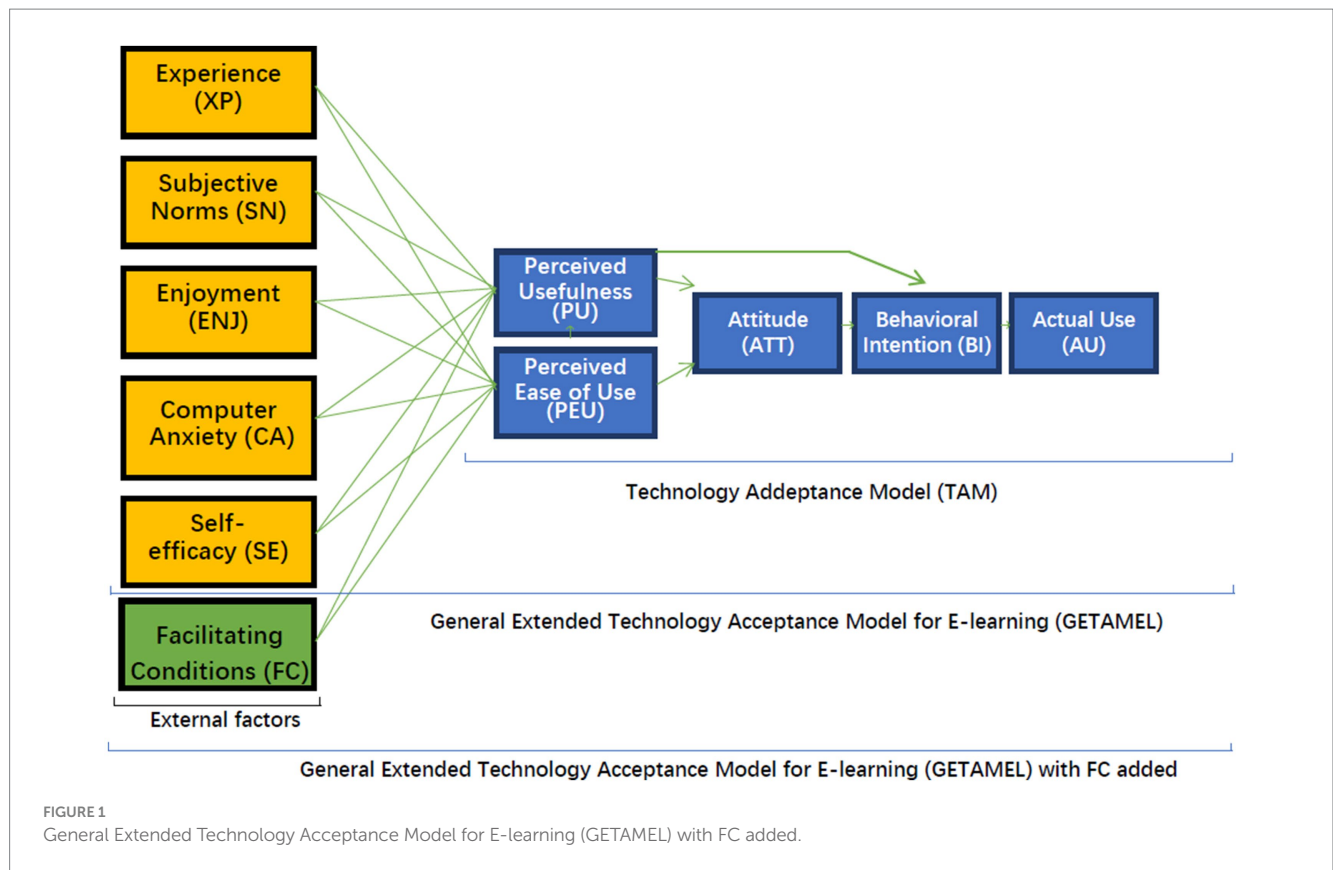
FIGURE 1
General Extended Technology Acceptance Model for E-learning (GETAMEL) with FC added.

TABLE 2 Cronbach's α values of internal and external constructs.

	Constructs	Items included	Cronbach's α
Internal	Perceived usefulness	5	0.955
	Perceived ease of use	5	0.935
	Attitude	3	0.964
	Behavioral intention	4	0.952
	Actual use	3	0.890
External	Experience	3	0.89
	Subjective norm	3	0.658
	Technology anxiety	3	0.932
	Self-efficacy	4	0.764
	Enjoyment	3	0.773
	Facilitating conditions	3	0.840
Overall	—	39	0.964

3.3 Data collection and analysis

The data collection occurred between March 4, 2024, and April 23, 2024. The questionnaire was created and distributed using "Wenjuanxing," a popular platform for recruiting survey participants in China. Emails were sent to the interpreting instructors in the Chinese mainland and Macao, informing them of the survey with the link and QR code included. Additionally, during the annual conference of the Translators Association of China, the most important gathering of translation and interpreting educators of the year, the QR code for the questionnaire was provided to interested parties to scan individually, ensuring the quality of the data.

The data analysis was conducted using both Excel and SPSS to ensure comprehensive and accurate results. Initially, the data was imported into Excel for preliminary cleaning and organization, which involved removing duplicate entries, handling missing values, and ensuring consistency in data formatting. Once the preliminary analysis was complete, the cleaned dataset was imported into SPSS for more advanced statistical analysis. In SPSS, detailed descriptive statistics were computed to understand the central tendencies and dispersions of the variables, including measures such as mean, median, mode, standard deviation, and variance. Additionally, the reliability of the scales used in the questionnaire was assessed using Cronbach's alpha to ensure internal consistency.

4 Results

4.1 External factors

To identify the key external factors that influence the instructors' adoption of tablet INT, the following aspects were considered: XP, SN, ENJ, TA, SE and FC.

For XP, we designed questions to assess the usage and experience of tablet for general note-taking and previous experience with preparing interpreting tasks using digital device. According to the survey results (see Figure 2), 8% rated their tablet usage for
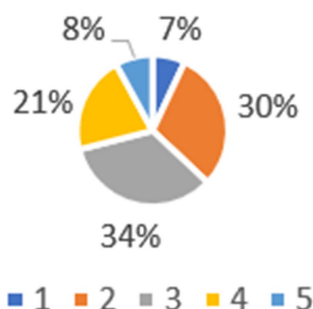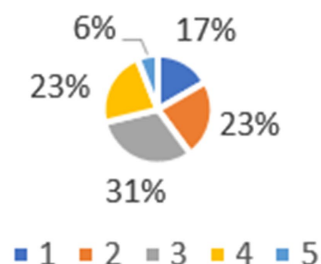
FIGURE 2
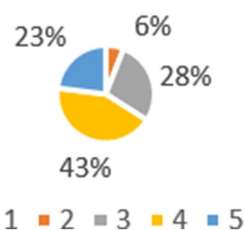Data concerning experience (XP) with tablet INT.
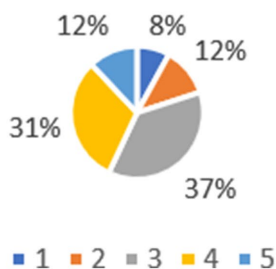
FIGURE 3
Data concerning subject norms (SN) of tablet INT.

note-taking in general as 5, while 21% rated it 4. Thus, a total of 29% of our respondents use tablets frequently for general note-taking. Conversely, 7% rated their usage as 1, and 30% rated as 2, indicating that they never or seldom use tablets for general note-taking. The data suggests that a significant proportion of participants consider tablets to be a valuable asset for notes while a notable segment (37%) does not frequently use tablets for this purpose.

We found a comparable outcome when assessing previous experience of preparing interpreting tasks using digital device. 6% of the interpreting teachers and trainers rated their usage as 5 on the Likert scale, and 23% rated it as 4. So, 29% of our respondents had experience on preparing interpreting with tablets. However, 40% of the respondents rated their experience either 1 or 2, indicating that they barely had experience with preparing interpreting tasks using digital device.

Another factor that can partially impact teachers' attitudes toward integrating tablet INT into teaching is subjective norms, SN (see Figure 3). It was discovered that 43% of the participants reported that their coworkers utilize tablets for INT, rating their usage as either 4 or 5 on the Likert scale. Additionally, when queried about the significance of incorporating modern technology within the academic staff or team, 66% of the participants rated it with a score of 4 or 5. Abdullah and Ward's (2016) extensively examined the impact of Subjective Norm (SN) on learners' acceptance and utilization of e-learning. Their empirical data reveals that 19 out of 22 studies (86%), which explored

the correlation between SN/SI and Perceived Usefulness (PU), identified a notable positive association between these two constructs. So, in our study, we believe that SN plays a role in shaping teachers' perceptions of the importance of integrating tablets in interpreting teaching.

Both peer influence and institutional pressure can be significant drivers of technology adoption among educators, particularly in environments where there is a push toward modernization and the incorporation of digital tools. Peer influence can manifest in several ways. For example, instructors who observe their colleagues successfully using tablets for teaching note-taking in interpreting may feel encouraged to do the same. When coworkers express positive attitudes toward teaching tablet-based interpreting (INT), this can create a sense of professional expectation or motivation to align with evolving practices. On the other hand, institutional pressure can come from both formal and informal sources. For instance, institutions may encourage or mandate the adoption of new technologies as part of their broader efforts to enhance teaching methodologies or improve student outcomes. Program directors and administrative leadership may establish guidelines or policies that favor the integration of tablets. At the same time, this pressure can also create resistance, particularly if instructors feel that the technology does not align with their teaching styles or if they lack sufficient training or support.

However, these influences are not instantaneous and may take time to impact individual instructors. Teachers may need to see

tangible benefits, such as improved student engagement or ease of note-taking, before fully adopting tablets in their own practice.

In the future, it would be beneficial to conduct further studies examining the attitudes of interpreting program directors and institutional leadership. Investigating how top-down policies, funding availability, and institutional culture contribute to shaping educators' decisions to adopt new tools like tablets could provide a more comprehensive view of the external pressures at play.
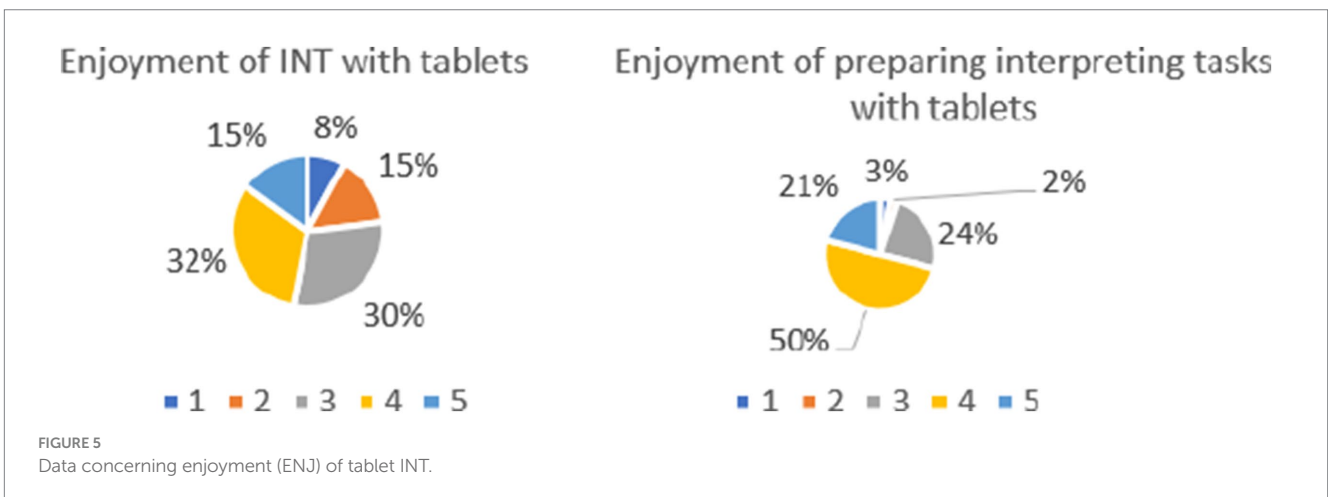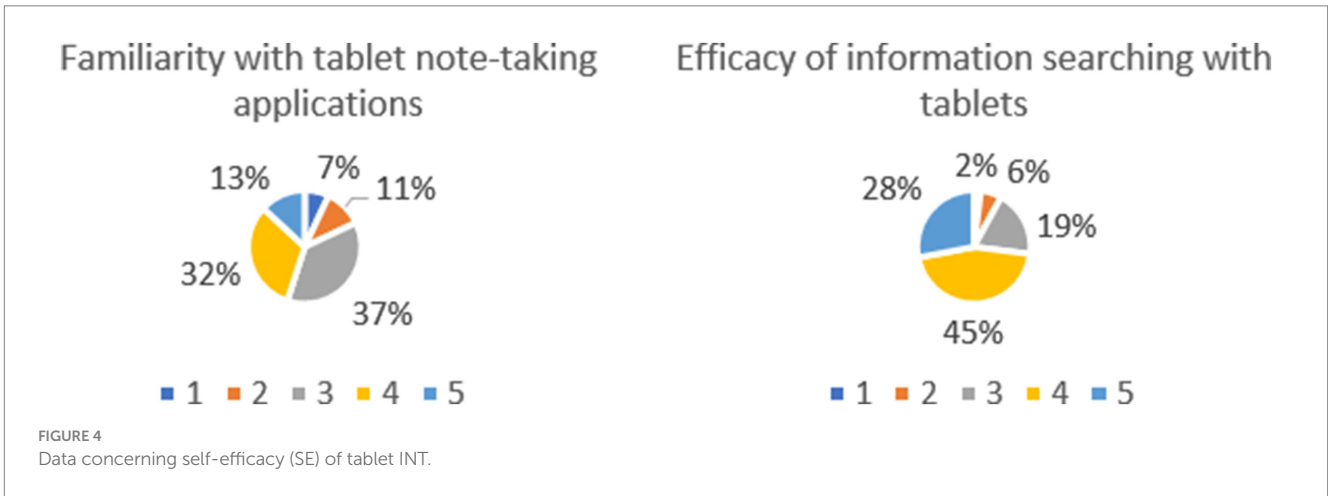
We also addressed questions about SE (see Figure 4). As previously mentioned, a high level of self-efficacy is associated with strong self-motivation and is correlated with the PU and PEU of technologies. When asked respondents to rank the following statement, "I am familiar with note-taking apps on tablets," 37% of the respondents scored it as 3, while 45% scored either 4 or 5. Regarding the statement, "I am good at searching for information with a tablet," 73% ranked it 4 or 5. These findings suggest that the respondents have a solid foundation in using tablets for note-taking and information search tasks, indicating strong self-efficacy in this specific tablet usage skills.

Regarding ENJ (see Figure 5), respondents were asked to rank the statement, "I like to use tablet for INT." 47% of the respondents ranked 4 or 5, while 23% ranked 1 or 2. When asked if they like to use tablet for interpreting preparation, 50% of them scored it 4, and 21% scored it 5. Thus, 71% of the respondents showed a very positive attitude toward using tablets for interpreting preparation, while 47% enjoy

using tablets for INT, suggesting that our respondents prefer using tablet to prepare interpreting rather than using them for INT. Additionally, while 45% of the respondents enjoy INT with tablets, only 30% actually use them for this purpose, which will be further explained in the following section.

Under the factor of TA (see Figure 6), only 24% of the respondents rated their anxiety levels as 4 or 5 when using tablets to take general notes, whereas 46% rated as 1 or 2. In contrast, when using tablets for INT, 30% reported anxiety levels of 4 or 5, and 39% rated as 1 or 2. These findings suggest that there may be specific factors related to using tablets for INT that are causing more anxiety among respondents compared to general note-taking. Therefore, these possible factors will be explored by analyzing respondents' insights about the challenges of using tablets for INT.

We posit that FC, which is not included in the original GETAMEL model, also plays a role as an external factor influencing instructors' adoption of tablets for INT (Figure 7). In the survey, we asked whether interviewed instructors have sufficient resources to use tablets for interpreting. 47% of our respondents rated sufficiency levels as 4 and 5, which indicates that a notable portion of the instructors believe that they have enough resources. However, when participants were asked if they had received any training for tablet INT, 50% scored 1 or 2. This suggests that a significant portion of interpreting instructors may not have received adequate training. Further investigation into the types

FIGURE 4
Data concerning self-efficacy (SE) of tablet INT.

FIGURE 5
Data concerning enjoyment (ENJ) of tablet INT.

of resources and training available to instructors could provide valuable insights.

4.2 Internal factors

To answer Research Question 2, key internal factors that influence instructors' adoption of tablets for INT under the GETAMEL model were explored. These factors include respondents' PU, PEU, ATT, BI as well as AU.

PU is an essential factor for the GETAMEL model because it directly influences the likelihood of technology adoption (Figure 8). When respondents were asked about the convenience of carrying out interpreting teaching tasks with tablets, 44% agreed or strongly agreed. Additionally, 48% of respondents scored 4 or 5 for the statement "tablet note-taking is useful for my interpreting tasks." Conversely, 24% of the participants ranked 1 or 2 for both questions. These results suggest that the majority of the respondents find tablets convenient and useful for interpreting teaching or related tasks.

Regarding the PEU factor, it was critical to assess how instructors perceived the ease of using tablets for INT, both for themselves and for their students (Figure 9). 45% of the respondents scored 4 or 5 on a

Likert scale, agreeing that using tablets for INT is easy for them, while 22% do not agree. Furthermore, 58% believe it's easy for students to use tablets for INT. Notably, no respondent scored 1 on this question, and only 7% scored 2. These findings suggest that overall, teachers and trainers generally find using tablets for INT to be relatively easy, with a majority also believing that it is even easier for students. This indicates a positive perception of the ease of use of tablet INT among respondents.

When examining instructors' attitudes (ATT) toward tablet INT, we found that 58% of the respondents exhibited very positive attitudes toward the benefits of using tablets for INT by themselves (Figure 10). Similarly, 60% of respondents indicated positive perceptions of using tablets for interpreting in classes, as reflected by their choices of 4 or 5. Overall, the majority of teachers and trainers surveyed displayed favorable attitudes toward incorporating tablet interpreting into their teaching practice. These findings suggest a high level of receptiveness to utilizing technology for INT, despite only 30% of them currently using tablets for this purpose.

Under the factor BI, respondents were asked if they intended to recommend students adopt tablet INT in the future or if they would include tablet note-taking skills in interpreting teaching (see Figure 11). 52% of the participants, selecting 4 or 5, agreed with the recommendation that students adopt tablet INT. Additionally, 45% indicated that they
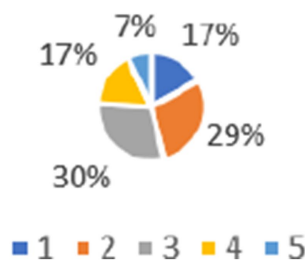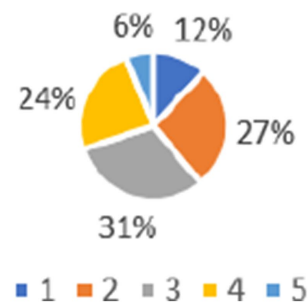
FIGURE 6
Data concerning technology anxiety (TA).
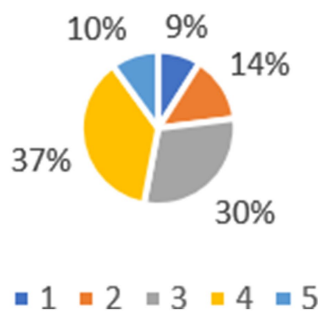
FIGURE 7
Data concerning facilitating conditions (FC).

FIGURE 8
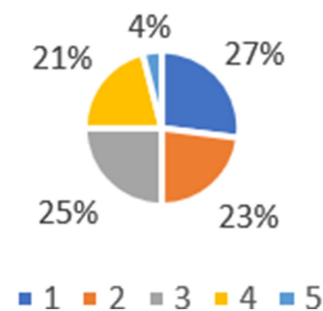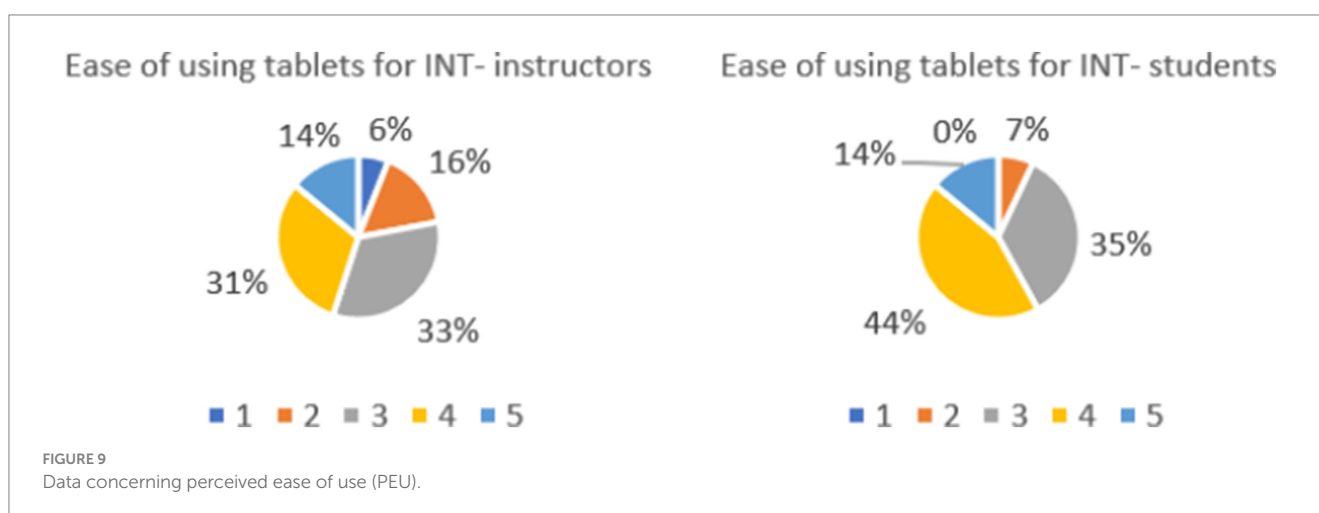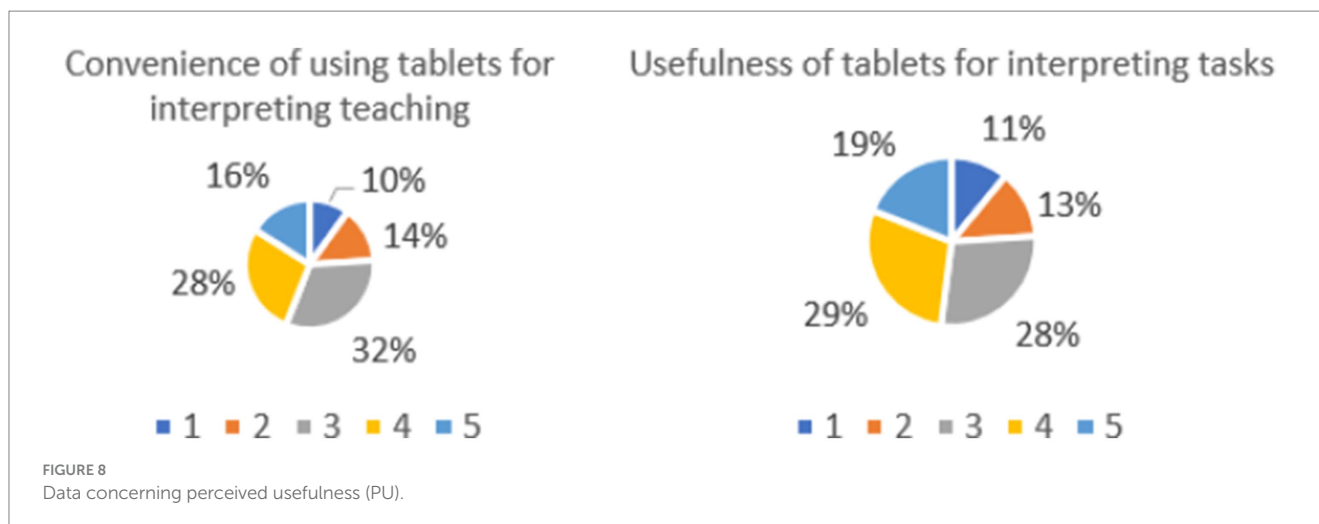Data concerning perceived usefulness (PU).

FIGURE 9
Data concerning perceived ease of use (PEU).

would incorporate tablet INT skills into their teaching contents. In both questions, around 30% of the respondents remained neutral. These results suggest that a significant portion of interpreting instructors are open to integrating tablet technology into their teaching practices.

As for AU, according to the survey results (see Figure 12), 16% rated their frequency of tablet usage in general work contexts as 5, while 32% rated it 4. Conversely, only 7% rated their usage as 1, indicating that they never use tablets for work-related activities. The data indicates that a substantial number of participants view tablets as valuable tools in their professional activities, while a minority do not see the necessity of using tablets for their professional duties.

When comparing how often they use tablets for INT, only 6% of the interpreting teachers and trainers rated their usage as 5 on the Likert scale, and 24% rated it as 4. However, 42% of the respondents rated their usage either 1 or 2, indicating that almost half of them do not use tablets for INT. As the results show, there are more instructors using tablets for general work than using them for INT. This suggests a discrepancy between the use of tablets for general work and for interpreting note-taking. Further research could explore the reasons behind this disparity.

4.3 Perceived challenges and advantages

To address Research Question 3, which aims to understand the perceived challenges and advantages of using tablets for INT, we designed two open-ended questions and collected respondents' answers for analysis.

After conducting a word frequency analysis using Sketch Engine, we categorized the instructors' perceived challenges into two main categories: technical difficulties with the tablet and stylus, and technical problems of applications, with special concerns about distraction during interpreting.

First of all, many instructors raised concerns about tablet's hardware, particularly its battery life. They worry that the device might abruptly drain its power during interpreting, potentially disrupting the process. Additionally, they expressed apprehension about potential system malfunctions that could trigger flashbacks. Another hardware-related issue is the contact problem with the stylus pen. The stylus pen tip's touch may cause poor writing fluency and information loss during speech delivery. Many instructors also mentioned other unpredictable technical problems, such as flashbacks or issues caused by accidental screen touches. Overall, teachers are

FIGURE 10
Data concerning attitudes (ATT) toward tablet INT.
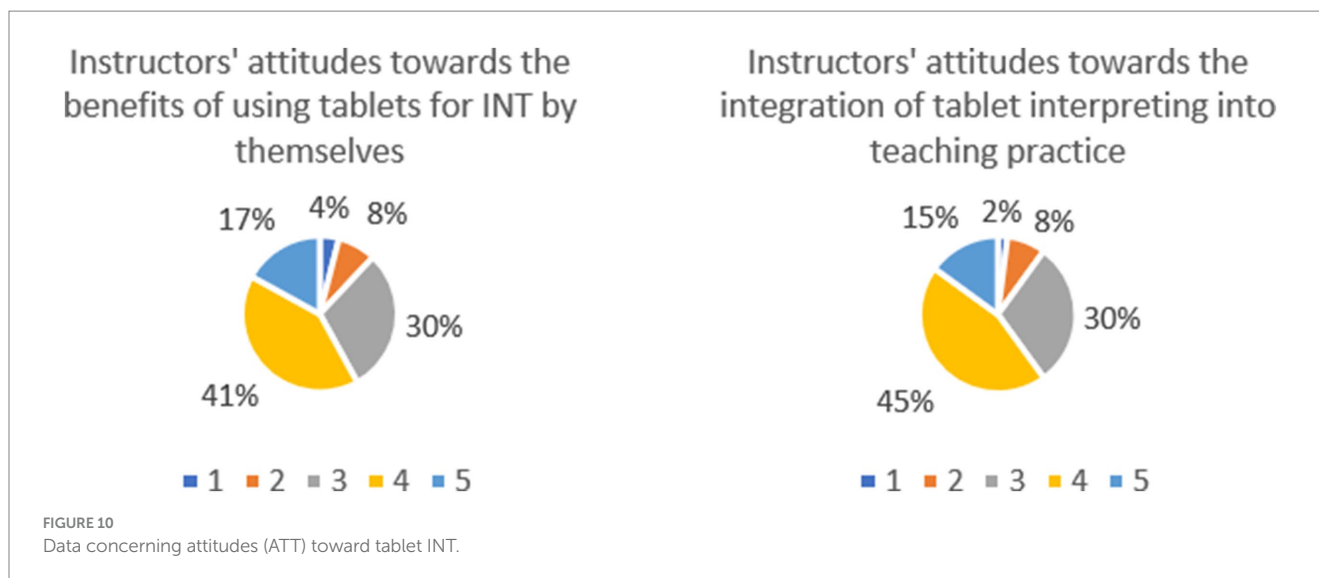
worried about the reliability of the device during interpreting and its impact on the practice.

Several instructors have also emphasized the challenges of using note-taking application. They noted that interpreting itself is already a demanding task, and mastering the application's interface adds an additional layer of complexity compared to traditional paper and pen methods. Consequently, they believed that taking notes on a tablet requires more effort. Moreover, many instructors have also raised concerns about note reading. They highlighted that flipping page on a tablet could hinder interpreters' ability to locate information accurately. Some interpreting teachers observed that rapid page turning might cause eye discomfort and dizziness, problems not encountered with traditional paper note-taking. Instructors also mentioned that the complexity of applications could distract interpreters. The interface, with its numerous buttons for colors options, stylus setting, and page display formats, could result in mistouches and lead to information loss or confusion, ultimately compromising the quality of interpreting.

Despite the challenges outlined earlier, respondents also listed several advantages of tablet INT. Foremost among these is portability, which allows interpreters to record and review notes seamlessly on the move, greatly enhancing flexibility and convenience of work. Additionally, respondents noted that well-optimized note-taking applications facilitate real-time recording and reviewing, catering specifically to interpreters' note-taking requirements. These software programs usually come with a variety of features and tools, such as different thicknesses of strokes, color options, etc., to accommodate diverse note-taking needs. The quality of screen display was also emphasized by respondents. Many mentioned that certain tablets boast large screens with high resolutions, delivering clear and realistic colors. This capability proves invaluable for interpreters when capturing detailed visual notes, especially when dealing with complex charts, images, or presentations (PPTs). Furthermore, respondents highlighted the benefits of content synchronization and sharing. Tablets enable seamless synchronization of content across various devices, including smartphones and computers. This feature facilitates easy review, editing, and sharing of notes post-interpretation with colleagues and clients alike. Looking ahead, some respondents

acknowledged the potential future integration of tablets or PCs with voice recognition technology to aid interpreters. Thus, proficiency in using tablets for interpreting is increasingly recognized as a pivotal trend that cannot be overlooked.
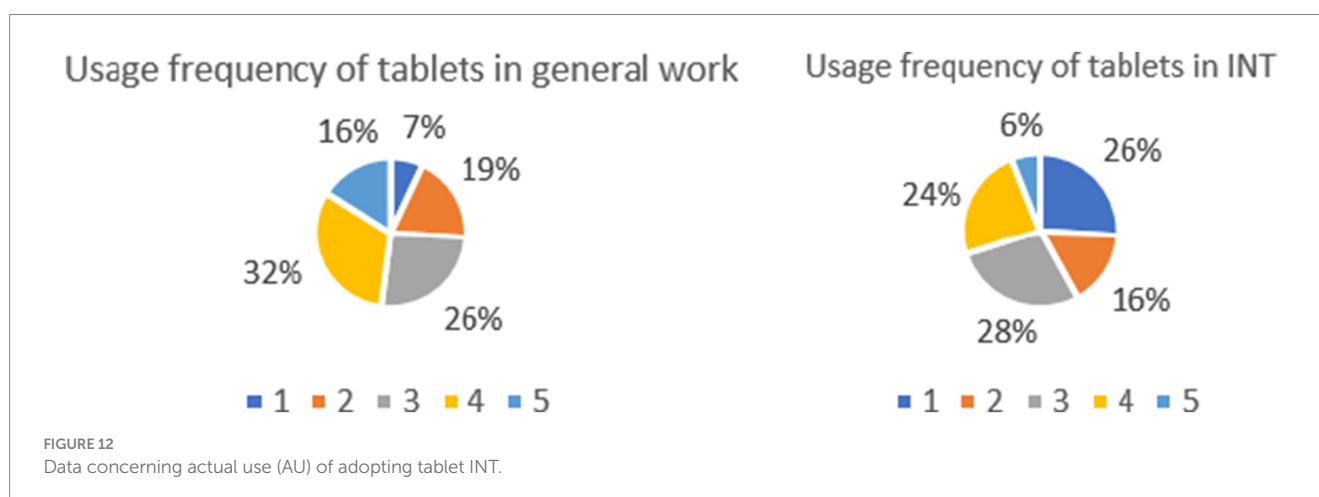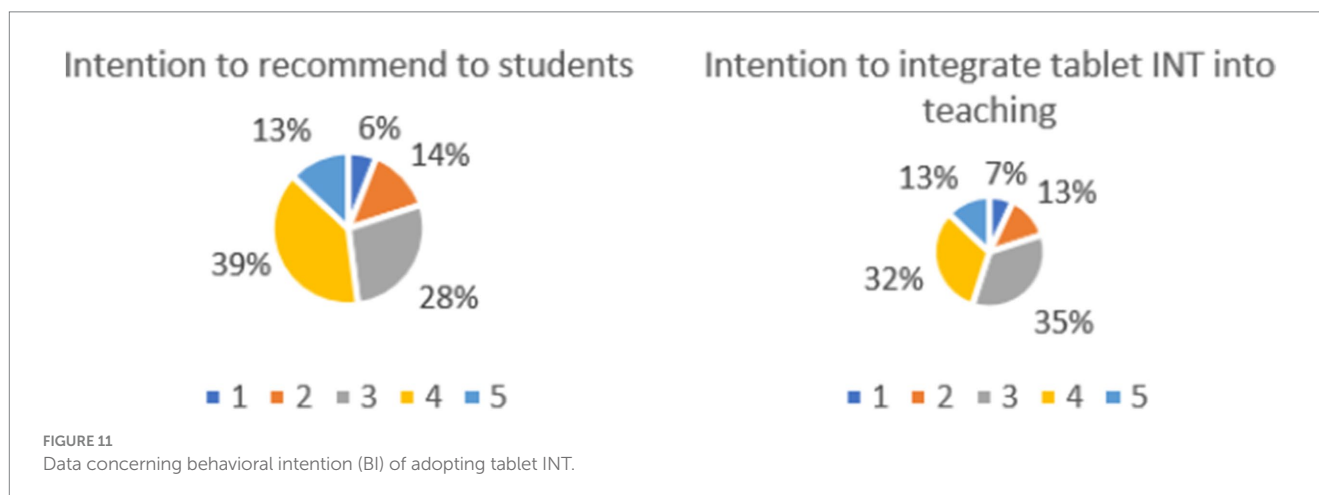
Following the comprehensive exploration of challenges and advantages associated with using tablets for INT, the data also illuminated diverse viewpoints among educators regarding their integration into training practices. Some respondents expressed strong opposition to using tablets for INT. Their concerns were not limited to the reasons previously mentioned, but also included the fact that electronic devices are sometimes prohibited in interpreting practice. They believe the traditional pen and paper method is indispensable for training interpreters. On the contrary, some others indicated significant support for using tablets, claiming that those who did not use them were hesitant to adopt new ideas simply because they had not tried them. Overall, the debate highlighted the importance of considering both perspectives and finding a balance between embracing technology and respecting traditional methods in interpreting training. It also emphasized the need for ongoing discussions and flexibility in adapting to the evolving landscape of interpreting practices.

5 Discussion

Tablet INT has become a trend in interpreting classrooms in recent years, driven by the popularization of tablets. However, in the current interpreting teaching practice within universities and training classes in China, very few instructors have adopted different teaching methods or incorporating teaching contents to adapt to this trend. The goal of the current study is to examine the present situation, the reasons behind it and propose measures to improve the status quo.

5.1 Discrepancies and explanations

In the analysis of the data collected, there are some discrepancies, the explanations of which will help us gain deeper insights into to the issue.

FIGURE 11
Data concerning behavioral intention (BI) of adopting tablet INT.

FIGURE 12
Data concerning actual use (AU) of adopting tablet INT.

First, there is a discrepancy between the preference for using tablets for general work compared to interpreting, and for the preparation of interpreting tasks compared to INT. Interpreting is more demanding than ordinary office work, requiring greater cognitive effort, concentration, and quick responses. Additionally, delivering interpreting is more stressful than preparation. This issue can be seen as a problem related to the fit between the difficulty level of the task and technology adoption, specifically the adoption of tablet INT. According to the Task-Technology Fit (TTF) Model, the effectiveness of technology depends on how well it fits the task requirements (Goodhue and Thompson, 1995). There is a negative relationship between task complexity and TTF: as task requirements increase, fit decreases. This means that if tasks are too large and complex for the IT to provide adequate support, it will lead to an unwillingness to adopt the technology. Since interpreting is a highly complex and demanding task, it naturally leads to less intention to adopt tablets for INT.

Second, there is a noticeable discrepancy between instructors' perceived usefulness of tablet INT and their actual use of it. Our collected data strongly indicate that 58% of respondents have very positive attitudes toward the benefits of using tablets for INT. However, only about 30% of them frequently use tablets for this purpose. The causes of this gap are complex and involve multiple levels of

consideration in addition to deep-rooted customary factors. On the one hand, although tablets show great potential in terms of functionality and convenience, some instructors may take a wait-and-see attitude toward their application in INT due to unfamiliarity with the new technology or lack of necessary training. More than 60% of the participants are 30 years old or above, meaning that when they were in university studying interpreting, tablets were not as prevalent as they are today, let alone used for interpreting. Consequently, they tend to adhere to their established habits rather than adopt new technology, even if they believe it has significant advantages. Habitual behavior requires minimal attention, weakening the individual's control over both their behavioral intentions and the behavior itself. As long as circumstances remain relatively stable, past behavior patterns can easily influence future choices (Bamberg et al., 2003). In addition, older groups of faculty may be more reliant on their long-established interpreting tools and processes and relatively less receptive to new technologies. We selected respondents over the age of 51 and analyzed their answers to the open-ended questions. Most of them acknowledged the portability of tablets, but mentioned the "solidity" of traditional pen-and-paper note-taking, the cognitive load that tablets can bring, the inconvenience of handling them, and some remain open to the possibility of training for instructors. Others, however, bluntly stated that tablets had no advantages at all and reject

FIGURE 13
Proposed extended model.
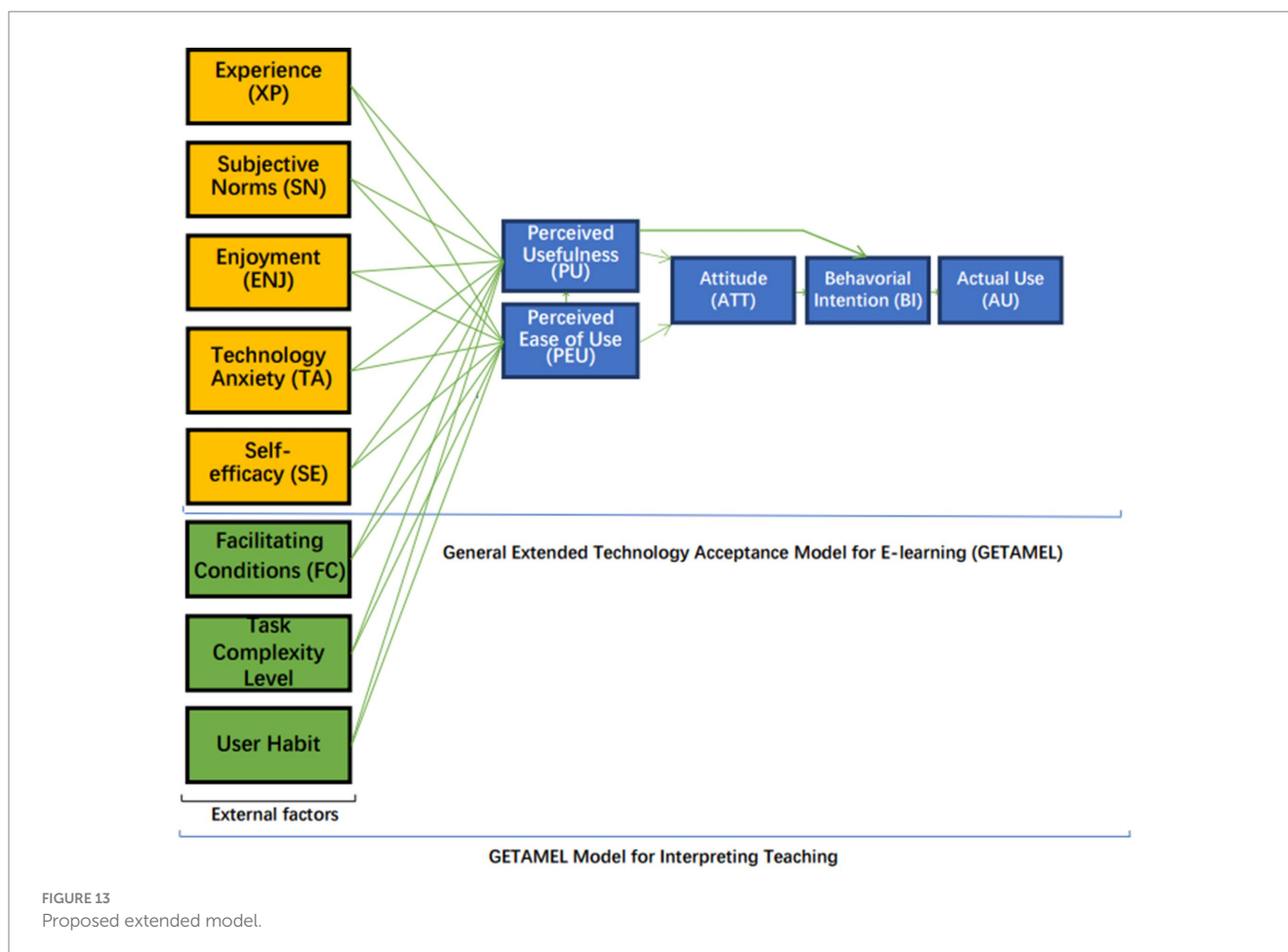
to use them for INT. More than 50% admitted that they barely use tablet for working purpose. Regarding the group of respondents aged 41–50 and above, only about 21% regularly use tablet for INT. Comparing to 30% of average actual use percentage, user habits appears to be an influencing factor.

Third, based on the current research, especially the discrepancies mentioned above, an extended GETAMEL model could be proposed with the addition of two external constructs, namely task complexity level and user habit (Figure 13).

Although the exact relations between these two external constructs and the internal constructs will not be discussed in details here, as it requires a larger body of data to support it, we believe this extended model suits better the explanation of technology adoption for interpreting teaching.

5.2 Suggested measures

While entering into the AI era, there have been opinions about the threat of AI to the jobs of the translator and interpreters and the doomed future of the translation and interpreting students. While machine translation and various technologies have been massively incorporated into translation teaching, there seems not much that has been done by interpreting instructors. Based on the above analysis,

some measures are suggested, not only for the adoption of tablet INT, but also for other interpreting-related technologies, such as ChatGPT-assisted interpreting preparation and terminology management system.

First, instructors need to be encouraged to use technology. The faculty can provide comprehensive training, such as workshops and seminars, online courses. For example, workshops could demonstrate how tablets can streamline note-taking by using features like color-coded annotations, digital note organization, and the ability to quickly retrieve notes during interpreting sessions. Additionally, trainers could provide examples of how tablets support terminology management by using apps that allow interpreters to store, retrieve, and organize key terms during consecutive interpreting. Create peer mentoring programs where tech-savvy instructors guide their colleagues could further encourage adoption. Institutions could also establish awards and recognition programs for teachers who effectively use technology to enhance learning.

Second, provide both hardware and technical support. Some instructors refrain from adopting technology simply because they lack the necessary devices. If instructors are provided with both the hardware and software, they will be more willing to try. For example, universities could loan tablets to instructors or create a fund for purchasing devices, ensuring that all educators have equal access to the technology they need. Additionally, it is crucial to ensure that teachers have access to technical support to help troubleshoot issues,

maintain the technology, and receive immediate assistance with any technical problems they encounter.

Third, align with industry and student needs. Interpreting is a rapidly evolving industry due to technological advancements and shifting demands in the post-COVID-19 era. Therefore, interpreting education should be closely connected with industry developments. The trends in the industry today will be the reality students face tomorrow, and these trends should be adequately reflected in classroom teaching. Instructors should also consider students' needs and interests. The younger generation is often more attuned to the latest technological developments than their instructors. Educators should therefore incorporate real-world applications of these tools in their teaching. For instance, teachers could create assignments where students practice tablet-based note-taking in simulated interpreting environments that reflect industry realities, such as virtual conferences or multilingual meetings. Moreover, students could be asked to use tablets during in-class note-taking exercises and subsequently review their notes digitally to assess their performance and share feedback with peers. By integrating students' needs and interests into their studies, teachers can significantly enhance learning efficiency.

6 Conclusion, limitations and future research

This study has deepened our understanding of instructors' perceptions and adoption of tablet-based INT. It helps to close a gap in the literature by focusing on instructors' perspectives, recognizing that they are crucial to the effectiveness of information technology in teaching and learning activities. Under the GETAMEL framework, we identified both external and internal factors that influence their choices. Our data analysis revealed that only about 30% of the instructors are actually using tablets for INT, despite the majority acknowledging the importance of adopting new technologies. This discrepancy highlights the need for further research to explore barriers to adoption and develop strategies to promote tablet INT among instructors.

However, this study has limitations. It employed quantitative rather than qualitative approaches. There were open-ended questions but they only dealt with the advantages and challenges of using a tablet for INT. Most of the respondents simply responded with one or two sentences of relatively simple information. A qualitative study of interpreting instructors' use and attitude toward tablet INT would be useful in a future research. The sample size was limited, potentially restricting the generalizability of the results. Further, respondents' self-response data may affect the results of the study because respondents may have a subjective bias about their technical abilities or attitudes, and this self-reporting may not be objective enough. These limitations not only affect the depth and breadth of the study, but also pose an impact on the transparency of the study. Future research should address these limitations by expanding the sample size and incorporating qualitative methodologies to validate the GETAMEL framework. Consideration could also be given to crosswalking data through quantitative and quantitative means to

ensure research transparency and provide a more comprehensive understanding of the factors influencing technology adoption among instructors.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors without undue reservation.

Ethics statement

The studies involving humans were approved by the Pedagogic and Research Affairs Office, Macao Polytechnic University, Macao Special Administrative Region, China. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

YT: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. YW: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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