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We want but we can't: measuring EFL translation majors' intention to use ChatGPT in their translation practice

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This study integrated technology acceptance model, theory of planned behaviour, and self-determination theory to explore translation majors' intentions to use ChatGPT in their translation practice. Employing a quantitative research design, the study collected data from 385 English as a foreign language (EFL) translation majors across various universities in China. Analysis revealed that perceived usefulness significantly influenced students' intentions, overshadowing perceived ease of use due to access constraints in China. Findings indicate that both controlled and autonomous motivations, along with subjective norms and attitudes, robustly shape intentions to use ChatGPT. This study challenged the conventional focus of technology acceptance model on perceived ease of use and modified the traditional theory of planned behaviour by excluding perceived behavioural control. These findings underscore the critical role of motivational and social factors in the adoption of AI tools in translation learning. The results highlight the need for tailored pedagogical approaches that integrate more accessible AI platforms, and accommodate both external motivations and intrinsic interests.

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Introduction

With the acceleration of globalization, the demand for high-quality translation services has grown exponentially (Brisset and Godbout 2017). In various fields such as international trade, academic research, and technological communications, translation services play a vital role in bridging linguistic and cultural gaps (Ersoy and Öztürk 2015). Among these, Artificial Intelligence (AI) has emerged as a transformative force, offering advanced tools to enhance the speed, accuracy, and accessibility of translation. While dedicated translation tools such as Google Translate excel in providing quick and accurate translations for everyday usage, AI-powered language models like ChatGPT are designed for more complex linguistic tasks, such as generating contextualized translations, assisting with nuanced language learning, and supporting advanced translation scenarios that require creativity and adaptability (Gao et al. 2024).

ChatGPT's advanced language processing capabilities have revolutionized translation learning and practice, offering students instantaneous and diverse linguistic translations, and enabling a deeper engagement with complex textual nuances (Huang and Li 2023). As AI tools like ChatGPT become increasingly prevalent in educational settings (Kasneci et al. 2023), their impact on language learning, particularly in translation studies, becomes a critical area of exploration. Unlike tools like Google Translate, which primarily focus on translating fixed phrases or texts, ChatGPT provides interactive and customizable responses, making it a versatile tool for both language practice and deeper academic engagement (Gao et al. 2024). Currently, numerous studies compared the translation qualities among different AI applications like ChatGPT, Google Translate, and even between AI and human beings (Calvo-Ferrer 2023; Lee 2024). Current studies have shown that ChatGPT exhibits favourable translation competence, often outperforming other translation tools and aiding in language learning tasks (Gao et al. 2024). The significance of GPT technology in enhancing translation quality and efficiency, as well as its growing role in the translation learning (Fan et al. 2023) and translation industries (Mohamed et al. 2024), underscores the need to understand its impact among translation learners. However, there is a lack of research specifically examining how translation majors perceive and intend to use ChatGPT in their practice. In addition, although ChatGPT has provided groundbreaking changes to translation learning and practices among translation learners in universities, this technology might also undermine translation students' learning initiative and lead to academic and ethical risks (Zhou 2023). Given the diversified opinions upon ChatGPT in translation field, translation majors might also be confused about when and whether they should apply ChatGPT in their translation assignments and practice. Those complex situations might profoundly impact their intentions to apply this technology.

Typically, the technology acceptance model (TAM) has been widely applied to explain individuals' decisions to adopt new technologies in various contexts, such as the use of online learning platforms (e.g., Balaman and Baş 2023) and the adoption of mobile payment systems (e.g., Türker et al. 2022). However, in the unique context of China, where access to ChatGPT requires additional technical measures, such as virtual private networks (VPNs), its usage is accompanied by certain challenges. Consequently, whether TAM can effectively explain the acceptance and usage intentions of translation majors toward ChatGPT in this specific context remains underexplored.

Given the conflicting attitudes toward ChatGPT and the complexities of network regulations, it is worth exploring the factors that drive translation majors to use ChatGPT to support their translation learning and practice. Therefore, this study aims to answer the research question of what the antecedents of translation learners' intentions to use ChatGPT in their translation practice are, by focusing on the relationships between perceived usefulness, perceived ease of use, attitudes, subjective norms, motivation (controlled & autonomous), and intention to use ChatGPT. In this study, quantitative data were collected through a survey administered to 385 college English translation majors from 8 different universities in China. The collected data were analysed using structural equation modelling, allowing for a comprehensive examination of the proposed hypotheses and the relationships among the variables. The findings of this study reveal that among the six hypothesized influencing factors, all—except for perceived ease of use—exert a significant direct or indirect impact on translation learners' intentions to use ChatGPT. Understanding the reasons underlying their intentions to use ChatGPT is crucial, as educators and curriculum designers can leverage these findings to foster a supportive learning environment that emphasizes the utility and benefits of AI tools while addressing learners' motivational and attitudinal needs. Theoretically, this study challenges the conventional emphasis on perceived ease of use in the technology acceptance model, revealing that translation learners value functionality and relevance over simplicity when adopting AI tools. Furthermore, it modifies the traditional theory of planned behaviour by excluding perceived behavioural control, offering a more focused understanding of learners' decision-making processes in the context of translation practice.

Literature review and hypothesis formulation

English education, AIGC, and translation studies. The Chinese government emphasizes English education as a vital aspect of global communication and national competitiveness (Liu et al. 2023). To this end, significant efforts have been made, such as incorporating English into the national curriculum from an early age (Shi et al. 2022), providing language teacher training programs (Wang et al. 2013), and promoting international collaboration in language education (Sun 2024). Despite these efforts, many learners face challenges in achieving advanced proficiency (Zhou et al. 2021), especially in translation tasks requiring cultural nuance and professional expertise. The growing demand for high-quality translations in academic and professional contexts around the world (Hu et al. 2018) has highlighted the limitations of traditional methods, spurring interest in integrating AI tools like ChatGPT into translation education (Lee 2024).

Although ERNIE and Kimi, as domestic large language models in China, are accessible to translation learners, current research suggests that ChatGPT demonstrates more significant advantages in many aspects (Wei 2024; Zhang et al. 2024). In addition, some studies compared the translation quality of ChatGPT and human beings (Calvo-Ferrer 2023; Lee 2024), while some tested the translation performances of ChatGPT and other translation applications like Google Translate, DeepL (Gao et al. 2024). Most of those studies demonstrated that ChatGPT has favourable translation competence and therefore, it was suggested to be applied to facilitate students' language teaching and learning (Sugiyama and Yamanaka 2023). For example, ChatGPT was proposed as a tool to aid students in their foreign language learning of writing and speaking (Barrot 2023). However, ChatGPT's inaccessibility in China due to internet restrictions presents unique challenges. Understanding how these constraints shape learners' engagement with AI technologies is crucial for bridging the gap between technological advancements and the practical needs of translation education in China.

Moreover, despite the demonstrated capabilities of ChatGPT in language translation, there is a gap in understanding specifically

how translation students perceive these tools within their translation practice, especially considering the significant impact of large language models like ChatGPT on their learning outcomes and even future career prospects (Sahari et al. 2023). Investigating translation majors' intentions to use ChatGPT is crucial, as their perceptions and attitudes directly influence the effective integration and utilization of such advanced AI technologies in translation education (Jang et al. 2021; Mailizar et al. 2021). Understanding these students' intentions can provide valuable insights into the practical and educational implications of adopting AI tools like ChatGPT in translation curricula. It is therefore needed to investigate translation majors' intentions to use ChatGPT in their translation practice.

Technology acceptance model and language learning. The technology acceptance model (TAM) posits a theoretical framework for understanding the adoption and usage of new technologies (Davis 1989). Central to this model are two cognitive beliefs: perceived usefulness (PU) and perceived ease of use (PEU). PU is the extent to which a person believes that using a particular technology will enhance their performance, while PEU refers to the degree to which a person believes that using the technology will be effort-free. The model asserts that PU and PEU influence individuals' attitude toward using a particular system, which, along with PU, directly affects the behavioural intention to use the technology. By delineating these relationships, TAM provides a robust framework to gauge the likelihood of a technology's acceptance and use within a target population. The relations among those variables were demonstrated in Fig. 1.

TAM's applicability extends to the domain of language learning, where technological interventions are increasingly prevalent (Lee 2022; Zhang and Zou 2022). In the context of language education, PU might encompass the technology's ability to facilitate better comprehension, provide diverse linguistic exposure, and enhance overall communicative competence. PEU becomes particularly salient with language learning technologies, as a user-friendly interface can significantly reduce the cognitive load on students, allowing them to focus more on the learning content rather than the mechanics of the technology. Numerous studies have employed TAM to explore how students adopt language learning software, online platforms, and other digital resources (Alfadda and Mahdi 2021; García Botero et al. 2018; Hsu and Lin 2022). These studies often highlight the importance of both PU and PEU in shaping students' attitudes toward using technology for language learning purposes.

The evolution of AI-driven tools like ChatGPT presents a new frontier in language learning technology (Jeon et al. 2023). ChatGPT's capabilities, from providing instant translations to facilitating interactive language practice (Bin-Hady et al. 2023), can be analysed through the TAM lens to understand their adoption among language learners. As such, the model can offer valuable insights into how students perceive the usefulness of ChatGPT in enhancing their translation skills and abilities and how its ease of use influences their willingness to incorporate it into their translation processes. Based on these concerns, it is hypothesized that:

H1: Perceived usefulness of ChatGPT significantly influences attitude toward using ChatGPT in translation practice.

H2: Perceived ease of use of ChatGPT significantly influences attitude toward using ChatGPT in translation practice.

H3: Perceived usefulness of ChatGPT significantly influences intention to use ChatGPT in translation assignments.

H4: Attitude toward using ChatGPT significantly influences intention to use ChatGPT in translation practice.

Despite TAM providing a foundational understanding of technology adoption, its scope is limited to perceived usefulness and ease of use, overlooking critical social factors (Riffai et al. 2012). This is particularly relevant in educational contexts where technology usage decisions are influenced by social dynamics and external constraints (Naismith et al. 2011). To holistically capture these dimensions, this study incorporates the theory of planned behaviour, which encompasses attitudes and subjective norms, thus offering a more comprehensive framework for examining behavioural intentions in language learning environments.

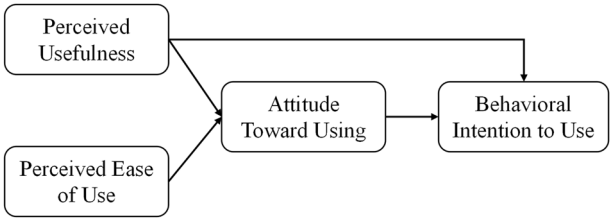

Fig. 1 Simplified TAM model (Davis 1989).

Theory of planned behaviour and language learning. The theory of planned behaviour (TPB) is a well-established psychological theory that predicts deliberate behaviour (Ajzen 1991, 2011). TPB posits that three core components influence an individual's behavioural intentions: attitudes toward the behaviour, subjective norms, and perceived behavioural control (Ajzen 1991). Attitudes toward the behaviour refer to individual' positive or negative evaluation of performing the behaviour, which was mentioned in TAM as well. Perceived behavioural control reflects individuals' perception of the ease or difficulty of performing the behaviour, which is similar to the concept of perceived ease of use in TAM. Subjective norms are the perceived social pressure to engage or not engage in the behaviour. In the domain of language learning, subjective norms could involve the influence of teachers, peers, and broader educational policies on students' language learning behaviours, and those social influences were found to drive their intention to use or not use language learning tools (Lai et al. 2022). Such social pressures might also profoundly affect students' decisions to adopt and continuously use innovative tools like ChatGPT. Therefore, it is hypothesized in this study that:

H5: Subjective norms toward using ChatGPT significantly influences intention to use ChatGPT in translation practice.

While TAM effectively assesses perceived usefulness and ease of use, it lacks insight into intrinsic motivational factors influencing technology adoption, such as a student's decision to use ChatGPT for language learning. Similarly, TPB, despite incorporating social influences, does not adequately address internal motivational states, focusing more on intentional behaviours without differentiating between intrinsic and extrinsic motivations. These shortcomings underscore the necessity of integrating self-determination theory, which provides a nuanced understanding of motivation by distinguishing between self-motivated (intrinsic) and externally influenced (extrinsic) motivations, thereby offering a more comprehensive framework for examining technology adoption in educational settings.

Self-determination theory and language learning. Self-determination theory (SDT), a psychological framework developed by Ryan and Deci (2017), focuses on human motivation in social contexts. Central to SDT are two key types of motivation: controlled and autonomous. Controlled motivation is driven by external factors such as rewards or societal pressures, where actions are performed due to external demands or potential consequences. In contrast, autonomous motivation stems from

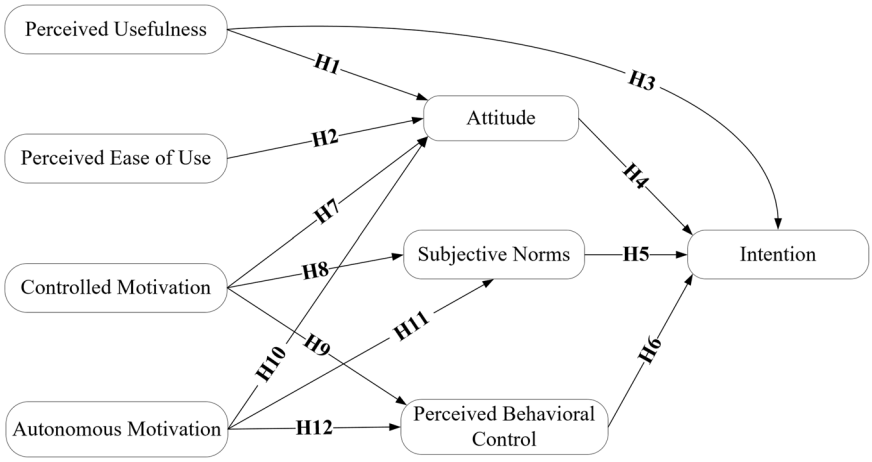

Fig. 2 Hypothesized model, adapted from Davis (1989), Ajzen (1991), and Ryan and Deci (2017).

internal sources like personal interest, enjoyment, or alignment with one's values, leading to engagement in activities out of genuine desire or personal relevance. These two distinct motivations are critical in understanding how individuals approach tasks and make decisions (Grant et al. 2011), significantly influencing their behaviours and attitudes within various contexts, including educational settings.

Controlled motivation, driven by external rewards or pressures, might lead to pragmatic attitude towards AI tools like ChatGPT (Feng et al. 2016; Zhu et al. 2023). In the realm of subjective norms, controlled motivation can amplify the perceived social obligation to use such tools, especially when endorsed by educational institutions (Chen et al. 2016). Autonomous motivation, characterized by internal desires and personal interest, significantly shapes people's engagement with high-tech tools like ChatGPT (Xia et al. 2022). This type of motivation positively influences attitudes, as students intrinsically motivated find genuine value in using these tools, leading to a favourable perception (Choi & Drumwright 2021; Priya and Sharma 2023). Additionally, it can subtly shape subjective norms, as numerous studies demonstrate that people's autonomous motivation could influence people's subjective norms towards a specific intentional behaviour (Li and Wu 2019).

Based on the theoretical underpinnings of SDT and their influence on TPB variables, the following hypotheses are proposed to explore the effects of controlled and autonomous motivation on the use of ChatGPT in translation practice:

H6 and H7: Controlled motivation toward using ChatGPT significantly influence attitudes (H6), and subjective norms (H7).

H8 and H9: Autonomous motivation toward using ChatGPT significantly influence attitudes (H8), and subjective norms (H9).

The overall hypotheses were demonstrated in the following hypothesized model (Fig. 2).

Methods

Context. This study unfolds within the dynamic and technologically evolving sphere of higher education in China, particularly within the field of translation studies. The educational context is marked by a blend of traditional language learning methodologies and a burgeoning interest in the incorporation of advanced digital tools to enhance the pedagogical process. Central to this study is the examination of the adoption of ChatGPT, an AI-powered language model, by college students in translation programs.

In China, the direct use of ChatGPT faces certain restrictions due to national internet regulations, leading to it being inaccessible without the use of VPNs. Students who are keen on utilizing ChatGPT for their translation assignments must navigate these additional steps, employing VPNs to bypass regional restrictions. This scenario presents a unique layer of complexity—not only do students need to contend with the usual factors influencing technology acceptance, but they must also weigh the additional effort and the potential risks associated with using VPNs to access ChatGPT.

Participants and sampling. The participants in this study were undergraduate and postgraduate students majoring in translation at various universities across China, where English is studied as a foreign language. Data collection took place over approximately six months. To ensure diversity and representativeness, a random sampling technique (Emerson 2015) was employed. Students were recruited from eight universities located in four cities that were strategically selected to capture a wide range of geographical and academic contexts.

The four cities included Shanghai, Wuhan, Nanning, and Liuzhou. Shanghai, located in eastern China, is the country's largest and most internationalized city, representing a highly developed and globalized academic environment. Wuhan, situated in central China, is known for its relatively advanced economy and robust educational institutions. Nanning, the capital city of a southwestern province, is characterized by moderate economic development. Liuzhou, a smaller city in China, has relatively underdeveloped educational resources, providing a contrast to the other cities. By selecting universities from these diverse locations, we aimed to create a geographically and academically representative sample. The universities included both public and private institutions to further diversify the sample. By including universities from cities with distinct geographical, economic, and educational contexts, as well as from both public and private institutions, the sample reflects a diverse range of academic environments and is intended to provide a broad representation of translation students across China.

In total, 432 survey responses were collected. To ensure the validity and reliability of the data, strict inclusion criteria were applied. Participants were required to be currently enroled in a translation program at either the undergraduate or postgraduate level and to have completed at least one semester of study. Additionally, participants were required to have prior experience using large language models, such as ChatGPT, to assist in their translation practice and learning. After careful screening, responses from participants who did not meet these criteria, as well as those with incomplete or missing data, were excluded.

This resulted in a final sample of 385 valid responses. The diverse composition of the sample reflects the wide range of geographical, academic, and institutional contexts in which translation students in China study.

The demographic breakdown of the sample was showcased in Table 1.

Instrumentation. In this study, the primary instrument for data collection is a carefully developed questionnaire, informed by existing literature in translation education and AI integration. The questionnaire's content validity was enhanced through a review by two experts in translation studies, ensuring relevance and comprehensiveness. A subsequent pilot study with a representative sample ($N = 65$) tested its reliability and validity (with all variables' Cronbach's α values exceeding 0.7), leading to refinements for clarity and consistency (Taber 2018). This meticulous process yielded a precise instrument designed to gather in-depth insights into students' intentions and considerations regarding the use of ChatGPT for translation tasks.

The original questionnaire was written and administered in Chinese. To help international readers better understand the content of the Chinese questionnaire, we translated the items into English for inclusion in this manuscript. The translation of the questionnaire items was reviewed by a bilingual expert to ensure accuracy and clarity. The translated items in the questionnaire and their corresponding origins are demonstrated in the following Table 2.

Data analysis. For this study, data analysis was conducted using SPSS 25 and Amos 23. Initially, the questionnaire data was processed in SPSS 25 to compute descriptive statistics, offering an overview of the data distribution, and to calculate Cronbach's alpha, ensuring the reliability of the questionnaire items. Additionally, SPSS was used for exploratory factor analysis, laying a solid foundation for the structural equation modelling and hypothesis testing in later stages. The analysis then progressed to Amos 23, where structural equation modelling (SEM) was employed to test the study's hypotheses and the overarching theoretical model. SEM facilitated the examination of complex relationships between variables, particularly focusing on factors influencing translation learners' intentions to use ChatGPT in translation practice.

Results

Reliability analysis. A reliability analysis was performed to assess the internal consistency of each variable, with the findings summarized in Table 3. All six variables yielded Cronbach's alpha values exceeding 0.70 (Taber 2018), thereby indicating that the questionnaire demonstrated a satisfactory level of reliability.

Table 1 Demographics of the respondents.

Demographics		F	%
Gender	Male	68	18
	Female	317	82
University type	Public	297	77
	Private	88	23
Degree	Postgraduate	213	55
	Undergraduate	172	45
Cities	Shanghai	92	24
	Wuhan	112	29
	Nanning	95	25
	Liuzhou	86	22

Exploratory factor analysis. In this study, exploratory factor analysis was conducted using SPSS 25. The overall KMO value for the questionnaire was 0.874, with a significance level of 0.000 ($p < 0.05$), confirming the appropriateness of employing principal component analysis. To examine potential common method variance, the Harman single-factor test was applied. Following the approach outlined by Podsakoff et al. (2003), common method variance would be indicated if a single factor emerged or if a general factor accounted for the majority of the total variance. The results of the exploratory factor analysis revealed a multi-factor structure (eigenvalues > 1), with the first factor explaining only 25.16% of the total variance, well below the critical threshold of 50% (Conway and Lance 2010). These findings indicate that common method variance does not significantly affect the dataset.

Confirmatory factor analysis. The results of the convergent validity test are presented in Table 4. Composite reliability (CR) values for all six variables exceeded 0.7, and average variance extracted (AVE) values were above 0.5 for all variables. These findings suggested the convergent validity of the six variables was acceptable (Fornell and Larcker 1981).

Discriminant validity test results (see Table 5) demonstrated that the square root of every variable's AVE was higher than the Pearson correlations between the corresponding construct and others, indicating discriminant validity was acceptable among the variables (Fornell and Larcker 1981).

Model fit and hypotheses testing. Model fit results of the hypothesized model is demonstrated in Table 6. The values of GFI, CFI and TLI were all above 0.9. In addition, the results of χ^2/df, and RMSEA, also indicated that the hypothesized model was acceptable. The research model with factor loadings and path coefficients was displayed in Fig. 3. In the structural model, the R^2 values of the endogenous variables were as follows: attitudes ($R^2 = 0.37$), subjective norms ($R^2 = 0.29$), and intention to use ChatGPT ($R^2 = 0.38$). These values represent the proportion of variance in each endogenous variable that is explained by the associated exogenous variables in the model. The average R^2 across the three endogenous variables is 0.34, which exceeds the commonly accepted threshold of 0.33 for medium explanatory power (Urbach and Ahlemann 2010). These results suggest that the model exhibits a moderate level of explanatory power for the endogenous variables, indicating that the predictors effectively explain a substantial portion of the variance in these constructs.

Table 7 demonstrated the 9 hypotheses in the hypothesized model constructed before, with their standardized and unstandardized path coefficients. The results of tested hypotheses were listed accordingly, and it showed that 8 paths (except the H2 path from PEU to ATT) in the hypothesized model were significant and acceptable.

The following section is a detailed explanation of each path, demonstrating the significance and impact of various factors related with translation learners' intentions to use ChatGPT.

H1 (PU → ATT): The path from perceived usefulness (PU) to attitudes (ATT) was significant (Unstd. = 0.331, Std. = 0.294, $p < 0.001$). This finding suggests that translation students who perceive ChatGPT as more useful tend to develop more positive attitudes toward using it.

H2 (PEU → ATT): The path from perceived ease of use (PEU) to attitudes (ATT) was not significant (Unstd. = 0.076, Std. = 0.064, $p > 0.05$). This result indicates that translation students' perceptions of how easy ChatGPT is to use do not significantly affect their attitudes toward using it.

Table 2 Measurement instrument.

Latent constructs	Observable constructs	Adapted construct items	Sources
Perceived usefulness	PU1	ChatGPT helps me to learn translation more efficiently.	Alfadda and Mahdi (2021), Almusharraf and Bailey (2023) and García Botero et al. (2018)
	PU2	ChatGPT improves my translation performance.	
	PU3	Using ChatGPT to do translation is helpful.	
	PU4	ChatGPT makes translation assignment easier to be finished.	
	PU5	ChatGPT is advantageous for finishing translation assignments.	
Perceived ease of use	PEU1	Log in and out of ChatGPT is fast and clear.	Alfadda and Mahdi (2021), Almusharraf and Bailey (2023)
	PEU2	Approaching to use ChatGPT is easy for me.	
	PEU3	It is easy to talk with ChatGPT.	
	PEU4	ChatGPT website is understandable.	
	PEU5	Overall, I believe that ChatGPT is easy to use.	
Autonomous motivation	ATM 1	I enjoy using ChatGPT to do translation assignments.	Ferguson et al. (2015), Katz et al. (2011), Kunz (2015), McEown and Oga-Baldwin (2019)
	ATM 2	I use ChatGPT to improve my translation quality.	
	ATM 3	Using ChatGPT in translation practice is funny.	
	ATM 4	I use ChatGPT for the pleasure of translation.	
Controlled motivation	CTM 1	I use ChatGPT to do translation assignments because otherwise I cannot finish them.	Ferguson et al. (2015), Katz et al. (2011), Kunz (2015), McEown and Oga-Baldwin (2019)
	CTM 2	I use ChatGPT to do translation assignments because otherwise I will be regarded as an unqualified student.	
	CTM 3	I use ChatGPT to do translation assignment to get more scores.	
	CTM 4	I use ChatGPT in my translation because I want my teacher recognize my translation ability.	
Attitudes	ATT 1	Using ChatGPT to do translation is attractive for me.	Al-Jubari (2019), Chen et al. (2009), Luqman et al. (2018)
	ATT 2	Using ChatGPT to do translation could give great satisfactions to me.	
	ATT 3	Using ChatGPT to do translation implies more advantages than disadvantages.	
Subjective norms	SN 1	Most of my students think ChatGPT is important for translation measures.	Al-Jubari (2019) and Chen et al. (2009)
	SN 2	Social context requires translation majors to have the ability to use ChatGPT.	
	SN 3	Our translation teachers think we should know how to use ChatGPT.	
	SN 4	Our translation teachers are supportive of the usage of ChatGPT in translation assignments	
Intentions	INT 1	I would use ChatGPT in my next translation assignment.	Al-Jubari (2019) and Chen et al. (2009)
	INT 2	I'm ready to make anything to use ChatGPT in my translation practice.	
	INT 3	I have very seriously thought in using ChatGPT in my translation practice.	
	INT 4	I've got the firm intention to use ChatGPT in my translation practice.	

Table 3 Reliability test results.

Variables	PU	PEU	ATM	CTM	ATT	SN	INT
Alpha	0.879	0.859	0.857	0.818	0.880	0.823	0.897

PU Perceived usefulness, *PEU* perceived ease of use, *ATM* Autonomous motivation, *CTM* Controlled motivation, *ATT* Attitudes, *SN* Subjective norms, *INT* Intention to conduct research.

H3 (PU → INT): The path from perceived usefulness (PU) to intention to use ChatGPT (INT) was significant (Unstd. = 0.221, Std. = 0.222, $p < 0.001$). This demonstrates that translation students who perceive ChatGPT as more useful are more likely to form a stronger intention to use it.

H4 (ATT → INT): The path from attitudes (ATT) to intention to use ChatGPT (INT) was significant (Unstd. = 0.209, Std. = 0.237, $p < 0.001$). This finding highlights that translation students with more positive attitudes toward ChatGPT are more likely to intend to use it.

H5 (SN → INT): The path from subjective norms (SN) to intention to use ChatGPT (INT) was significant (Unstd. = 0.370, Std. = 0.397, $p < 0.001$). This indicates that translation students who perceive stronger social expectations or peer influence are more likely to intend to use ChatGPT.

H6 (CTM → ATT): The path from controlled motivation (CTM) to attitudes (ATT) was significant (Unstd. = 0.412, Std. = 0.318, $p < 0.001$). This suggests that translation students motivated by external factors, such as academic requirements or institutional expectations, tend to hold more positive attitudes toward using ChatGPT.

H7 (CTM → SN): The path from controlled motivation (CTM) to subjective norms (SN) was significant (Unstd. = 0.557, Std. = 0.454, $p < 0.001$). This finding shows that translation students with higher levels of controlled motivation are more

likely to perceive stronger social expectations or norms regarding the use of ChatGPT.

H8 (ATM → ATT): The path from autonomous motivation (ATM) to attitudes (ATT) was significant (Unstd. = 0.283, Std. = 0.239, $p < 0.001$). This result indicates that translation students motivated by intrinsic interest or personal curiosity tend to develop more positive attitudes toward using ChatGPT.

H9 (ATM → SN): The path from autonomous motivation (ATM) to subjective norms (SN) was significant (Unstd. = 0.209, Std. = 0.187, $p < 0.01$). This finding suggests that translation students with higher levels of autonomous motivation are more likely to perceive stronger social expectations or norms related to using ChatGPT.

These results collectively demonstrate that perceived usefulness, attitudes, and subjective norms are key determinants of translation students' intention to use ChatGPT, while autonomous and controlled motivations play a critical role in shaping their attitudes and perceived social expectations. Although perceived ease of use did not significantly influence attitudes, the overall model provides strong support for the hypothesized relationships, highlighting the complex interplay of motivational and behavioural factors in driving ChatGPT adoption among translation students.

Table 4 Convergent validity test result.

Variables	Items	Factor loadings	Item reliabilities	CR	AVE
PU	PU5	0.702	0.493	0.881	0.599
	PU4	0.751	0.564		
	PU3	0.733	0.537		
	PU2	0.813	0.661		
	PU1	0.859	0.738		
PEU	PEU5	0.701	0.491	0.861	0.554
	PEU4	0.730	0.533		
	PEU3	0.679	0.461		
	PEU2	0.786	0.618		
	PEU1	0.818	0.669		
ATM	ATM4	0.695	0.483	0.858	0.604
	ATM3	0.781	0.610		
	ATM2	0.745	0.555		
	ATM1	0.877	0.769		
CTM	CTM4	0.688	0.473	0.819	0.534
	CTM3	0.641	0.411		
	CTM2	0.798	0.637		
	CTM1	0.783	0.613		
ATT	ATT3	0.772	0.596	0.885	0.720
	ATT2	0.922	0.850		
	ATT1	0.845	0.714		
SN	SN4	0.632	0.399	0.832	0.556
	SN3	0.773	0.598		
	SN2	0.702	0.493		
	SN1	0.857	0.734		
INT	INT1	0.651	0.424	0.905	0.707
	INT2	0.856	0.733		
	INT3	0.936	0.876		
	INT4	0.891	0.794		

PU Perceived usefulness, *PEU* perceived ease of use, *ATM* Autonomous motivation, *CTM* Controlled motivation, *ATT* Attitudes, *SN* Subjective norms, *INT* Intention to conduct research.

Discussion

This study successfully integrated three theoretical frameworks—TAM, TPB, and SDT—to comprehensively explore the factors influencing translation majors' intention to use ChatGPT. By combining these perspectives, the research provides a nuanced understanding of how motivational and social factors intersect to shape students' technology adoption decisions. The study found that EFL translation learners' intention to use ChatGPT in their translation practice was influenced by both distal and proximal factors. Perceived usefulness emerged as a key driver, with students recognizing the practical benefits of ChatGPT for translation tasks. Both controlled and autonomous motivation were significant in shaping students' intentions, reflecting external pressures as well as intrinsic interest and curiosity. Proximal factors such as positive attitudes towards ChatGPT, and supportive subjective norms from peers and instructors further influenced students' intentions. Overall, these findings suggest a complex interplay of motivational and social factors that drive EFL students' use of ChatGPT in translation practice.

The findings of this study present an interesting departure from TAM, which traditionally emphasizes both perceived usefulness and perceived ease of use as key determinants of technology acceptance (Davis 1989). In our research, we found that only perceived usefulness significantly influenced individuals' attitudes towards ChatGPT, while perceived ease of use did not have a notable impact. This divergence from TAM's expectations is not uncommon, as similar cases have been observed in other studies (e.g., Davis et al. 1989; Gefen and Straub 2000). One key reason for this lack of influence from perceived ease of use is the restricted accessibility of ChatGPT in mainland China due to internet regulation and censorship (Zou and Liu 2024). Consequently, Chinese ChatGPT users must utilize VPNs to access the service (Liu et al. 2024), which increases the complexity and difficulty of using this technology. This additional barrier may overshadow some perceived simplicity of the ChatGPT interface (Cheng et al. 2023) itself, thus decreasing the perceived ease of use. As a result, students may prioritize the technology's perceived usefulness and its potential to enhance their translation work over its ease of use.

This deviation from TAM's predictions suggests when doing translation practice, Chinese EFL learners' attitudes towards ChatGPT are more driven by the technology's utility than its simplicity, given the challenges associated with accessing and

Table 5 Discriminant validity test results.

	AVE	INT	SN	ATT	CTM	ATM	PEU	PU
INT	0.707	**0.841**						
SN	0.556	0.521	**0.746**					
ATT	0.720	0.466	0.370	**0.849**				
CTM	0.534	0.375	0.495	0.444	**0.731**			
ATM	0.604	0.215	0.319	0.401	0.293	**0.777**		
PEU	0.554	0.065	0.121	0.085	0.037	0.061	**0.744**	
PU	0.599	0.395	0.207	0.415	0.210	0.223	−0.030	**0.774**

Square roots of AVEs are in bold on diagonal, while off diagonal are Pearson correlations of variables.
PU Perceived usefulness, *PEU* perceived ease of use, *ATM* Autonomous motivation, *CTM* Controlled motivation, *ATT* Attitudes, *SN* Subjective norms, *INT* Intention to conduct research.

Table 6 Model fit results.

Indexes	Values	Suggested values
$\chi 2$	511.065	-
$\chi 2/df$	1.412	<3.0
GFI	0.918	>0.90
AGFI	0.901	>0.90
CFI	0.974	>0.90
TLI	0.971	>0.90
RMSEA	0.033	<0.08
SRMR	0.046	<0.05

Table 7 Results of hypotheses testing.

Hypothesis	Path	Unstd.	Std.	Result
H1	PU → ATT	0.331***	0.294	Accept
H2	PEU → ATT	0.076	0.064	Reject
H3	PU → INT	0.221***	0.222	Accept
H4	ATT → INT	0.209***	0.237	Accept
H5	SN → INT	0.370***	0.397	Accept
H6	CTM → ATT	0.412***	0.318	Accept
H7	CTM → SN	0.557***	0.454	Accept
H8	ATM → ATT	0.283***	0.239	Accept
H9	ATM → SN	0.209**	0.187	Accept

PU Perceived usefulness, *PEU* perceived ease of use, *ATM* Autonomous motivation, *CTM* Controlled motivation, *ATT* Attitudes, *SN* Subjective norms, *INT* Intention to conduct research. ***indicates $p < 0.001$; **indicates $p < 0.01$.

using it. Therefore, teachers employing AI-assisted teaching demonstrations must consider students' accessibility to ChatGPT. If the majority of students are unable to directly access ChatGPT, instructors should strive to use domestic or readily available generative AI tools during teaching demonstrations, notwithstanding ChatGPT's leadership in generative AI tools. Specifically, China's domestic AIGC tools such as ERNIE 3.0, developed by Baidu, present a viable alternative. ERNIE has been advancing rapidly, with some studies indicating that its translation performance, particularly in understanding complex Chinese texts, can surpass that of ChatGPT (Bao and Zhang 2023). Given translation majors in China will certainly learn how to translate some complicated Chinese texts (Sun and Gao 2020), therefore by incorporating such domestic AIGC tools into the curriculum, educators could provide equitable access to advanced translation technology among translation majors, and enhance their learning experience. However, it is also critical to recognize the potential downside of relying on AI tools like ERNIE or Kimi for translation, particularly regarding the potential loss of creativity in students' translation practices (Sahari et al. 2023). As translation is both an art and a science (Alwazna 2013), fostering creativity and interpretative skills is essential for producing high-quality translations. To mitigate this, educators should encourage students to use AI tools as supplementary aids rather than as replacements for human creativity.

This study delved into the impact of controlled and autonomous motivations on two proximal variables: attitudes and subjective norms. The results indicated that both controlled and autonomous motivations significantly influenced these proximal variables. However, controlled motivation exhibited a stronger effect on these variables compared to autonomous motivation, as

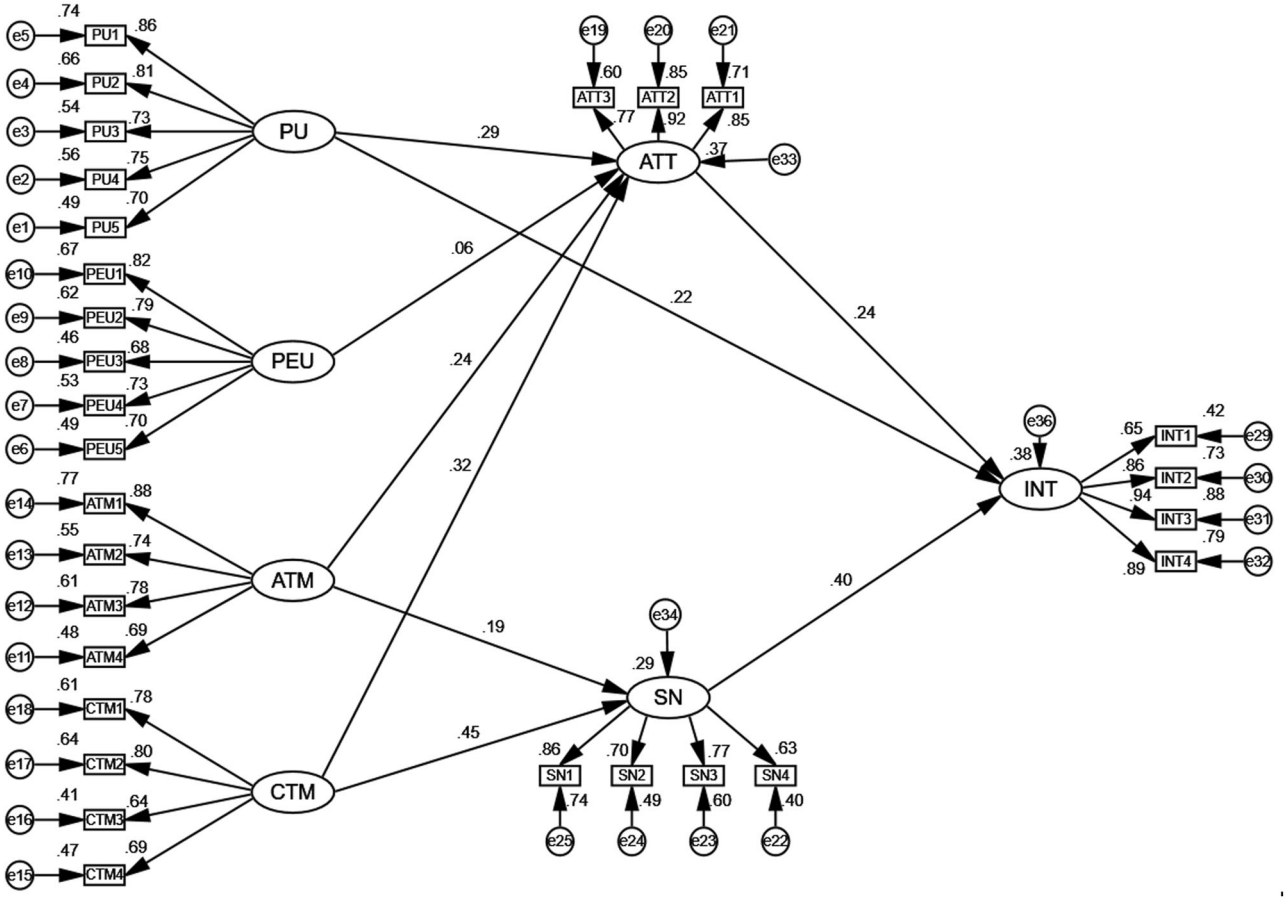

Fig. 3 Research model with factor loadings and path coefficients.

illustrated in Table 7. This finding contradicts many existing studies on the relationship between autonomous and controlled motivations. Existing research often suggests that autonomous motivation has a higher impact on behavioural intentions, such as research literacy (Zhao and Huang 2024), academic intentions (Brunet et al. 2015; Wijsman et al. 2018). The prominence of controlled motivation in this study can be attributed to the specific context in which the research was conducted. For translation majors, translation assignments are rigorously evaluated by instructors, and these scores contribute significantly to students' overall performance evaluation, which are closely linked to their GPA and hence their future pursuits, such as further studies or job prospects (Kim and Spencer-Oatey 2021; Sulastri et al. 2015). In a context where ChatGPT is restricted, translation majors may bypass access barriers, such as using VPNs, to improve their grades and enhance their future career prospects. This behaviour is driven by controlled motivation, as students are primarily focused on meeting academic expectations and securing high grades, rather than by intrinsic interest in the tool. Therefore, in environments where academic expectations and performance evaluations carry significant weight, students may be more inclined to conform to external standards driven by controlled motivation. This aligns with other studies (e.g., Li et al. 2024) that have found similar patterns in academic and other high-stakes environments, where students often prioritize meeting requirements and expectations over intrinsic interest or enjoyment. This suggests that educators can set higher learning and evaluation standards, capitalizing on students' external motivation to improve translation quality through tools like ChatGPT. However, excessive reliance on controlled motivation may diminish students' intrinsic interest in translation. To balance both motivations, it is important to foster autonomous motivation by creating challenging translation tasks that emphasize skill-building and enjoyment, rather than merely focusing on grades. Encouraging students to reflect on how to use ChatGPT or other AI tools for enhancing translation quality and engagement, beyond just achieving high scores, can help cultivate their intrinsic motivation.

Traditional TPB models consist of three influencing factors: attitudes, perceived behaviour control, and subjective norms (Ajzen 1991). However, this study did not incorporate perceived behaviour control, a factor from the traditional TPB model. This omission was due to the conceptual overlap between perceived behaviour control and perceived ease of use in the TAM model, as see the definitions of perceived behaviour control (Ajzen 2002) and perceived ease of use (Davis 1989). TAM has been widely utilized and validated across various domains (Davis et al. 2024), suggesting that perceived ease of use from the TAM model could influence attitudes in the TPB model. Thus, it may be beneficial to consider enhancing the TPB model by demonstrating the impact of perceived behaviour control on attitudes, rather than positioning perceived behaviour control and attitudes as parallel factors.

Conclusion

This study explored the antecedents of translation learners' intentions to use ChatGPT in their translation practice, and highlighted the paramount influence of perceived usefulness, alongside the significant roles played by both controlled and autonomous motivations, attitudes and subjective norms. Contrary to traditional expectations set by TAM, perceived ease of use was not a significant determinant.

Our study highlights that most translation students find ChatGPT highly beneficial for translation learning and practice, yet network restrictions hinder access. To address this, educational institutions should offer training on locally accessible large language models, enabling students to leverage generative AI to improve translation efficiency and quality—an essential skill for the industry's future. Additionally, translation educators should shift from traditional methods, such as lexical equivalence teaching, to incorporating large language model applications into the curriculum, better aligning with evolving industry demands. However, the use of AI tools like ChatGPT in academic settings also raises ethical concerns, particularly when such tools are employed to complete graded assignments. Institutions must implement clear guidelines and policies to ensure that AI-assisted work maintains academic honesty. For instance, AI tools should be positioned as supplementary aids rather than replacements for core learning processes, and educators should emphasize their responsible and ethical use in enhancing, rather than undermining, students' translation outcomes.

Limitations

Our study included participants ranging from first-year undergraduate students to final-year master's students majoring in translation. While this broad coverage enhances the representativeness of our sample, it may also introduce variations in translation proficiency and technology usage skills across different groups. These variations could potentially influence the hypothesized model constructed in this study. Therefore, future research could focus on specific groups, such as undergraduates or graduate students, to explore their intentions to use ChatGPT in a more targeted manner.

Furthermore, this study took place in a context where access to ChatGPT was restricted. However, currently, the majority of countries have access to ChatGPT. This indicates that the conclusions drawn from this study may be limited to countries where direct access to ChatGPT is restricted, such as North Korea, China, Iran, Russia, and others. Future research could explore the hypothesized model from this study and its applicability in countries and regions where ChatGPT is accessible. This would provide a broader understanding of the factors influencing attitudes towards ChatGPT across different contexts. Although ChatGPT is banned in China, there are numerous domestic large language models, such as ERNIE and Kimi. Future research could also investigate whether the relationships between different factors in the theoretical model constructed in this study are applicable to these local large language models.

Data availability

The data supporting the findings of this study are available upon request from the corresponding author.

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The author confirms that no generative artificial intelligence tools were used in the writing of this manuscript. However, generative AI, particularly ChatGPT, constitutes an important background for this study, as some translation students utilize such tools to support their learning. Notably, prior experience with generative AI tools was a prerequisite for participation in this study, ensuring that all participants had firsthand experience with these technologies in their translation learning process.

Author contributions

The author was solely responsible for the conceptualization, design, data collection, analysis, and writing of this manuscript.

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Competing interests

The authors declare no competing interests.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was approved by the Medical Ethics Committee of Guangxi University (No.: GXU-2024-035) on March 30th, 2024.

Informed consent

Written informed consent was obtained from all participants prior to their inclusion in this study. Participants were fully informed about the study's purpose, procedures, data usage, and their rights, including the right to withdraw at any time without consequences. They were explicitly informed that all data would be collected and processed in an anonymized manner and that no identifying details, such as names or personal information, would be disclosed in the manuscript.

Additional information

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