FACTORS INFLUENCING INTENTION TO USE ARTIFICIAL INTELLIGENCE IN LEARNING LISTENING AND SPEAKING SKILLS: A STUDY OF CHINESE STUDIES STUDENTS AT THAI NGUYEN UNIVERSITY OF SCIENCES

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Abstract:

This study examined the determinants of Chinese Studies students' intention to use artificial intelligence (AI) to learn listening and speaking skills at Thai Nguyen University of Sciences. Using the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT2), the study determined five primary factors: perceived usefulness, perceived ease of use, hedonic motivation, social influence, and trust. A quantitative study design was adopted, using survey data from 200 Chinese Studies major students. The results of multiple regression analysis indicated that all five variables significantly impact students' intent to use AI tools for learning listening and speaking skills. The implications are meaningful for instructors, developers, and policymakers who want to improve the effective application of AI in language learning. Future lines of inquiry were also outlined in the study, such as expanding the sample size and using mixed methods for enhancing the understanding of AI uptake in language learning.

Keywords: artificial intelligence, intention, listening skill, speaking skill, Chinese Studies

1. Introduction

Artificial intelligence (AI) is increasingly important in language learning, particularly in the acquisition of listening and speaking skills. AI technologies like chatbots and speech recognition software give learners interactive environments that enhance their speaking ability and interaction (Huang & Zou, 2024). AI technologies facilitate adaptive and tailored practice spaces that classroom environments might be unable to support.

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Technology acceptance theories like the Technology Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT2) (Venkatesh *et al.*, 2012) proposed that learners' perceived usefulness, perceived ease of use, hedonic motivation, social influence, and trust determine the intention of learners to use new learning technology. Previous studies confirmed that such variables affect the adoption of AI technology among learners across multiple learning areas, such as language learning (Choung *et al.*, 2022; Chai *et al.*, 2023).

However, most existing research has focused on general language learning or reading and writing skills (Huang & Zou, 2024), with limited attention given to AI's role in supporting listening and speaking practice. Moreover, there is limited knowledge on how these factors impact the intention of students to utilize AI in oral language skills in Vietnamese universities, particularly for Chinese Studies students - a group of learners with special language learning needs that have been less explored in existing studies.

This study aims to address this gap by identifying the key factors influencing Chinese Studies students' intention to use AI in learning listening and speaking skills at the Thai Nguyen University of Sciences. The findings will contribute to both theoretical understanding and practical strategies for promoting effective AI integration in language education.

2. Literature review and hypotheses development

2.1. Perceived usefulness

Perceived usefulness is the degree to which an individual feels that implementing a given technology will enhance their performance in learning (Davis, 1989). In learning languages, technologies such as chatbots and speech recognition enable learners to improve listening and speaking skills through interactive and customized activities, enabling better oral proficiency (Huang & Zou, 2024; Godwin-Jones, 2023). If students perceive that such tools will help them achieve their learning goals, they will be willing to embrace them (Kohnke *et al.*, 2023). Past research has constantly identified that perceived usefulness is a key moderator of learners' behavioral intention toward using AI within language learning contexts (Chai *et al.*, 2023):

H1: Perceived usefulness has a positive effect on Chinese Studies students' intention to use artificial intelligence in learning listening and speaking skills at Thai Nguyen University of Sciences.

2.2. Perceived ease of use

Perceived ease of use is the extent to which an individual believes using a specific technology will be easy (Davis, 1989). In language learning, artificial intelligence technologies such as chatbots, speech recognition software, and virtual teachers will become widely accepted if the learners perceive them as intuitive and easy to use (Huang & Zou, 2024). When learners perceive that an AI tool is not highly technically challenging

to operate or accommodate nicely in their learning cycle, their behavioral intention towards utilization rises (Chai *et al.*, 2023). Empirical evidence supports that perceived ease of use is a primary predictor of behavioral intention in various AI-based learning contexts (Venkatesh *et al.*, 2012). In language learning contexts, ease of use has been determined to significantly impact students' acceptance of AI speaking practice tools (Godwin-Jones, 2023). Therefore, the author proposed a hypothesis as follows:

H₂: Perceived ease of use has a positive effect on Chinese Studies students' intention to use artificial intelligence in learning listening and speaking skills at Thai Nguyen University of Sciences.

2.3. Hedonic motivation

Hedonic motivation refers to the extent to which an individual finds pleasure and enjoyment in using a particular technology (Venkatesh *et al.*, 2012). Regarding language learning, technologies such as ChatGPT and AI chatbots can transform repetitive speaking and listening activities into engaging and enriching processes that create internal motivation among students (Kohnke *et al.*, 2023). Huang and Zou (2024) found that the enjoyment derived from using AI-based tools significantly predicted students' intention to engage with these tools repeatedly. Moreover, enjoyment mediated between perceived usability and students' continued use of the tools. These findings mean that students who perceive AI tools as engaging and satisfying possess more positive attitudes to integration and have stronger intentions to incorporate AI into their speaking and listening study practice. Thus, the following hypothesis was proposed:

H₃: Hedonic motivation has a positive effect on Chinese Studies students' intention to use artificial intelligence in learning listening and speaking skills at Thai Nguyen University of Sciences.

2.4. Trust

Trust describes the extent to which users are assured that an AI system is secure, reliable, and will perform as expected (Choung, David, & Ross, 2022). In AI-based language learning, where students are likely to learn alone with AI assistance, trust is a key factor in initial adoption and continued use (Al-Abdullatif, 2024). When students believe that AI tools provide positive feedback, maintain their data privacy, and function normally, they develop positive behavioral intentions to utilize these technologies (Choung *et al.*, 2022; Al-Abdullatif, 2024). Experimental evidence confirms that trust influences users' intention to use AI and boosts perceived usefulness, strengthening adoption (Choung *et al.*, 2022). Based on these arguments, the following hypothesis was established:

H₄: Trust has a positive effect on Chinese Studies students' intention to use artificial intelligence in learning listening and speaking skills at Thai Nguyen University of Sciences.

2.5. Social influence

Social influence refers to how individuals perceive that important others, such as relatives, teachers, or peers, expect them to use a particular technology (Venkatesh *et al.*, 2003). For generative AI like ChatGPT, social influence has been found to impact students' use of these technologies. For generative AI like ChatGPT, social influence has been found to impact students' use of these technologies. For instance, a survey among Nepalese university students revealed that teachers' and peers' support was positively related to their intention to employ ChatGPT (Bahadur *et al.*, 2024). Such findings suggest that supportive expectations from the surrounding social world of a learner play a significant role in technology adoption. Thus, the following hypothesis was proposed:

H5: Social influence has a positive effect on Chinese Studies students' intention to use artificial intelligence in learning listening and speaking skills at the Thai Nguyen University of Sciences.

The research model of the topic is presented in Figure 1.
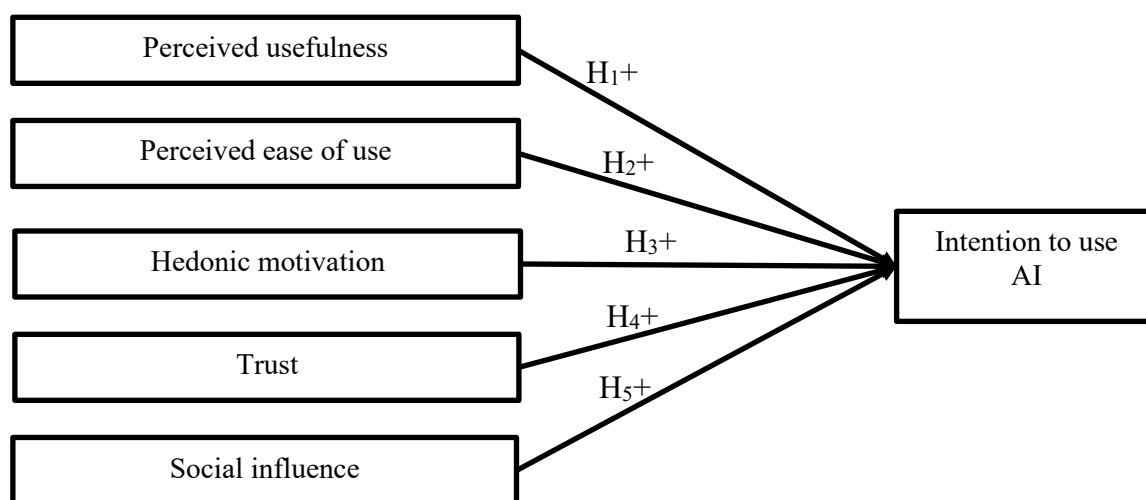
Figure 1: The proposed research model

3. Methodology

3.1. Data collection

This study employed a quantitative research approach, utilizing survey questionnaires as the primary tool for data collection. The target population was students majoring in Chinese Studies at the Thai Nguyen University of Sciences. Participants completed the questionnaire either through a Google Form or via face-to-face interviews. According to Hair *et al.* (2009), the minimum required sample size should be at least five times the scale's total number of observed variables. Based on this guideline, this study's minimum sample size is 22*5=110 respondents. To enhance the reliability and robustness of the data, the researchers have increased the sample size to 200 respondents.

3.2. Scale measurement

The research scale of the topic was built and calibrated based on the scales of previous studies, including Al-Azawei and Alowayr (2020), Davis (1989), and Nguyen *et al.* (2024). All observed variables were measured using a 5-point Likert scale.

Table 1: Summary of the survey sample (n=200)

Variables	Categories	Frequency	Percentage (%)
Gender	Male	131	65.5
	Female	69	34.5
Year of study	First year	27	13.5
	Second year	104	52.0
	Third year	45	22.5
	Fourth year	24	12.0

4. Results and Discussion

4.1. Reliability test

The reliability of the measurement scale was tested utilizing Cronbach's alpha coefficient (Table 2). All instruments were found to exhibit good reliability, with Cronbach's alpha (CA) ranging from 0.750 to 0.856 and all the items' Corrected Item–Total Correlation (CITC) being greater than 0.3. Hair *et al.* (2009) argued that Cronbach's alpha values above 0.7 indicate strong internal consistency, and CITC values above 0.3 are also sufficient in item discrimination (Cristobal *et al.*, 2007). The variables in this research - Perceived Usefulness (CA = 0.802), Perceived Ease of Use (CA = 0.781), Hedonic Motivation (CA = 0.847), Trust (CA = 0.772), Social Influence (CA = 0.750), and Intention to Use AI (CA = 0.856) were above these reliability cutoffs. The findings affirm that all the measures were internally consistent enough to ascertain the usability of these scales in future analyses.

Table 2: Results of the reliability test

Items	Constructs	Corrected Item – Total Correlation
	Perceived usefulness (PU) – Cronbach's alpha = 0.802	
PU1	AI facilitates the process of learning, listening and speaking skills.	0.592
PU2	AI helps me become more efficient in learning, listening and speaking skills.	0.619
PU3	AI allows me to save time when learning listening and speaking skills.	0.639
PU4	AI enhances the effectiveness of learning, listening and speaking skills.	0.627
	Perceived ease of use (PEU) – Cronbach's alpha = 0.781	
PEU1	The AI system offers useful assistance in completing tasks.	0.624
PEU2	I find it easy to recall how to perform tasks using the AI system.	0.566
PEU3	Installing AI applications on my phone and computer is easy.	0.600
PEU4	I find the interfaces of AI applications to be simple and easy to use.	0.559
	Hedonic motivation (HM) – Cronbach's alpha = 0.847	
HM1	I am pleased with my learning outcomes in listening and speaking skills when using AI tools.	0.638
HM2	I have a greater interest in using AI for learning listening and speaking skills.	0.647
HM3	Using AI tools to learn listening and speaking skills is an enjoyable activity for me.	0.719
HM4	I feel confident in the knowledge I acquire through using AI tools.	0.739
	Trust (TRUST) – Cronbach's alpha = 0.772	
TRUST1	I consider AI technology to be reliable.	0.607
TRUST2	I feel confident that legal and technological frameworks provide sufficient protection against potential issues with AI technology.	0.597
TRUST3	I believe that AI technology is capable of performing its intended functions effectively.	0.625
	Social influence (SI) – Cronbach's alpha = 0.750	
SI1	Individuals who are important to me believe that I should use AI technology to learn listening and speaking skills.	0.526
SI2	People who shape my behavior think that I should use AI technology to learn listening and speaking skills.	0.548
SI3	Those whose opinions I respect prefer that I use AI technology to learn listening and speaking skills.	0.661
	Intention to use AI (I) – Cronbach's alpha = 0.856	
I1	I intend to use AI technology to study listening and speaking skills in the future.	0.652
I2	I will always try to use AI to study listening and speaking skills in my daily study.	0.623
I3	I feel that using AI tools in learning listening and speaking skills is the right decision.	0.769
I4	I will recommend that other students to use AI technology to study listening and speaking skills.	0.779

4.2. Validity test

Exploratory factor analysis was employed to test the validity of the measurement scale (Table 3). Kaiser-Meyer-Olkin (KMO) sampling adequacy was 0.823 for independent

variables and 0.750 for the dependent variable, exceeding the 0.60 threshold, meaning that the data were appropriate for factor analysis (Hair *et al.*, 2009). Bartlett's test of sphericity was significant at p = 0.000 for both scales, validating the factorability of the correlation matrix. The Eigenvalues for the independent and dependent variables were 1.330 and 2.837, respectively, with the total variance explained reaching 66.346% for the independent variables and 70.931% for the dependent variable. These findings suggest that the extracted factors explain a high percentage of variance; hence, the construct validity of measurement scales is satisfactory.

Table 3: Results of validity test

	KMO	Sig Bartlett's test	Eigenvalues	Total variance explained (%)
Independent variable	0.823	0.000	1.330	66.346
Dependent variable	0.750	0.000	2.837	70.931

4.3. Correlation

The Pearson correlation test was applied to confirm the relationships between the independent and dependent variables (Intention to use AI). As seen from Table 4, the independent variables were all positively correlated with using AI at a 0.01 level (2-tailed). Notably, Perceived Usefulness (r = .582, p < .01) was most highly correlated with Intention to use AI, followed by Perceived Ease of Use (r = .527, p < .01), Hedonic Motivation (r = .485, p < .01), Trust (r = .461, p < .01), and Social Influence (r = .389, p < .01).

Table 4: Results of the Pearson correlation test

		I	PU	PEU	HM	TRUST	SI
Perceived usefulness	Pearson Correlation	.582**	1				
	Sig. (2-tailed)	.000					
Perceived ease of use	Pearson Correlation	.527**	.329**	1			
	Sig. (2-tailed)	.000	.000				
Hedonic motivation	Pearson Correlation	.485**	.246**	.391**	1		
	Sig. (2-tailed)	.000	.000	.000			
Trust	Pearson Correlation	.461**	.317**	.398**	.411**	1	
	Sig. (2-tailed)	.000	.000	.000	.000		
Social influence	Pearson Correlation	.389**	.282**	.314**	.215**	.301**	1
	Sig. (2-tailed)	.000	.000	.000	.002	.000	

4.4. Regression and hypothesis testing

Table 5 indicates the result of the regression analysis and hypothesis testing. The adjusted R-squared was 55.4%, indicating that the independent variables could predict 55.4% of the variance in students' intention to use artificial intelligence in learning listening and speaking skills. The Durbin-Watson statistic was 1.820 (>1), indicating no autocorrelation between the independent variables. In addition, the F-test value for significance was 0.00 (<0.05), illustrating that the overall regression model was statistically significant. In

addition, all the Variance Inflation Factor (VIF) values were higher than 2, validating that no multicollinearity existed in the model.

Table 5: Results of regression and hypothesis testing

Hypothesis	Expected result	Standardized Coefficients Beta	Sig.	Hypothesis testing	Collinearity Statistics	
					Tolerance	VIF
PU → I	Positive effect	0.378	0.000	Accepted	.824	1.213
PEU → I	Positive effect	0.227	0.000	Accepted	.725	1.380
HM → I	Positive effect	0.228	0.000	Accepted	.764	1.308
TRUST → I	Positive effect	0.119	0.037	Accepted	.722	1.386
SI → I	Positive effect	0.127	0.016	Accepted	.840	1.190
R^2					0.554	
Adjusted R^2					0.542	
F statistic (sig.)					48.113 (0.000)	
Durbin-Watson					1.820	

The findings from the multiple regression analysis indicated that the Sig values for all independent variables were below 0.05, demonstrating that each variable had a statistically significant effect on student's intention to use artificial intelligence in learning listening and speaking skills. As a result, all proposed research hypotheses were supported. When ranking the independent variables according to their standardized Beta coefficients, their influence on the dependent variable ranged from strongest to weakest in the following order: (1) Perceived Usefulness, (2) Hedonic Motivation, (3) Perceived Ease of Use, (4) Social Influence, and (5) Trust.

5. Discussion

The results of this study provide valuable insights into the factors influencing Chinese Studies students' intention to use artificial intelligence (AI) for learning listening and speaking skills at Thai Nguyen University of Sciences.

Perceived usefulness emerged as the strongest predictor of intention for students. This aligns with prior research suggesting that when learners perceive AI tools as effective in enhancing their language performance, their willingness to adopt them increases (Huang & Zou, 2024; Kohnke *et al.*, 2023). According to the findings, hedonic motivation also emerged as the second strongest predictor. Consistent with a study by Huang and Zou (2024), students who like and enjoy using AI tools tend to continue using them.

Perceived ease of use also significantly influenced students' intention to use AI. This means that when students find AI tools simple and easy to use, they are more likely to adopt them for their learning. This result is consistent with previous research showing that the easier technology is to use, the more willing students are to use it in their studies (Godwin-Jones, 2023; Venkatesh *et al.*, 2012).

Social influence also had a positive effect on the intention of students to utilize AI. This indicates that when students are encouraged and motivated by their instructors and peers, they adopt AI-based learning technologies (Bahadur *et al.*, 2024). Further, it was found that trust strongly influenced the students' intention to utilize AI, though in a weaker way compared to the other constructs. This is in line with earlier research, which shows that while trust can foster students' initial intention to play around with AI tools, enjoyment, and perceived usefulness tend to play a larger role in their continuing utilization of these tools in the long run (Choung *et al.*, 2022; Al-Abdullatif, 2024).

6. Conclusion

This study aims to determine factors influencing Chinese Studies students' intention to use AI in learning listening and speaking skills at the Thai Nguyen University of Sciences. The findings confirm that perceived usefulness, hedonic motivation, perceived ease of use, social influence, and trust significantly positively impact students' behavioral intention to adopt AI, thereby supporting all hypotheses.

Perceived usefulness was the strongest predictor, suggesting that students will embrace AI if they perceive it as an effective tool to enhance their listening and speaking abilities. Hedonic motivation and perceived ease of use also acted as strong predictors, suggesting that AI tools must be pleasant and easy to use to encourage students to take them up. Social influence and trust also supported students' intention, emphasizing the support of teachers and peers and fostering a belief in the reliability and safety of AI tools.

This study is also subject to some limitations. The sample size, although satisfactory for the analysis, was relatively small in number, which may limit the generalizability of the findings. Further, this study employed a quantitative mode exclusively, which provides rich statistical outcomes but cannot identify students' underlying experiences and sentiments while using AI tools. Future research could reduce these limitations by employing larger and more representative samples and adopting mixed-methods designs that combine quantitative and qualitative data. This would allow a more comprehensive picture of the determinants of AI adoption in language learning and richer, more qualitative insights into students' experiences over time.

Conflict of Interest Statement
The authors declare no conflicts of interest.

About the Author(s)

Mai Thi Ngoc Anh and Trieu Van Toan are lecturers at Thai Nguyen University of Sciences, Vietnam. They are currently doing research on factors influencing intention to use artificial intelligence in learning listening and speaking skills: a study of Chinese studies students at Thai Nguyen University of Sciences.

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