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Research on the Influencing Factors of University Students' Use of ChatGPT Based on TAM

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Abstract

The generative artificial intelligence, with its dialogue interaction capabilities to automatically generate text and assist users in problem-solving, has garnered widespread attention worldwide. ChatGPT, in particular, has made significant changes across various industries of human life, exerting considerable influence on fields such as education. As the principal adopters of emerging technologies and active user groups, university students' acceptance and use behaviors toward ChatGPT carry significant research value. This study is based on the Technology Acceptance Model (TAM), constructing an analytical framework for factors influencing university students' use of ChatGPT, and proposes relevant research hypotheses. A suitable survey questionnaire was designed in accordance with the background of this study. By employing SPSS 26 software and Structural Equation Modeling, the influencing factors affecting university students' use of ChatGPT were analyzed in depth. The study findings reveal that interaction experience during usage is a key factor perceived by university students as useful and usable for ChatGPT, while perceived usefulness is positively influenced by perceived usability. Additionally, peer recommendations from classmates and teachers, along with social factors, are significant determinants influencing university students' decisions to use ChatGPT. Based on these conclusions, the study provides relevant countermeasures and strategies for optimizing the ChatGPT tool to facilitate its better utilization by university students.

Key words: Technology Acceptance Model; ChatGPT; Influencing Factors

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1. INTRODUCTION

With the rapid development of generative AI technology, ChatGPT, released by OpenAI in November 2022, sparked global attention with its superior natural language processing capabilities. The number of users exceeded 100 million in just two months, making it the application with the fastest increase in user size in the history of Internet development (Xin and Liu,2023). The generative artificial intelligence represented by ChatGPT breaks through the last line of defence of human-computer intelligence difference with excellent creativity, but the evaluation of ChatGPT also shows serious polarization (Wu and Liu, 2023). ChatGPT, as a text-responsive language model (Liu Baocun, Gou Minghan,2023), has had an important impact and demonstrated significant technological superiority in a variety of fields, such as educational innovation and mobile communication. The diversity of its functions can provide users with intelligent services in language translation, text creation, knowledge answering, psychological counselling, pharmaceutical counselling, disease prevention understanding ,advice, financial analysis and decision making. However, due to the current lack of technical regulatory constraints on generative AI, it is easy to cause controversial intellectual property issues during its use, posing challenges to academic ethics and social integrity (Dong, 2024). At the same time, the convenience and ease of use of ChatGPT can easily lead to users' dependence on it, thus weakening their sense of independent thinking and practical innovation ability. In the context of digital transformation of education, ChatGPT can be used as an intelligent learning assistant

to enhance academic productivity, but it may also lead to academic ethical controversies, so it is of great theoretical value and practical significance to explore the factors influencing the adoption of this technology by the university student population.

2. LITERATURE REVIEW

Since large language models can bring a lot of convenience to users, especially school students can provide high value to them through interaction with ChatGPT, many scholars have conducted a lot of research on the use of ChatGPT by university students (Li, Xu et al,2024). For example, the use of ChatGPT among university students has been on the rise, and studies have shown that the majority of university students consult generative AI for questions about daily life, social politics, history and geography, and cultural fields, and use it as an important decision-making tool when they encounter difficulties (Li, Xu et al, 2024). University students have an open and receptive attitude towards new technologies, but while actively embracing technological innovations, they also need to pay attention to the potential risks and challenges of new technologies. On the one hand, over-reliance on technological tools can easily lead to academic integrity problems, forming a bad academic style and affecting the construction of academic culture (Zhang, 2023). On the other hand, its undifferentiated information output characteristics have potential risks for the formation of students' ideology and the shaping of values (He, Ying et al, 2023). ChatGPT originated in the United States, and has been increasingly used in different fields, and its research focuses on three main aspects.

2.1 Research on the application of generative artificial intelligence in professional fields

Manyapplications for ChatGPT mainly focus on the medical field. Idrissa (2023) conducted an in-depth exploration and analysis of the current status of generative artificial intelligence application in oncology. Problems in oncology are solved by increasing the level of accuracy through artificial intelligence.Jovanouic (2022) comparative study on the performance of ChatGPT and orthopaedic residents in orthopaedic assessment exams found that it outperformed problems on plain text than problems with images, but not as good as orthopaedic residents in problem accuracy. Massey (2023) et al. used generative AI in conjunction with wearable assistive devices for the treatment of sarcopenia and osteoarthritis. It was found to be effective in improving the efficiency of professional rehabilitation. Chen X (2024) explored the key trends in the use of generative AI in Malaysian banks in the future, and concluded that the key trend to drive the development of banks is to broaden AI access and accelerate financing in the field of AI. Thus, helping banks sustainable finance.

2.2 Study of the ethical and moral issues raised by ChatGPT

In his study, Brooks (2023) pointed out that ChatGPT can raise serious ethical challenges, especially by exacerbating the inequality of information distribution and thus widening the global digital divide.Divitor (2024) et al. discussed research based on how the educational challenges posed by ChatGPT in medical education should be addressed, and they argued that generative AI should be appropriately integrated into educational programmes. Scholars such as Guleria (2023) discussed the ethical issues posed by ChatGPT in academic research, arguing that AI is prone to bias, dissemination of inaccurate information, and plagiarism in scientific writing and research. Researchers are called upon to think critically and raise awareness of the associated privacy and ethical risks.

2.3 Challenges of generative AI for education in professional fields and strategies

Facing the impact of ChatGPT on classroom teaching, Yang Zongkai (2023) et al. explored the impact of generative AI on education and coping strategies and proposed that we should correctly grasp the direction, path, and limit of the integration and development of AI and education, lead the innovation of education, and promote the sustainable development of education and society. And Dai Ling, Zhao Xiaowei and Zhu Zhiting (2023) establish a smart questioning model based on ChatGPT to help learners and education practitioners better apply the new generation of AI technology and release the educational potential of large language models. Zhou Chengli (2024) and other scholars empowered generative AI to university and university Civics classes, which helps to enhance the fit between teaching and objectives knowledge transfer and learning method innovation.

2.4 Study of Factors Influencing ChatGPT Users' Willingness

Zhang Hai (2023) et al. applied rootedness theory to study the factors influencing ChatGPT users' perceptions and willingness to use, and the results showed that subjective, technological, informational, and social-environmental factors were important factors influencing ChatGPT users' willingness to use, and ChatGPT users' perception of risk, especially occupational risk, was particularly obvious compared with users of other information systems. Li Yan (2025) et al. used a mixed research method to explore the typical behaviours, collaborative approaches, writing quality and influencing factors of secondary school students' human-computer collaborative writing, and the factors affecting human-computer collaborative writing include human motivation to collaborate, collaborative ability, writing ability, preconceptions and judgments about the value of ChatGPT writing, collaborative gains and emotional factors, as well as the endogenous technology and writing performance of ChatGPT. Mao Taitian (2024)

et al. identified a total of 15 factors affecting AIGC users' willingness to adopt in three dimensions: information quality, user perception, and technical features based on rootedness theory. Zhou Yunqian (2025) et al. constructed a hypothetical model of factors influencing the academic use of ChatGPT by academic producers based on prospect theory and technology acceptance model, and found that "performance-driven" and "intention-driven" are the main motivations triggering the academic use of ChatGPT by academic producers, and perceived risk plays a major role in the motivation. It was found that "performance-driven" and "intention-driven" were the main motivators for academic producers to use ChatGPT academically, and perceived risk played a positive role.In summary, despite the relatively rich research results of scholars, there are fewer studies on the influencing factors of the use of ChatGPT by the important group of university students. As one of the most influential theoretical frameworks in the field of information systems, the Technology Acceptance Model (TAM) provides a classic paradigm for understanding users' technology adoption behaviours. Traditional TAM emphasises the central role of Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), but the interactive nature of generative AI may reshape the technology acceptance mechanism, therefore, this study adds the variable of Perceived Interactivity on the basis of the traditional TAM model to explore the influence of university students' ChatGPT usage influencing factors, so as to make corresponding suggestions.

3. RESEARCH MODELLING AND RESEARCH HYPOTHESES

3.1 Research hypothesis

Perceived interactivity in this study refers to the two-way communication situation and feedback of the students from four universities in their daily life towards the use of ChatGPT. Perceptual interaction of generative AI refers to the two-way information exchange process between university students and generative AI. The interaction function allows users to acquire knowledge and expand insights through dialogue-based interactions. This interactive experience influences users' adoption willingness and usage behaviour. Based on the technology acceptance model, Wang Ru (2024) explores the impact of perceived interactivity of generative AI on university students' independent learning ability, and finally shows that perceived interaction has a positive impact on perceived ease of use, perceived usefulness, and attitude towards use Du Hui's（2023）study demonstrated that perceived interactivity significantly and positively affects the willingness to continue using generative AI through human-like and functional trust. Multiple studies have demonstrated that perceived interactivity not only shapes users' perceived usefulness and ease of use during the usage process, but also influences users' willingness to use. Therefore, this paper proposes the following hypothesis:

H1: Perceived Interactivity has a positive impact on Perceived Usefulness

H2: Perceived Interactivity has a positive impact on Perceived Usability.

H3: Perceived interactivity has a positive impact on usage intention

Perceived ease of use in this study refers to the degree of difficulty that students have in using ChatGPT in their daily lives. Perceived usefulness in this study refers to the degree of usefulness of Lake Medicine students when using ChatGPT in their daily lives. Yu Fei (2024) et al.'s study of university students' willingness to use generative AI based on the TAM and TTF integration model showed that both perceived ease of use and perceived usefulness of AI positively affect users' willingness to use, and university students' perceived ease of use positively affects their perceived usefulness. Du Hui (2023) et al. based on the TAM model to study the acceptance of AI technology by enterprises showed that perceived usefulness and perceived ease of use have an impact on the willingness of enterprises to accept AI. All the above studies show that perceived usefulness and perceived ease of use have an impact on willingness to use. Therefore, this paper proposes the following hypothesis:

H4: Perceived utility has a positive impact on usage intention.

H5: Perceived usability has a positive impact on usage intention.

H6: Perceived usability has a positive impact on perceived utility.

Perceived riskiness in this study refers to the preconceptions of the risks students incur when using ChatGPT in their daily lives. Social influence in this study refers to university students' perception of the extent and factors of social aspects that influence their use of generative AI. Zhang Chi's (2023) study based on the technology acceptance model found that the perceived riskiness of university students towards generative AI reduces the willingness of the university student community to use it, whereas the social influence creates the willingness of university students to use generative AI tools. Zhao Lifang and Wang Yuanxin (2023) similarly found that perceived risk is negatively related to journalism and communication students' willingness to use ChatGPT based on the TAM model. Based on the findings of the above scholars, this paper therefore proposes the following hypothesis:

H7: The perception of risk has a negative impact on usage intention.

H8: Social influence has a positive impact on usage intention.

This study establishes the hypothesised relationships as shown in Table 1:

Table 1
Research hypotheses

Serial number	Research hypothesis
H1	Perceived Interactivity has a positive impact on Perceived Usefulness
H2	Perceived Interactivity has a positive impact on Perceived Usability
H3	Perceived interactivity has a positive impact on usage intention
H4	Perceived utility has a positive impact on usage intention.
H5	Perceived usability has a positive impact on usage intention.
H6	Perceived usability has a positive impact on perceived utility.
H7	The perception of risk has a negative impact on usage intention
H8	Social influence has a positive impact on usage intention.

3.2 Theoretical modelling

This paper is based on the TAM model as a foundation to construct a research model of the influence factors of university students' use of ChatGPT. Combined with the current situation and theory of generative artificial intelligence, the TAM base model is modified. The influence path between university students' perception and willingness to use ChatGPT is examined.

The theoretical model of this study has two dimensions of variables: (1) independent variables: perceived usefulness and perceived ease of use, perceived interaction, perceived risk, and community influence. Two of the variables, perceived usefulness and perceived ease of use, are both independent and dependent variables. (2) Dependent variable: willingness to use. The model constructed in this study broadly reflects the variables and their correlations, and the above five variables affect university students' willingness to use generative AI and whether they will recommend, share, or continue to use generative AI in the future. The research model is shown in Figure 1:

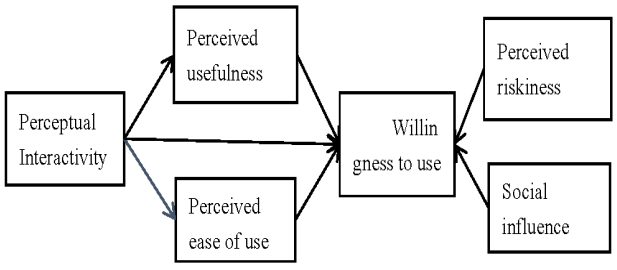

Figure 1
Theoretical model

3.3 Questionnaire design

The questionnaire of this study has three parts. The first part is the basic information of the respondents and their basic use of ChatGPT, including gender, age, the number of times they have used ChatGPT in the last half a month and their commonly used functions. The purpose is to understand the characteristics of university students' basic use of ChatGPT. The second part is the measurement of perceptual dimension. The scale items of other scholars' empirical studies on perceptual theories on willingness to use were borrowed and referred to. Based on the TAM theoretical model and a 5-point Likert scale, the questionnaire items were constructed to collect university students' attitudes and perceptions of ChatGPT through six scale questions: perceived usefulness, perceived ease of use, perceived interactivity, perceived risk, community influence, and willingness to use. The third part is open-ended questions to find out what features university students would like to see added to ChatGPT to help them learn.

3.4 Questionnaire distribution and collection

This paper is a study of the influencing factors on the use of ChatGPT by four university's students in city S. The questionnaire was collected by online distribution of questionnaires in the form of interview questionnaire ask link to the students from the first to the fourth year of university. The questionnaires were collected for 20 days and a total of 249 questionnaires were received. After screening and excluding 46 invalid questionnaires with too short answer time, 203 valid questionnaires were confirmed, with an effective recovery rate of 81.5%, indicating a high questionnaire recovery effect.

4. DATA ANALYSIS AND EMPIRICAL ANALYSIS

4.1 Descriptive statistical analyses

Based on the descriptive statistical analysis of the data from 203 questionnaires, it is possible to understand the basic background information of the students and their ChatGPT usage. As shown in Table 2, among the survey respondents, by gender, the proportion of males was 54.2% and the proportion of females was 45.8%. By grade, freshmen accounted for 18.7% of the total number of survey respondents, sophomores accounted for 23.6% of the total number of survey respondents, while junior's accounted for 15.3%, senior's accounted for 21.7% of the overall number of survey respondents, and junior's and above accounted for 20.7% of the overall number of survey respondents. Divided by the number of times ChatGPT was used in the last half month, students who used it 1-5 times accounted for 18.2% of the total, those who used it 5-10 times accounted for 29.1% of the total, those who used it 10-15 times accounted for 34.5% of the total, and those who used it more than 15 times accounted for 11.3% of the total. Table 3 shows that the most used function of ChatGPT by university students is text generation, accounting for 52.2%, followed by information query and language translation, accounting for 48.8% and 47.3% respectively. The use for code data aspect is less frequent compared to other functions.

Table 2
Basic information

Sports event	Options (as in computer software settings)	Frequency	Per cent
Distinguishing between the sexes	Male	110	54.2
	Daughter	93	45.8
Grade	First-year university student	38	18.7
	Second-year university student	48	23.6
	Third-year university student	31	15.3
	Fourth-year university student	44	21.7
	Dragon Boat Festival (5th day of 5th lunar month)	42	20.7
Number of times used in the last half month	0th	14	6.9
	1-5 times	37	18.2
	5-10 times	59	29.1
	10-15 times	70	34.5
	15 or more	23	11.3

Table 3
Commonly Used Functions

Sports event	Options (as in computer software settings)	Frequency	Per cent
Commonly Used Functions	Text generation	106	52.20 per cent
	Image Generation	89	43.80 per cent
	Video Production	94	46.30 per cent
	Content Optimisation	94	46.30 per cent
	Information Enquiry	99	48.80 per cent
	language translation	96	47.30 per cent
	Code compilation and debugging	40	19.70 per cent
	Dialogue and interaction	64	31.50%
	Data Capture and Analysis Statistics	45	32.50%

4.2 Reliability test

4.2.1 Reliability analysis

The results of the reliability analysis showed (Table 4) that the α coefficients of Clonbach for all variables were >0.8, indicating that the questionnaire had a high degree of internal consistency and reliability, and that the quality of the data met the requirements of the analysis. The analysis was completed using SPSS 26.0, and the judgement criteria were: α > 0.8 (excellent), 0.7-0.8 (acceptable), 0.6-0.7 (needs to be revised), and < 0.6 (needs to be reset).

Table 4
Reliability Analysis

	Cronbach Alpha	Item count (of a consignment etc)
General questionnaire	0.949	32
Perceptual interactivity	0.876	5
perceived usefulness	0.867	6
Perceived ease of use	0.889	5
Perceived riskiness	0.886	6
Social influence	0.888	5
Willingness to use	0.876	5

4.2.2 Validity analysis

The results of the validity test showed (Table 5) that the KMO values of both the perceptual and personality scales were >0.8, and the Bartlett's test of sphericity p < 0.05, indicating that the data were well suited for factor analysis. The judgement criteria are: KMO >0.8 (very suitable), 0.7-0.8 (more suitable), 0.6-0.7 (basically suitable), <0.6 (not suitable).

Table 5
Validity Analysis

KMO and Bartlett's test		
KMO Quantity of Sample Suitability		0.931
Bartlett's test of sphericity	approximate chi-square (math.)	3900.033
	(number of) degrees of freedom (physics)	496
	significance	0.000

4.3 Validation factor analysis

Use AMOS software to build a confirmatory factor analysis model diagram, as shown in Figure 2 and analyze it.

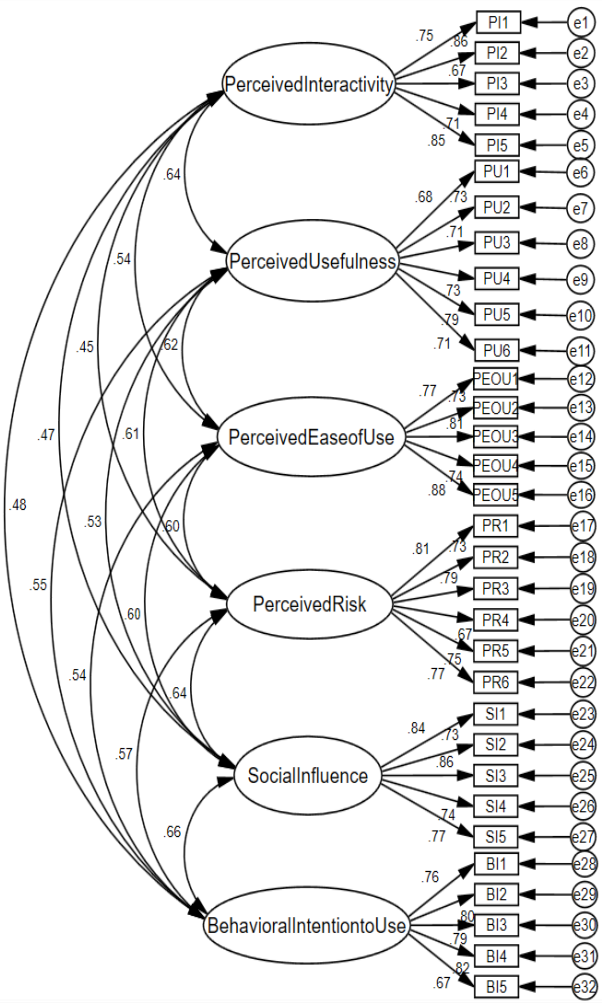

Figure 2
Model diagram of confirmatory factor analysis

Validated factor analysis of the questionnaire data was carried out using AMOS software.

As shown in Tables 6, the results of the model fit index test show that CMIN/DF=1.099 (<3), RMSEA=0.022 (<0.05), NFI=0.881, TLI=0.987, and CFI=0.988. All the fit indices meet or exceed the recommended standard values, which indicates that the model has a desirable fit with the data.

Table 6
Fit Test

	Fitness indicator	
Norm	**(An official) standard**	**Indicator values**
CMIN/DF	<5	1.099
RMSEA	<0.10	0.022
NFI	>0.8	0.881
TLI	>0.8	0.987
CFI	>0.8	0.988

Provided that the model fit was up to standard, this study further examined the scale's convergent validity and combinatorial reliability. The standardised factor loadings of each measure on its corresponding dimension were obtained through Amos software, and an online computational tool was used to find the average variance extracted (AVE) and combined reliability (CR) for each dimension. According to the criteria proposed by Fornell and Larcker (1981), the AVE value should be ≥0.5 and the CR value should be ≥0.7. As shown in Tables 4-6, the AVE values (range 0.52-0.78) and CR values (range 0.81-0.93) of each dimension in the present study met the above criteria, which indicated that the scales had ideal convergent validity and internal consistency reliability.

Table 7
Convergent Validity and Combined Reliability Tests

			Estimate	AVE	CR
PI1	<---	Perceptual interactivity	0.753		
PI2	<---	Perceptual Interactivity	0.858		
PI3	<---	Perceptual Interactivity	0.673	0.5955	0.8794
PI4	<---	Perceptual Interactivity	0.711		
PI5	<---	Perceptual Interactivity	0.846		
PU1	<---	perceived usefulness	0.682		
PU2	<---	perceived usefulness	0.728		
PU3	<---	perceived usefulness	0.71	0.5248	0.8686
PU4	<---	perceived usefulness	0.73		
PU5	<---	perceived usefulness	0.787		
PU6	<---	perceived usefulness	0.705		
PE1	<---	Perceived ease of use	0.768		
PE2	<---	Perceived ease of use	0.728		
PE3	<---	Perceived ease of use	0.81	0.6225	0.8913
PE4	<---	Perceived ease of use	0.745		
PE5	<---	Perceived ease of use	0.884		
PR1	<---	Perceived riskiness	0.812		
PR2	<---	Perceived riskiness	0.726	0.5691	0.8876
PR3	<---	Perceived riskiness	0.787		
PR4	<---	Perceived riskiness	0.671		
PR5	<---	Perceived riskiness	0.753		
PR6	<---	Perceived riskiness	0.769		
SI1	<---	social influence	0.844		
SI2	<---	social influence	0.73		
SI3	<---	social influence	0.856	0.6237	0.8919
SI4	<---	social influence	0.743		
SI5	<---	social influence	0.767		
IU1	<---	Willingness to use	0.760		
IU2	<---	Willingness to use	0.797		
IU3	<---	Willingness to use	0.788	0.5906	0.8778
IU4	<---	Willingness to use	0.817		
IU5	<---	Willingness to use	0.672		

Convergent Validity and Combined Reliability Tests (continued)

We construct a model in AMOS software, as shown in Figure 3, and analyze it as follows.

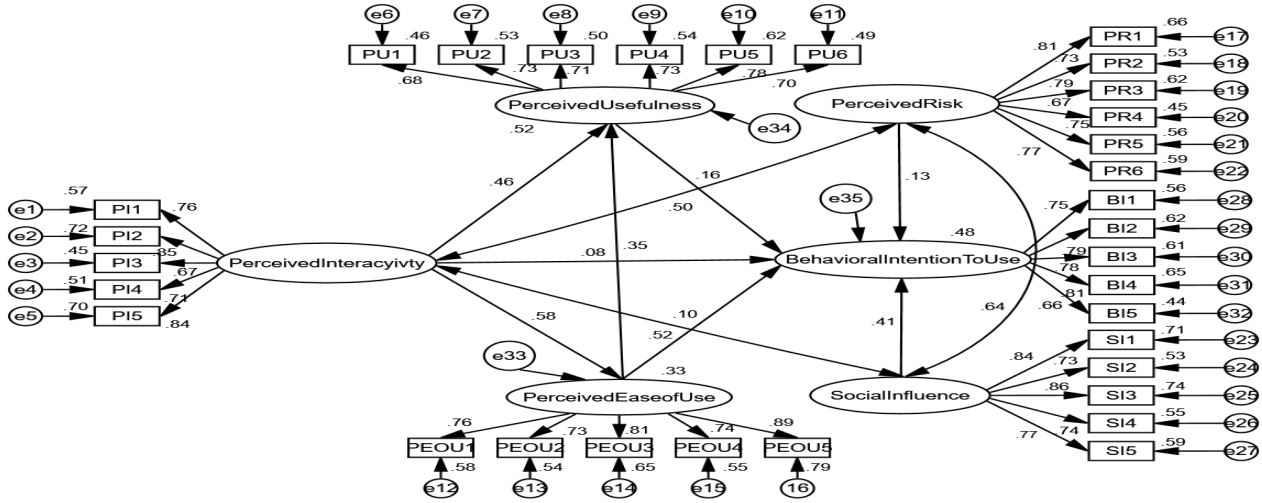

Figure 3
Structural equation model diagram

Tables 8 show that the model fit well (χ^2/df = 1.233, RMSEA = 0.034, IFI = 0.865, TLI = 0.968, CFI = 0.971), and that all the indicators met the criteria.

Table 8
Fit test

Fitness indicator		
Norm	**norm**	**Indicator values**
CMIN/DF	<5	1.233
RMSEA	<0.10	0.034
NFI	>0.8	0.865
TLI	>0.8	0.968
CFI	>0.8	0.971

Based on the results of the analyses in Table 9, this study used the criteria of AVE values greater than 0.5 and CR values greater than 0.7 to assess the aggregation validity and portfolio reliability of the model. The data analyses showed that the AVE values of all dimensions exceeded the minimum threshold of 0.5 and the CR values were higher than the criterion value of 0.7. These results fully confirm that the measurement model has good convergent validity and internal consistency reliability.

5. FINDINGS AND DISCUSSION

5.1 Results of hypothesis testing

It can be seen according to the statistical test results in Table 10, the positive influence relationship between perceived interaction and perceived usefulness reaches the level of significance (β=0.337, p<0.001), confirming that hypothesis H1 is valid. The positive significant level (β=0.61, p<0,001) was reached between perceived interaction and perceived ease of use, confirming that hypothesis H2 is valid. Perceived interactivity is positively correlated with willingness to use (β=0.06, p<0.001), but its effect is not significant. Hypothesis H3 is not valid. Perceived usefulness does not positively and significantly affect willingness to use (β=0.175, p>0.05) and hypothesis H4 does not hold. Perceived ease of use does not positively and significantly influence willingness to use (β=0.073, p<0.001) and hypothesis H6 is valid. Perceived riskiness does not positively and significantly influence willingness to use (β=-0.109, p>0.05), hypothesis H7 does not hold. There is a positive and significant level of relationship between community influence and willingness to use (β=0.324, p>0.05), hypothesis H8 holds.

Table 9
Convergent Validity and Combined Reliability Tests

			Estimate	AVE>0.5	CR>0.6
PI5	<---	Perceptual Interactivity	0.839	0.5894	0.8768
PI4	<---	Perceptual Interactivity	0.711		
PI3	<---	Perceptual Interactivity	0.671		
PI2	<---	Perceptual Interactivity	0.846		
PI1	<---	Perceptual Interactivity	0.756		
SI1	<---	social influence	0.844	0.6234	0.8918
SI2	<---	social influence	0.729		
SI3	<---	social influence	0.857		
SI4	<---	social influence	0.739		
SI5	<---	social influence	0.77		
PR1	<---	Perceived riskiness	0.815	0.5688	0.8875
PR2	<---	Perceived riskiness	0.729		
PR3	<---	Perceived riskiness	0.787		
PR4	<---	Perceived riskiness	0.671		
PR5	<---	Perceived riskiness	0.748		
PR6	<---	Perceived riskiness	0.767		
IU1	<---	Willingness to use	0.751	0.5773	0.8717
IU2	<---	Willingness to use	0.789		
IU3	<---	Willingness to use	0.78		
IU4	<---	Willingness to use	0.809		
IU5	<---	Willingness to use	0.661		
PU1	<---	perceived usefulness	0.681	0.5247	0.8686
PU2	<---	perceived usefulness	0.731		
PU3	<---	perceived usefulness	0.709		
PU4	<---	perceived usefulness	0.734		
PU5	<---	perceived usefulness	0.784		
PU6	<---	perceived usefulness	0.703		
PE5	<---	Perceived ease of use	0.886	0.6222	0.8912
PE4	<---	Perceived ease of use	0.743		
PE3	<---	Perceived ease of use	0.808		
PE2	<---	Perceived ease of use	0.732		
PE1	<---	Perceived ease of use	0.765		

Table 10
Hypothetical Path Relationship Analysis

			Path factor	Standardised path factor	S.E.	C.R.	P
Perceived usefulness	<---	Perceptual Interactivity	0.337	0.464	0.064	5.27	***
Perceived ease of use	<---	Perceptual Interactivity	0.61	0.577	0.078	7.789	***
Willingness to use	<---	Perceptual Interactivity	0.06	0.077	0.082	0.726	0.468
Willingness to use	<---	Perceived usefulness	0.175	0.165	0.107	1.642	0.101
Willingness to use	<---	Perceived ease of use	0.073	0.101	0.063	1.165	0.244
Perceived usefulness	<---	Perceived ease of use	0.239	0.348	0.057	4.203	***
Willingness to use	<---	Perceived riskiness	-0.109	-0.133	0.073	-1.491	0.136
Willingness to use	<---	Social influence	0.324	0.413	0.074	4.366	***

Table 11
Hypothesis Validation Results

Serial number	Research hypothesis	Establishment
H1	university students' perceived interaction with ChatGPT has a positive effect on their perceived usefulness.	set up
H2	university students' perceived interaction with ChatGPT has a positive effect on their perceived ease of use.	set up
H3	university students' perceived interaction with ChatGPT has a positive effect on their willingness to use it.	untenable
H4	Perceived usefulness of ChatGPT among university students has a positive effect on sense intention to use.	untenable
H5	Perceived ease of use of ChatGPT by university students has a positive effect on perceived willingness to use.	untenable
H6	university students' perceived ease of use of ChatGPT has a positive effect on their perceived usefulness.	set up
H7	university students' perceived risk of ChatGPT has a negative inverse effect on their willingness to use it.	untenable
H8	Community Influence Positively Affects university Students' Willingness to Use ChatGPT Usage	set up

5.2 Discussion of results

This research is based on the TAM theoretical model through questionnaire survey method, literature research method and statistical analysis method, multidimensional thesis research hypotheses are proposed, data collection is carried out, and then reliability analysis, structural equation modelling analysis, path coefficient analysis and so on are used to verify the hypotheses:

5.2.1 Perceptual interaction path analysis

Perceived interactivity in the hypothesis is that the user's experience when communicating and interacting with the AI can enhance the user's perception of the usefulness and ease of use of the AI and increase the user's willingness to use ChatGPT. The results show that perceived interactivity has a positive and significant effect on perceived usefulness and ease of use, which is consistent with the conclusion that users' interaction experience positively affects their ease of use and usefulness as mentioned by Wang Ru (2024). Based on this it is proved that hypotheses H1 and H2 are valid. Hypothesis H3 Perceived interaction is positively related to willingness to use, but the effect is not significant. According to Du Hui (2023) mentioned that perceived interaction cannot affect users' willingness to use alone , perceived interactivity may need to improve users' perceived usefulness, ease of use, and functional trust in order to significantly affect users' willingness to use, so Hypothesis H3 is not valid.

5.2.2 Perceived usefulness and ease of use path analysis

In the hypothesis, perceived usefulness is the degree to which users subjectively feel that AI solves users' problems and improves the efficiency of learning work is positively related to their willingness to use, but the effect is not significant, and perceived ease of use is the degree to which users' difficulty in using ChatGPT is positively related to their willingness to use, but the effect is likewise not significant. This is not consistent with the conclusion that users' perceived usefulness and perceived ease of use positively and significantly affect their willingness to use acceptance as proposed by scholars Du Hui (2023) and Yu Fei (2024). Therefore, hypothesis H4 and hypothesis H5 are not valid. On the one hand, it may be that the sample.

The number is too small and the sample size needs to be increased. On the other hand, it may be caused by the high subjectivity of users and different personal needs. Users' perception that ChatGPT tools are good will positively affect the degree of usefulness of ChatGPT tools as perceived by users, which is consistent with the findings of the above scholars. Based on this it is proved that hypothesis H6 is valid.

5.2.3 Perceived riskiness path analysis

Perceived riskiness in the hypothesis is that university students' own perception of potential academic problems and risks of the ChatGPT tool is negatively related to its use, but its effect is not significant. This is inconsistent with Zhang Chi's (2023) conclusion that users' own concerns about the lack of algorithmic darkness and management systems in AI tools reduce users' willingness to use. It can be understood that university students do not accurately judge the potential risks of ChatGPT, and the perceived risk is not at a level that would affect their willingness to use the tool. So the effect of perceived riskiness and willingness to use is not significant. So hypothesis H7 is not valid.

5.2.4 Community impact path analysis

In the hypothesis, the community influence is that university students are positively influenced by the recommendations of teachers and classmates around them, the social climate and their own herd mentality. This is consistent with Zhang Chi's (2023) conclusion that the more favourable the surrounding classmates and social climate are to the use of generative AI tools, the more the university students' intention to use them will increase. Based on this, hypothesis H8 is proved to be valid.

5.3 Recommendations for countermeasures

Based on the conclusions of the above study, through the perceived situation and willingness to use ChatGPT by university students, we put forward the following suggestions for improvement:

5.3.1 Enhanced user interaction

In order to improve the user experience when using ChatGPT, the flexibility and interactivity of the system can be strengthened, personalized interactive design can be carried out according to the needs of different users as well as their habits of use**, fault tolerance and guided optimization can be strengthened to help users with**

vague descriptions and unclear organization to provide optimal choices, gradually understand and clarify the user's problems and needs **to reduce the number of ineffective dialogues** and enhance the user's perception of the user-friendliness of the system. to improve the user's experience**. In order to improve the user experience.**

5.3.2 Give full play to the group effect.

Social influences, such as recommendation from classmates and teachers, social media recommendation, etc., have a positive impact on users' willingness to choose to use ChatGPT. The sense of belonging and identity in the community will strengthen users' motivation to use ChatGPT, and ChatGPT can enhance the quality and improve the word of mouth, thus strengthening the experience of the social group and increasing the chances of university students to use it.

5.3.3 Strengthen the academic citation rules.

At present, university students are prone to academic misconduct such as thesis metabolism through ChatGPT, which should strengthen the rules of literature citation and increase the relevant labelling principles in the use of ChatGPT. Construct a human-led, AI-assisted model to reduce the risk of university students in using ChatGPT.

6. LIMITATIONS AND FUTURE WORK

This study on key influencing factors of ChatGPT adoption among university students was limited by its sampling scope, which encompassed only four higher education institutions in City S. Consequently, the findings may lack generalizability to broader academic populations. Future research should expand the sampling framework to include more geographically diverse universities, thereby addressing potential selection bias.

Furthermore, while our conclusions were derived from a research model grounded in the Technology Acceptance Model (TAM), subsequent studies could extend this inquiry to alternative theoretical frameworks. Comparative investigations employing the Theory of Planned Behavior (TPB), Unified Theory of Acceptance and Use of Technology (UTAUT), or Stimulus-Organism-Response (SOR) model would yield valuable insights into contextual variations across theoretical paradigms.

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