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"A Friend or A Foe" Determining Factors Contributed to the Use of ChatGPT among University Students

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Abstract

ChatGPT has become one of the most heated discussion in academia. With the continuous development of educational technology, ChatGPT is a kind of natural language processing technology which is widely applied in language models, dialogue systems and other fields. However, the factors influencing the sustained use of ChatGPT by university students have not been thoroughly explored. Therefore, this study aimed to delve into the willingness of university students to continue using ChatGPT and identify its influencing and related factors. For this purpose, this study employed quantitative correlational analysis by randomly selecting 400 students for a survey. The data was analyzed using SPSS and AMOS software. Based on the analysis, it can be concluded that perceived usefulness, perceived ease of use, social impact, convenience, and perceived interest had an impact on the willingness of university students to use ChatGPT. Based on this, corresponding strategies and research shortcomings were also presented in this study.

Keywords: ChatGPT, UTAUT Model, Influencing Factors, Digital Leadership.

Introduction

With the continuous progress of information technology and the deepening of higher education teaching reform, the application of educational technology has become an important means to promote teaching reform and improve teaching quality (Rahman & Watanabe, 2023), and higher education will also face new challenges and opportunities. Artificial intelligence technology can improve teaching quality and efficiency through intelligent assisted teaching, personalized education, and other methods, providing support and guarantee for higher education teaching innovation (Tang & Liu, 2023). As a natural language processing technology, ChatGPT is widely used in language models, dialogue systems and other fields (Susnjak, 2022). ChatGPT has demonstrated the highest performance in many application areas, such as coherent content and article generation, chatbot response, language translation, Question and Answer (Q&A), and programming code (Qadir, 2022) In addition, the application of ChatGPT is also one of the topics worth studying, as it applies it to daily learning by answering specific tasks and questions (Thunstrom, 2022). Among them, in higher education, ChatGPT not only provides an open environment where everything is

interconnected, greatly expanding students' knowledge horizons and deepening their intuitive feelings, but also allows them to customize corresponding learning plans and content according to their needs, providing tailored assistance to students (Feng, 2023).

Although in recent years, more and more research has focused on the application of artificial intelligence technology in the field of education, there is still relatively little research on the influencing factors of university students' willingness to use ChatGPT, and the research content is relatively single. Therefore, this study aims to deeply explore the willingness of university students to continue using ChatGPT, identify its influencing factors and related factors, in order to fill the knowledge gap in existing research, and provide guidance and support for decision-makers and practitioners in the field of education and technology regarding university students' use of ChatGPT. In order to achieve the above research objectives, this study employed a quantitative correlational research design for analysis, and answer the formulated research questions:

(a) what are the factors contributed to university students' acceptance of continuous use of ChatGPT for learning?
(b) what are the strategies contbuted to university students' acceptance of continuous use of ChatGPT learning?

The expected research results revealed the level of willingness of university students to continue using ChatGPT, and clarified the degree to which factors such as perceived usefulness, perceived ease of use, social impact, perceived interest, and convenience conditions affect their willingness to use. It is hoped that the results of this study would provide important guidance and support for decision-makers and practitioners in the field of educational technology. We also hope that the findings of this study can provide targeted recommendations for the design and implementation of educational technology tools, in order to improve university students' willingness and satisfaction with ChatGPT use, and promote the effective application of educational technology.

Literature Review

Development and Application of ChatGPT

In November 2022, OpenAI, a laboratory specializing in artificial intelligence, launched a chat robot called ChatGPT (Generative Pre-trained Transformer) (OpenAI, 2023). ChatGPT is a natural language processing and a text generative model. Its manifestation is to generate natural language text output by accepting text input, and to realize the interaction between artificial intelligence and people in the form of a dialog box window. In addition, ChatGPT can even answer subsequent questions, acknowledge errors, question incorrect premises, and refuse inappropriate requests (Fauzi et al., 2023). Moreover, ChatGPT can also generate text similar to humans and maintain a conversational style, allowing users to participate more in real-life conversations. Some of these research preprints, many blog articles, and media reports on ChatGPT's educational advantages (Eke, 2023).

The most advantageous feature among them is the ability of ChatGPT to generate high-quality and contextual responses in natural language conversations. This is a prerequisite for its attractiveness, which can be applied in various fields of education and enhance students' sense of experience (Hassani et al., 2023). And several educational technology companies have begun to explore the use of ChatGPT in various aspects of education, such as the language learning application Duolingo, which implements chat robot functions supported by

ChatGPT. Providing users with interactive language practice can help them better improve their French proficiency (Tlili et al., 2023). ChatGPT can also provide intelligent self-learning services for students, recommending relevant learning resources and content based on their learning situation and interests, and providing real-time learning guidance and Q&A services to help students better self-learning and master knowledge (Lee, 2023).

Application Status of ChatGPT in Higher Education

At present, the application of ChatGPT in higher education is gradually developing. Some students are beginning to try using ChatGPT to solve some academic problems and improve their own efficiency (Sallam, 2023). Firstly, ChatGPT can be seen as an interactive tutoring aid tool, based on the theory of "active interaction promotes learning" (page number is needed here since it is a direct quoted statement). The latest interactive aid tools continuously develop and improve the level of customized education through the use of resource intensive algorithms and complex combinations (Cui, Bai &Zhang, 2023). In addition, ChatGPT can also be seen as a personalized tutoring assistance tool, and personalized education has a positive impact on students' learning outcomes (Atlas, 2023).

The personalized path of creative learning can be inferred through training and based on students' background information. In addition, there are some frameworks based on information retrieval and natural language processing technology, which can connect students' past discussions, customize learning content, and promote students' collaboration (Rospigliosi, 2023). Some schools also use ChatGPT in the classroom to answer students' questions and provide more personalized learning support (Stokel, 2022). In this case, ChatGPT can recommend suitable learning content based on students' learning history and personal characteristics, and provide real-time learning support (Luo&Tan, 2023). In addition, ChatGPT can also be seen as a learning style perception coaching auxiliary tool. In the teaching process, understanding students' learning styles can improve teaching effectiveness, and students can also improve their own learning effectiveness by using ChatGPT (Adetayo, 2023).

Factors affecting university students' willingness to use ChatGPT

The combination of ChatGPT and education can provide support for students' papers, assignments, tests, etc., reduce a series of repetitive work, and stimulate the generation of creative content (Firaina & Sulisworo, 2023). In today's digital age, ChatGPT can also make significant contributions to improving the quality of student productivity, helping university students improve language skills, and providing certain support and motivation. These time-saving methods will enable university students to continue using ChatGPT (Fauzi et al., 2023). When talking to ChatGPT, it will remember the content you replied to, and if you don't like the content it replied to, you can expand and refine the content, and even ask it to respond in different voices and ways. These convenient conditions also greatly increase the willingness of university students to use ChatGPT (AlAfnan et al., 2023). Not only that, ChatGPT can also provide self-directed adaptation services for students with learning disabilities, which helps promote fairness and inclusiveness in education, create new forms of students' learning styles, and improve students' learning satisfaction, thereby increasing students' willingness to use ChatGPT for learning (Wang et al., 2023). Moreover, ChatGPT can also combine different teaching methods, such as project-based teaching, to impart a certain degree of interest to intelligent teaching, improve learning engagement and experience, improve students' satisfaction with the use of ChatGPT, and thus increase their willingness to use

ChatGPT (Topsakal et al., 2022). However, some studies have found that ChatGPT's answers have certain inaccuracies, which pose a threat to academic rigor and reduce the willingness to use it (Lo, 2023). And ChatGPT also has potential integrity issues, which can affect university students' willingness to use ChatGPT (Essel et al., 2022).

Theoretical Framework

Based on previous research findings, the factors that affect university students' use of ChatGPT for learning can involve multiple aspects. In order to explore these factors more comprehensively, this study chooses the UTAUT model as the theoretical framework. Venkatesh et al (2003) proposed the UTAUT model based on a summary of previous TAM related research and aimed to explore the issue of "influencing user cognitive factors". The four core dimensions in UTAUT mainly include: Performance Expectancy (PE) refers to the degree to which an individual feels that using the system is helpful for their work; Effort Expectancy (EE) refers to the amount of effort an individual needs to put into using the system; Social Influence (SI) refers to the degree to which an individual feels influenced by the surrounding group, mainly including subjective norms, social factors, and public image (displayed to the public); Facilitating Conditions (FC) refer to the level of individual perception of the organization's support for system usage in terms of relevant technology and equipment (Venkatesh et al., 2003).

In addition, the UTAUT model also indicates that there are four moderating variables that have a significant impact on the above core dimensions (Venkatesh et al., 2003). That is, gender, age, experience, and voluntariness. The research results of Venkatesh (2003) found that the composite effect of two or more control variables would make the impact more significant. Regarding the above statement, it can be seen that the framework diagram of the UTAUT model is as follows:

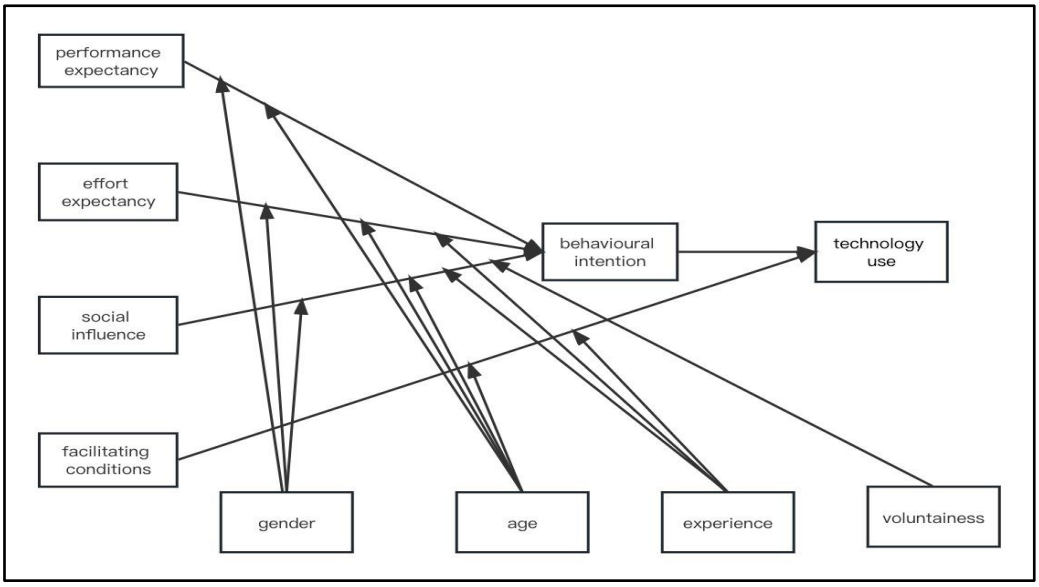

Figure 1. UTAUT Model

Conceptual Framework

Based on the above theoretical framework, we explored from the following aspects: Firstly, we focused on the perceived usefulness of ChatGPT among university students, that is, how much benefit they believe the use of ChatGPT has in learning. Secondly, we considered the

perceived ease of use of ChatGPT among university students, that is, whether they believe it is convenient and easy to operate. Thirdly, we investigated social influencing factors, such as the impact of teachers' attitudes and levels of support towards ChatGPT use on university students' willingness. Fourthly, we explored the convenience of using ChatGPT, that is, whether the environment the student can use ChatGPT without restrictions. Finally, we explored the perceived interest of university students, that is, whether they feel satisfied and interested with the process of using ChatGPT, and explore the impact of these factors on their willingness to continue using ChatGPT through the above manifestations.

By using the UTAUT model as a theoretical framework, this study able to comprehensively examined the willingness of university students to continue using ChatGPT and conduct in-depth analysis of multiple influencing factors. The conceptual framework of this study based on the above expression is shown in Figure 2:

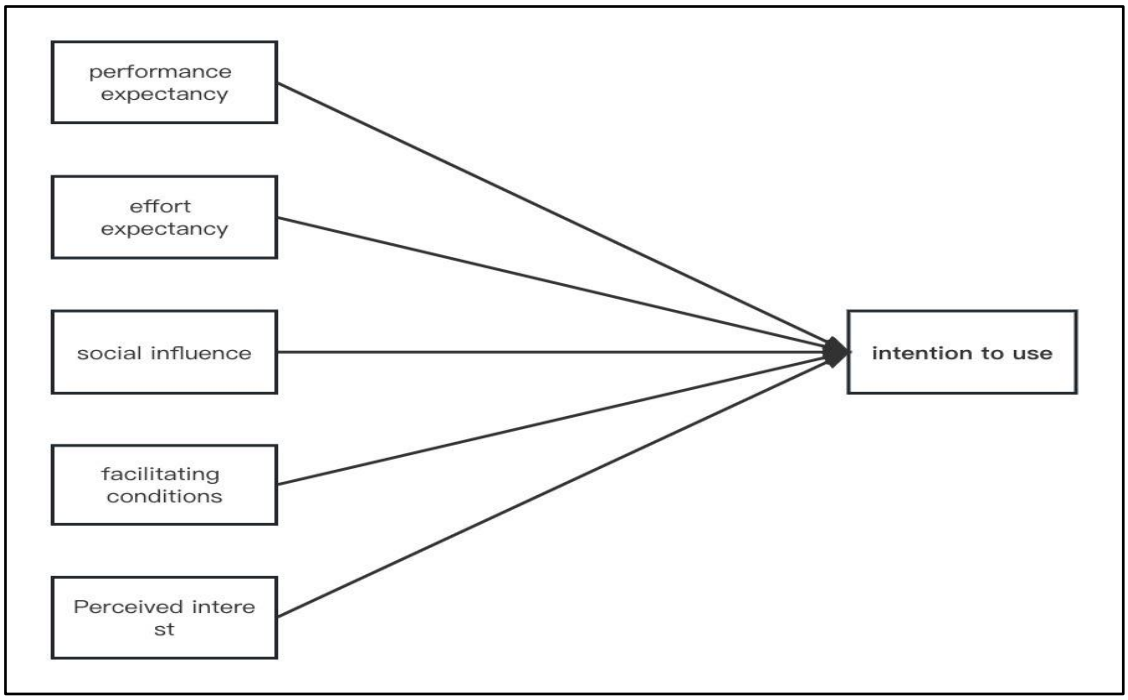

Figure 2: The conceptual framework

Based on this, the following hypotheses were developed:
H1: There are significant differences in the willingness of university students of different genders to continue using ChatGPT for learning
H2: There are significant differences in the willingness of university students of different ages to continue using ChatGPT for learning
H3: There is a significant difference in the willingness of university students with different educational backgrounds to continue using ChatGPT for learning
H4: There are significant differences in the willingness of university students from different majors to continue using ChatGPT for learning
H5: Perceived usefulness has a significant positive impact on the willingness of university students to continue using ChatGPT for learning.
H6: Perceived ease of use has a significant positive impact on the willingness to continue using ChatGPT learning.

H7: Social impact has a significant positive impact on the willingness to continue using ChatGPT learning.
H8: Convenience conditions have a significant positive impact on the willingness to continue using ChatGPT learning.
H9: Perceived interest has a significant positive impact on the willingness to continue using ChatGPT learning.
H10: University students' willingness to continue using ChatGPT is influenced by perceived usefulness, perceived ease of use, social impact, convenience conditions, and perceived interest

Methodology

Research Design

Based on the UTAUT model, this study assumes that university students' willingness to continue using ChatGPT was influenced by the following factors: perceived usefulness, perceived ease of use, social impact, and convenience conditions. We conducted research using quantitative research methods by quantifying the measurements of these factors (Creswell, 2007) and adopted structural equation models for analysis to validate these hypotheses. This study utilized a set of questionnaire as a data collection method. The questionnaire included two sections to measure participants' assessment of the perceived usefulness, perceived ease of use, social impact, convenience conditions, and willingness to continue using ChatGPT. According to Zheng & Li (2021), survey studies can show good response rates because this study involves a large number of analytical units. The research process of this study was divided into three stages: the first stage was the design and preparation of the questionnaire; the second stage was data collection and filtration; the third stage was data analysis and result interpretation.

Population

The targeted population of this study was the university students from five public universities in Malaysia. We chose these five universities because they have a good reputation in the field of education and have a diverse student population. This enables us to study the differences in the willingness of university students from different backgrounds, majors, and grades to use ChatGPT, in order to obtain more comprehensive research results. Secondly, the attitudes of these two universities towards the use of ChatGPT are in a usable state. Therefore, investigating the students of these two schools can make it easier to study the factors that affect the use of ChatGPT and obtain meaningful results. Secondly, students from these five schools often gather on campus, which makes the survey more convenient and saves time and resources. In addition, these five schools are currently ranked among the top five schools in Malaysia (QS World University Rankings, 2022), so students' professionalism is relatively high. Therefore, choosing students from these five public universities for research can ensure that our research results are more accurate and reliable, as they may be more likely to have more specific and professional insights into the problem. Therefore, we hope to draw widely applicable conclusions through studying the student groups of these five universities, in order to provide guidance and support for educational technology decision-makers and practitioners in Malaysia and other countries and regions regarding the use of ChatGPT by university students. Based on this, we obtained a randomly selected sample that covered university students from different majors, grades, and backgrounds. Subsequently, we distributed 400 questionnaires to these five universities. During the distribution process, the

selection of samples strictly followed the principle of random sampling to ensure the reliability and representativeness of the results.

Sampling Procedure

In order to fully study the application and learning effectiveness of ChatGPT among university students, this study adopted a series of steps. Firstly, given the limited research on ChatGPT and the lack of relevant scale support, we designed the scale based on the UTAUT model proposed by (Venkatesh et al., 2003). These scales are used to evaluate university students' willingness to use ChatGPT and influencing factors. After the scale design was completed, we conducted preliminary research to verify its rationality. Specifically, we first conducted a content validation procedure with professors at Universiti Putra Malaysia (UPM) and asked them to evaluate the eligibility of the questionnaire. Based on the feedback from the professor, we have revised and improved the questionnaire to ensure its validity and reliability. Subsequently, we distributed 80 questionnaires to students at UPM and calculated the reliability index of the questionnaires. These statistical results demonstrate the rationality and reliability of the questionnaire. In addition, based on the Kerjcie and Morgan (1970) scale, we distributed a questionnaire on the influencing factors of ChatGPT use to students from five public universities in Malaysia using a random sampling method. The data from these questionnaires will be used for further analysis and research.

Response Rate

Out of the 400 questionnaires distributed, only 11 were decided not to participate in the study, and 389 completed questionnaires were coded and analyzed to represent overall opinions. However, some had never used or been familiar with ChatGPT, while 34 had known about ChatGPT but for some reason did not use it. Only 355 fully understood and used ChatGPT.

questionnaires	total	percentage
Distribute	400	100%
Return	389	97.25%
i.Usable rate	355	88.75%
ii.Unusable rate	34	8.50%
Refuse to participate	11	2.25%

Roscoe (1975) statistical analysis should ensure sufficient sample size, with a range of 30-500 being within the range of most studies (Creswell et al., 2007). Therefore, the 355 sample size in this study is sufficient (Creswell & Poth, 2016)

Measurement

This study is based on the UTAUT model proposed by Venkatesh et al (2003) to design a scale for the influencing factors of university students' willingness to use ChatGPT. Therefore, we developed a survey questionnaire with 25 questions and used the Likert rating scale for scoring (1-strongly disagree, 5-strongly agree). It explores two parts: personal basic information (7 items) is mainly prepared for subsequent analysis by asking respondents' personal information, including whether they are UPM university students to prove the correctness of sample selection, gender, age, education, major, and the frequency of using ChatGPT to determine the current educational stage of the student. The second part is about the influencing factors and willingness to use ChatGPT (18 items), based on the UTAUT model to explore the willingness of university students to use ChatGPT, and from five influencing

factors to view the willingness to use ChatGPT from multiple perspectives, with perceived usefulness, perceived ease of use, social impact, convenience conditions, and perceived interest as the influencing factors. Therefore, based on the above statement, the research framework can be shown in the following figure:

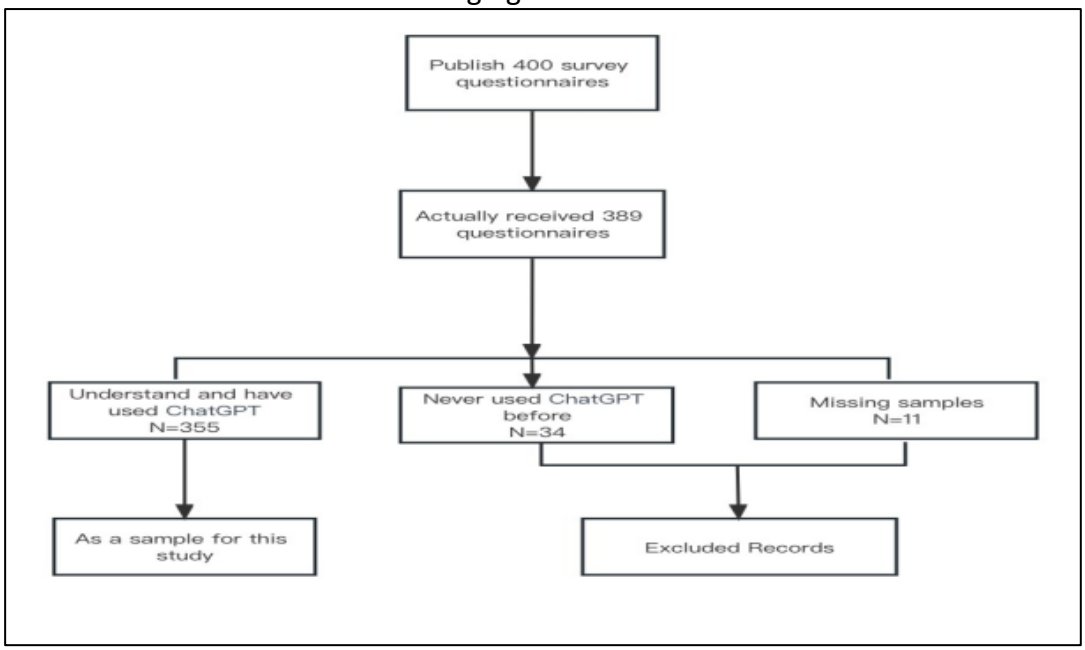

Figure 3: Research framework

Results

Sample descriptive statistical analysis

Table 1

Descriptive Statistical Analysis

Demographic Profile	Items	Frequency	Percentage
Gender	Male	159	44.8%
	Female	196	55.2%
Age	18-21	36	10.1%
	22-25	96	27.0%
	26-29	142	40.0%
	Above 30	81	22.8%
Education background	Bachelor	239	67.3%
	Master	75	21.1%
	Doctor	41	11.5%
Professional	Humanism	88	24.8%
	Engineering	117	33.0%
	Science	107	28.5%
	Business	49	13.8%
Frequency	Occasionally	52	14.46%
	Once a month	96	27.0%
	Once a week	159	44.8%
	Everyday	48	13.5%

From the descriptive statistics in Table 1, it can be seen that in terms of the gender of the subjects, the male to female ratio is 44.8% and 55.2%, respectively, indicating that there is

not a significant difference in the proportion between males and females. From the perspective of age, the proportion of each age stage is 10.1%, 27.0%, 40.0% and 22.8% respectively, which indicates that there are more people at the third age stage in the random sampling, while the proportion of people at other age stages is not big. However, considering the academic background, the proportion is 67.3%, 21.1% and 11.5%, it can be seen that the proportion of undergraduates in this random sampling is relatively large, and from the perspective of specialty, the proportion of humanities is 24.8%, The proportion of engineering disciplines is 33.0%, the proportion of science disciplines is 28.5%, and the proportion of business disciplines is 13.8%, indicating that the proportion of randomly sampled professionals is not significantly different. According to sample survey data, there are significant differences in the frequency of using ChatGPT for learning among university students. Among the surveyed students, 44.8% stated that they do not frequently use ChatGPT for learning, but 37.4% of them do not use it very much. Therefore, this proportion indicates that some students have a relatively low willingness to use ChatGPT for learning. Another group of students have a relatively high willingness to use ChatGPT, so it is crucial to study the factors influencing the sustained willingness of university students to use ChatGPT.

Table 2
Factors contributed to university students of using ChatGPT based on demographic profiling

Individual factor	**M**	**SD**	**T**	**E**	**SIG**
	BI				
Gender	-	-	0.737	2.925	0.416
Male	3.350	1.099	-	-	-
Female	3.267	1.019	-	-	-
Age	-	-	-	1.551	0.201
18-21	3.638	0.993	-	-	-
22-25	3.2083	1.080	-	-	-
26-29	3.3146	1.047	-	-	-
Above 30	3.2510	1.054	-	-	-
Education background	-	-	-	2.200	0.112
Bachelor	3.384	1.055	-	-	-
Master	3.160	1.058	-	-	-
Doctor	3.097	1.017	-	-	-
Professional	-	-	-	0.322	0.810
Humanism	3.303	1.054	-	-	-
Engineering	3.256	1.011	-	-	-
Science	3.386	1.109	-	-	-
Business	3.251	1.066	-	-	-

From Figure 4.2, it can be seen that different individual factors have an impact on the willingness to use ChatGPT. By using independent sample T-test to test the impact of gender on ChatGPT willingness, it can be found that F=2.295; P=0.416>0.05, indicating that there is no significant difference in gender in university students' willingness to continue using ChatGPT. Therefore, hypothesis H1 was not used. Additionally, one-way ANOVA was conducted on different ages, educational backgrounds, and majors, and the analysis results showed that F=1.551 for different ages; P=0.201>0.05; Different educational backgrounds F=2.200; P=0.112>0.05; F=0.322 for different majors; P=0.810>0.05; It can be explained that

there is no significant difference in the willingness of university students of different ages, educational backgrounds, and majors to continue using ChatGPT. Therefore, the validation of H2, H3, and H4 hypotheses has not been passed.

2.1 Correlation analysis of influencing factors with satisfaction and willingness to continue using

Table 3

Correlation analysis between factors and use of ChatGPT

Pearson's correlation among latent variables

	PU	PEU	SI	CF	PI	BI
PEU	1					
PE	0.438**	1				
SI	0.415**	0.414**	1			
CF	0.369**	0.394**	0.461**	1		
PJ	0.451**	0.396**	0.508**	0.494**	1	
BI	0.434**	0.451**	0.464**	0.446**	0.472**	1

Note: PU=Perceived Usefulness; EU=Perceived Ease of Use; SI=Social Influence; CF=Facilitating Conditions; PI=Perceived Interest;BI=Behavior Intention

**P<.01

The researchers conducted Pearson Correlation analysis on the various research variables in the model using SPSS 26.0 software. The degree of correlation between the variables in this study is shown in Figure 4.3, and all variables are at a significance level of 0.01, showing a significant positive correlation (Cohen, 1988.) Therefore, the model hypotheses constructed in this study, H6, H7, H8, H9, and H10, were preliminarily validated. Due to the lack of significant differences in demographic variables such as gender, grade, major, and place of origin in terms of willingness to continue using, regression analysis was not conducted. The results of regression analysis were shown in Table 4.3.1 by using each variable factor as the independent variable and willingness to continue using as the dependent variable. From Figure 4.3.1, it can be seen that the predictive variables PU, PEU, SI, CF, and PJ can explain the correlation between willingness to continue using (BI) and the dependent variable, Secondly, we can also explain the collinearity of the independent variables. The collinearity VIF is between 1-5 (Brien, 2007), which means that there is no multicollinearity between the respective variables, and the results obtained are valid. Secondly, the significance levels between PU, PEU, SI, FC, PI and the willingness to continue use are 0.004, 0.000, 0.002, 0.003, 0.002, where PU, PEU, SI, CF PJ is significant at the level of 0.005, respectively (Pallant, 2020). This indicates that assumptions H5, H6, H7, H8, and H9 have all been validated.

Table 4
Regression analysis between factors and use of ChatGPT

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.424	.205		2.069	.039		
	PEU	.160	.055	.149	2.923	.004	.691	1.447
	PE	.202	.054	.189	3.758	.000	.707	1.415
	SI	.175	.055	.167	3.156	.002	.637	1.569
	CF	.164	.054	.156	3.021	.003	.667	1.498
	PJ	.168	.054	.168	3.101	.002	.608	1.644

Construction and Testing of Structural Equations

Based on the original theory of UTAUT, a research model on the influencing factors of university students' willingness to use ChatGPT is proposed. The structural equation model is proposed to analyze and further explore the specific influencing factors of university students' acceptance of flipped classrooms. By using AMOS software, an initial structural equation model of the influencing factors of university students' willingness to use ChatGPT based on the UTAUT model was drawn. In this structural equation model, latent variables include perceived usefulness, perceived ease of use, social impact, convenience conditions, perceived interest, and 15 observation variables were used to measure, describe, and analyze. And there is a correlation between each latent variable. In order to better verify whether the predicted results of this study are consistent with the actual situation, it is necessary to first conduct a fit test on the model you have created. The research results are shown in Tables 5 and Figure 4.

Table 5
Model fitting indicators

Inspection indicators	Judgment criteria	Value	Matching judgment
Chi-square degree of freedom	< 3	1.065	Good
GFI	> 0.9	0.962	Good
RMSEA	< 0.08	0.014	Good
RMR	< 0.05	0.038	Good
CFI	> 0.9	0.997	Good
NFI	> 0.9	0.957	Good
AGFI	> 0.9	0.946	Good

From Table 5, it can be seen that according to the judgment criteria for fitting indicators, for indicators such as chi square free ratio, GFI, RMSEA, RMR, CFI, NFI, and AGFI, the research

results show that the values of all indicators meet the excellent fitting criteria. Specifically, the chi square free ratio is 1.065, GFI is 0.962, RMSEA is 0.014, RMR is 0.038, CFI is 0.997, NFI is 0.957, and AGFI is 0.946. These results indicate that the fitting between the research model and actual data is very good. In other words, there is a high degree of consistency and fit between the research model and the collected data. This means that the model used can better explain the variability of the data and effectively predict causal relationships and research hypotheses. Therefore, we can conclude that the research model has good adaptability and reliability in studying the willingness of university students to continue using ChatGPT and its influencing factors. University students' willingness to continue using ChatGPT is influenced by perceived usefulness, perceived ease of use, social influence, convenience conditions, and perceived interest. Hypothesis H10 has been validated.

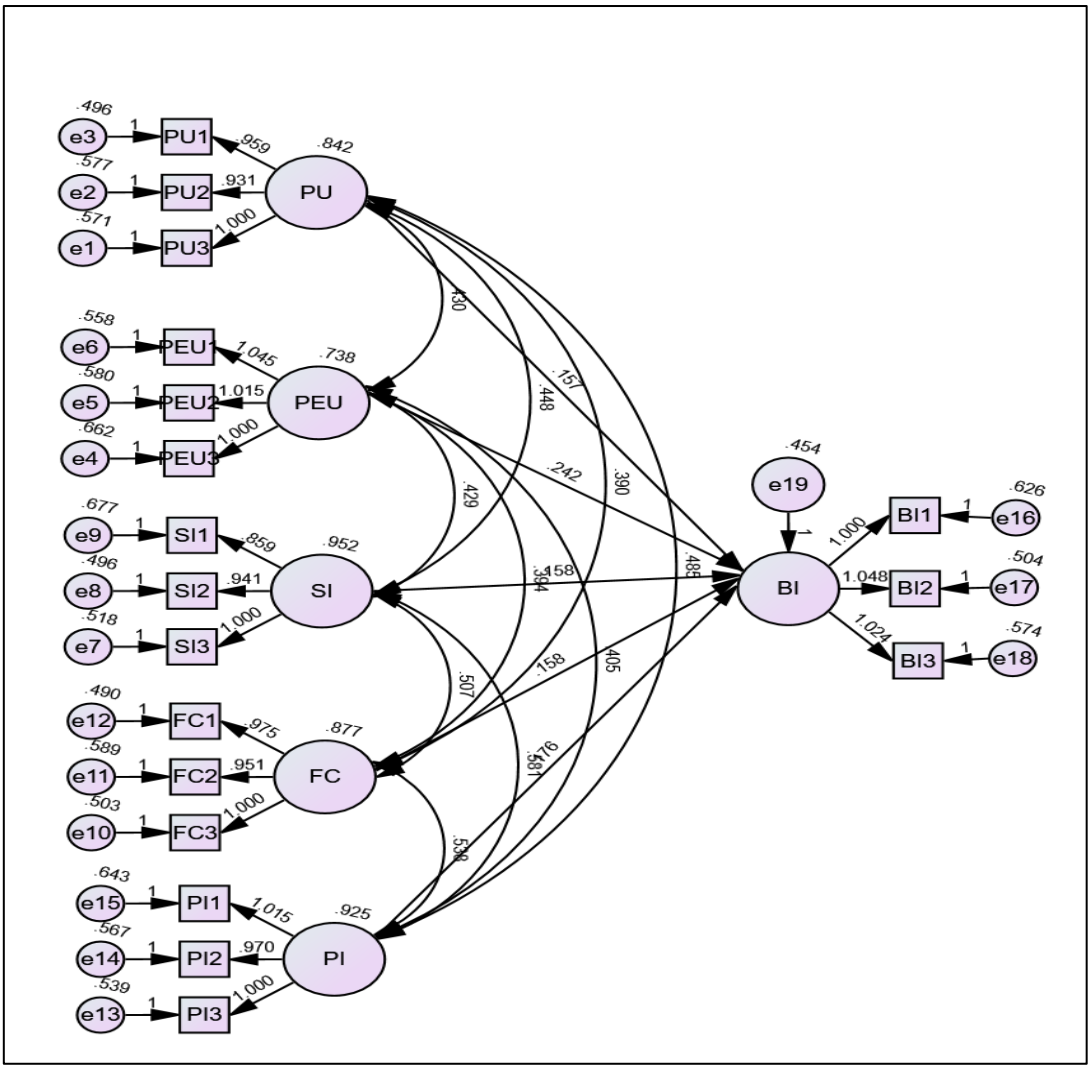

Figure 4. Structural Equation Diagram

Discussion

The aim of this study is to explore the factors that affect the sustained use of ChatGPT by top five public universities in Malaysia students. To achieve this goal, we adopted a random sampling survey method and conducted an extensive survey of students at top five public universities in Malaysia. By collecting data through a questionnaire survey and using

appropriate statistical analysis methods for data processing, we have obtained the following research results.

Firstly, the research results show that the perceived usefulness of ChatGPT among university students is a key factor determining its continued use. University students generally believe that ChatGPT has practical value for their learning, work, and life, and can provide useful information and assistance. They believe that ChatGPT can solve problems, provide accurate answers and guidance, and therefore have a high degree of recognition and reliance on it. Secondly, perceived ease of use has also been found to have a significant impact on the sustained use of university students. University students generally believe that the user interface design of ChatGPT is simple and clear, and the operation is simple and intuitive. They found that the interaction process with ChatGPT was smooth and able to quickly obtain the required information. This ease of use enables university students to easily use ChatGPT and obtain a satisfactory experience from it. Social impact has also been found to be an important factor affecting the sustained use of ChatGPT by university students.

Many students in the survey stated that they have been recommended and influenced by classmates, friends, or social media, which has led them to start using ChatGPT and continue to use it. This social influence prompts them to believe that ChatGPT is a valuable tool and to share and discuss the usage experience of ChatGPT with others. Convenience conditionality has also been proven to be one of the key factors for university students to continue using ChatGPT. Students believe that the diverse use channels of ChatGPT (such as web pages, mobile applications, etc.) and the stability and responsiveness of the system are important conditions for their continued use. When ChatGPT is easy to use on various platforms and can stably provide the required services, university students are more motivated to continue using it.

Finally, perceived interest is also one of the important factors affecting the sustained use of ChatGPT by university students. Students believe that the interactive process of ChatGPT is interesting and can provide an entertaining experience. During the investigation process, the author also found that some strategies can be improved to enhance university students' willingness to use ChatGPT. Among them, increasing promotional channels and regularly maintaining web pages to ensure system stability and accuracy can also introduce some interesting features, interactive or game elements to ChatGPT, making its use more interesting and attractive, in order to enhance university students' interest in continuous use of ChatGPT.

Conclusion

In conclusion, the purpose of this study is to explore the factors that affect the continuous use of ChatGPT by students in five Public university in Malaysia. Through random sampling surveys and appropriate statistical analysis methods, we identified several key research findings. Firstly, the perceived usefulness, ease of use, social impact, convenience conditions, and perceived interest of ChatGPT among college students are important factors that affect their continued use. This indicates that college students believe that ChatGPT has practical value for their learning, work, and life, and can solve problems, provide accurate answers, and provide guidance. Secondly, the simplicity and clarity of the user interface and the smoothness of the interaction process enable college students to easily use ChatGPT and obtain a satisfactory experience from it. Social recommendations and social influence have

also played an important role in promoting college students to start using ChatGPT and continue to use it. In addition, diversified usage channels, system stability, and responsiveness are also key factors that encourage college students to continue using ChatGPT. Finally, perceived fun provides entertaining experiences for college students, further enhancing their interest in continuing to use ChatGPT.

Suggestion

In order to improve the willingness of students from five Public university in Malaysia and students in similar environments to continue using ChatGPT, according to the research results, we propose the following suggestions to the developers of ChatGPT. Firstly, enhance the practicability and accuracy of the functions. Continuously optimize the algorithm and dataset of ChatGPT to ensure it provides accurate and comprehensive answers and guidance. Collaborate with experts in professional fields to ensure that ChatGPT can provide high-quality support in various disciplinary areas. Secondly, improve the usability of the user interface. Continuously improving the user interface design of ChatGPT to make it more intuitive, easy to navigate, and operate. Thirdly, social recommendations and social influence can be strengthened. Collaborate with universities to promote the application and promotion of ChatGPT in educational environments. Establish a user community where students can share and discuss their experiences and achievements in using ChatGPT. Encourage students to recommend and share ChatGPT through social media and other channels to expand their influence. Fourthly, provide diversified usage channels and stable system support. Ensure that ChatGPT can be used on different platforms, including web pages, mobile applications, etc. At the same time, ensuring the stability and responsiveness of the system, providing fast and reliable services to enhance user experience. Fifthly, increase interest and interactivity. Introduce some interesting features, interactions, or game elements to make the use of ChatGPT more interesting and engaging. For example, designing some interesting interactive questions and answers, or introducing graphic and animation effects to increase entertainment and engagement. Finally, regularly maintain and update. Regularly maintain and update ChatGPT to ensure system stability and accuracy. By actively adopting these suggestions, education managers and educators can promote the application of ChatGPT in educational environments, providing students with the training and support they need, including guidance on how to use ChatGPT correctly. Education managers can encourage teachers and students to innovate and explore in the process of using ChatGPT. Provide a certain degree of freedom and support. Education managers should guide teachers and students to use ChatGPT reasonably to ensure its auxiliary role in learning. Emphasize ChatGPT as a tool and resource, rather than a substitute for the role of a teacher. Teachers should continue to play the importance of their teaching and guidance, using ChatGPT as an auxiliary tool to help students solve problems and obtain information, in order to promote the modernization of education.

Limitation

The sample size of this study is limited to students from Malaysian public universities, so the universality of the results may be limited. Due to differences in background, needs, and habits between each university and student group, it is not possible to fully represent other universities or student groups. In order to improve the reliability and extrapolation of research results, future research can consider expanding the sample range to include more universities and students from different backgrounds. Secondly, this study mainly relies on

students' subjective feelings and opinions, without conducting actual behavioral observations or measuring objective indicators. Although students' subjective feelings are important for research, more objective indicators such as frequency of use, problem-solving rate, and satisfaction can be added to evaluate the actual usage behavior and effectiveness of ChatGPT. This can provide more comprehensive and objective evaluation results, and further support the explanation and discussion of continuous use factors.

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