

# Study on the Influencing Factors of College Students Using AIGC to Assist Studies Behavior

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## ABSTRACT

This study explores the influencing factors of college students' use of AIGC to assist studies behavior, builds a new model which combines TAM model and TPB theory, and adds the factor of trust into the model. At the same time, it explores differences of the use of AIGC to assist studies behavior of liberal arts students and science students. Data were collected by distributing questionnaires online and spreading questionnaires on social platforms, and a total of 418 valid questionnaires were collected. Regression analysis shows that the use of AIGC is influenced by five factors. Among the influencing factors, liberal arts students are more significantly affected by subjective norms and trust, while science students are more significantly affected by perceived behavior control.

## KEYWORDS

AIGC; Artificial intelligence; College student; TPB theory; TAM model

## 1. INTRODUCTION

With the advancement of artificial intelligence technology, the use of generative artificial intelligence became more widely in all aspects of social life. Generative AI is a more powerful form of AI that can learn from large datasets to create new and original content based on algorithms, models, and rules. The current use includes using AIGC to generate virtual anchors for live e-commerce delivery, using AIGC to create news and even generate videos, using AIGC to generate game images, etc., to penetrate into all aspects of life.

Although it is undeniable that AIGC technology has brought great convenience to college students' learning, which can greatly improve their learning efficiency and save a lot of time and energy, the use of AIGC in the learning process of college students may also bring adverse effects. The comments of the participants show that overall, AI is perceived as a positive technological advancement, but care needs to be taken when using AI as there may be negative outcomes [1]. Reliance on ChatGPT may undermine the fundamental goals of education, which may potentially bring negative effect on students' skills and abilities [2].

In this paper, the integration model of TAM model, TPB theory and trust explores the influence of six factors.

## 2. LITERATURE REVIEW

Many studies have been focused on the use of technology by college students. One study researched how VR is being used in college and how it influences college students. They found that after learning through this special platform, students' quality improved, and the number of students was on the rise [3]. Another study found that students perceived ChatGPT as a advanced writing tool which can not only increase students' learning efficiency, but also write quality content and provide some guidance [2]. From all the above research, it can be seen that in general, college students have a close relationship with new technologies, and college students' learning behaviors can be affected by the emergence of new technologies to a certain extent.

## 3. RESEARCH HYPOTHESIS

Attitude. It refers to the degree to which a person has a favorable or unfavorable opinion of an behavior [4]. The positive attitude of academics and students toward GenAI tools increases the likelihood of GenAI tools use among them. This highlights the importance of a positive attitude when using educational platform and the benefits of using these tools in education [5]. Attitude refers to whether college students like the use of AIGC in learning in the study. The more positive the college students' attitude, the more inclined they will be to use AIGC to assist their studies. Hence, the hypothesis is proposed:

H1: Attitude is positively associated with behavioral intention.

Subjective norms. It refers to the social pressure to do or not to do the behavior [4]. Subjective norms, which can be interpreted as to what extent others expect someone to do something, form the context that allows people to view AI as a new technology [6]. In this study, subjective norms refer to others' expectations of individuals, that is, whether others expect college students to use AIGC to assist their studies. The higher the subjective norms of AIGC, the more obvious the behavioral intention of college students. Hence, the hypothesis is proposed:

H2: Subjective norms is positively associated with behavioral intention.

Perceived behavioral control. It refers to how easy or difficult it is to do the behavior [4]. A study about the factors influencing the adoption of e-learning found that subjective norms had an important effect on the intention of continuous use of this technology [7]. The more college students think they have enough resources and self-confidence, the more likely they are to use AIGC as an academic aid. Hence, the hypothesis is proposed:

H3: Perceived behavioral control is positively related to behavioral intention.

Perceived usefulness. It is defined as the extent to which people believes that using a certain system will enhance their work performance [8]. A clear understanding of AI's potential to enhance job performance and its user-friendly interface is pivotal in fostering positive attitudes and intentions toward AI adoption [9]. In this study, it refers to whether college students feel that using AIGC is helpful to their studies. The more college students find AIGC useful for their studies, the more they will use AIGC. Hence, the hypothesis is proposed:

H4: Perceived usefulness is positively associated with behavioral intention.

Perceived ease of use. It refers to the degree to which a person believes that it is easy to use a certain system [8]. One study highlighted that perceived ease of use positively impacts intention to adopt AI [10]. Another study found perceived ease of use positively affected intention to adopt AI [11]. In this study, it refers to whether college students think they have the resources and confidence to use AIGC to assist their studies. The higher perceived ease of use of college students, the more inclined college students are to use AIGC to assist their studies. Hence, the hypothesis is proposed:

H5: Perceived ease of use is positively associated with behavioral intention.

At the same time of the development of AIGC technology, it will also bring negative perceptions to humans, such as the authenticity of the production content, the privacy of users and the opacity of the algorithm, which may cause people to distrust, thus affecting people's use of AIGC. If people trust technology, they tend to see it as beneficial. However, the lack of trust may raise concerns about the possible threats posed by technology [12]. It can be seen that college students' trust in AIGC is a significant factor in their use of AIGC. In this study, college student's trust in AIGC include the human-like trust dimension and the functionality dimension. Hence, the hypothesis is proposed:

H6: Trust is positively associated with behavioral intention.

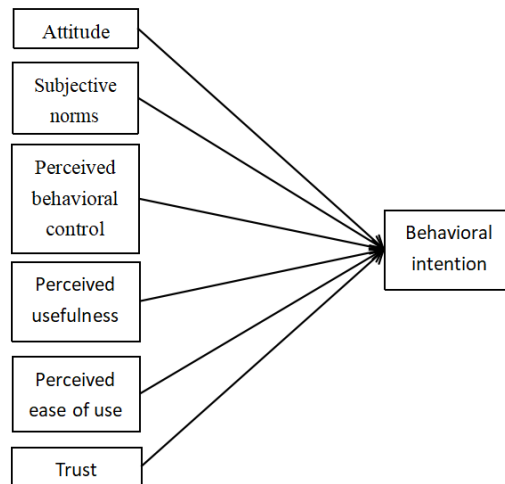


Figure 1. Research framework and hypotheses of the study

## 4. METHODS

### 4.1. Data Collection

This study uses a convenience sampling approach and adopts the questionnaire survey method. After designing the questionnaire, online questionnaires were distributed on the online platform and spread on social media between May and June 2024 (e.g., QQ, Wechat). In the opening statement of the questionnaire, the definition of AIGC was explained to respondents so that every respondent could understand what AIGC referred to in this research. A total of 424 questionnaires were collected from college students from different provinces in China. A lie detector test is included in the questionnaire to filter out the invalid respondents. After removing the invalid respondents, 418 valid questionnaires were collected.

### 4.2. Sample

Of the 418 respondents, 38.52% of the respondents were male while 61.48% of the respondents were female. The mean age was 20.81 years old. 54.78% of the respondents majored in liberal arts, and 45.22% of the respondents majored in science.

### 4.3. Measures

In this study, control variables included gender, age, and major. The measurement for attitude, subjective norms, and behavioral intention was measured using items adopted from previous studies [13]. The measures for perceived behavioral control were adapted from two studies [13, 14]. To measure perceived usefulness and perceived ease of use, the initial measurement scales were adopted [8] and to measure trust, the measurement from a previous study was adopted [12].

## 5. RESULTS

### 5.1. Hypothesis Testing

The results revealed that subjective norms were positively associated with behavioral intention ( $\beta=.216$ ,  $\text{sig}<.05$ ), and perceived behavioral control was also positively associated with behavioral intention ( $\beta=.165$ ,  $\text{sig}<.05$ ), thus supporting H2 and H3. However, attitude ( $\beta=.012$ ,  $\text{sig}=.758$ ) was not significantly correlated with behavioral intention and did not support H1. In addition, perceived usefulness was positively associated with behavioral intention ( $\beta=.164$ ,  $\text{sig}<.05$ ), thus supporting H4. Meanwhile, perceived ease of use was positively associated with behavioral intention ( $\beta=.129$ ,  $\text{sig}<.05$ ), hence supporting H5. Finally, trust was positively associated with behavioral intention ( $\beta=.173$ ,  $\text{sig}<.05$ ) (see Table 2).

**Table 1.** Correlations

	Cronbach $\alpha$	M	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Usefulness	0.935	3.23	1.45	-						
Ease of use	0.913	3.27	1.37	.545**	-					
Attitude	0.926	3.87	1.48	0.61	.121*	-				
Subjective norms	0.848	3.48	1.39	.448**	.509**	.227**	-			
Perceived behavioral control	0.894	3.30	1.42	.536**	.491**	.058	.379**	-		
Behavioral intention	0.842	3.36	1.40	.519**	.498**	.143**	.512**	.477**	-	
Trust	0.941	2.54	1.02	.487**	.438**	.230**	.461**	.356**	.480**	-

\*\*Correlation is significant at the 0.01 level (2-tailed).  
\*Correlation is significant at the 0.05 level (2-tailed).

**Table 2.** Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.703	.752		3.597	.000		
	gender	.136	.136	.047	1.001	.318	.993	1.007
	age	-.033	.033	-.047	-.991	.322	.996	1.004
	major	.770	.133	.274	5.798	.000	.993	1.007
2	(Constant)	.785	.605		1.297	.195		
	gender	.056	.109	.019	.511	.610	.954	1.049
	age	-.028	.026	-.039	-1.045	.297	.966	1.035
	major	.120	.115	.043	1.041	.298	.815	1.227
	usefulness	.158	.049	.164	3.225	.001	.535	1.868
	ease	.132	.050	.129	2.619	.009	.569	1.758
	sbn	.218	.047	.216	4.619	.000	.628	1.594
	att	.012	.038	.012	.309	.758	.854	1.171
	pbc	.162	.046	.165	3.506	.001	.621	1.610
trust	.237	.063	.173	3.772	.000	.651	1.536	

a. Dependent Variable: bi

## 5.2. Multigroup Analysis

In this study, the respondents were divided into liberal arts majors and science majors to investigate whether factors affecting the use of AIGC as academic aid between students majoring in liberal arts and students majoring in science differed. The influence of perceived ease of use ( $\beta=.117$ ,  $\text{sig}=.070$ ) becomes not significant. Among science majors, the perceived usefulness ( $\beta=.144$ ,  $\text{sig}=.064$ ) and perceived ease of use ( $\beta=.126$ ,  $\text{sig}=.114$ ) become not significant. In the process of using AIGC as an academic aid, the influence of subjective norms is more obvious among liberal arts majors ( $\beta=.254$ ,  $\text{sig}<.05$ ) than science majors ( $\beta=.180$ ,  $\text{sig}<.05$ ). This may be due to the difference in the field of study. Science majors have a better understanding of AIGC technology while liberal arts majors do not. Therefore, liberal arts students are more concerned about the influence and suggestions of others. The influence of trust on the intention to use AIGC to assist academic behavior is greater for liberal arts majors ( $\beta=.193$ ,  $\text{sig}<.05$ ) than for science majors ( $\beta=.157$ ,  $\text{sig}<.05$ ). This may be because liberal arts majors are more sensitive and pay more attention to personal emotional factors when considering whether to use AIGC as an academic aid. However, the influence of perceived behavior control on science majors ( $\beta=.176$ ,  $\text{sig}<.05$ ) is greater than that on liberal arts majors ( $\beta=.129$ ,  $\text{sig}<.05$ ). Perhaps because science majors have a certain learning foundation, they will be more cautious about using a new technology, and will consider whether they have the resources and ability to use this technology more than liberal arts students (see Table 3 and Table 4).

**Table 3.** Coefficients of liberal arts majors

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.816	.891		3.161	.002		
	gender	.266	.186	.095	1.430	.154	.994	1.006
	age	-.012	.041	-.019	-.282	.778	.994	1.006
2	(Constant)	.393	.689		.571	.569		
	gender	.087	.142	.031	.616	.539	.941	1.062
	age	-.011	.031	-.018	-.366	.715	.941	1.062
	usefulness	.188	.069	.195	2.740	.007	.476	2.101
	ease	.120	.066	.117	1.823	.070	.581	1.722
	sbn	.252	.061	.254	4.159	.000	.645	1.550
	att	.017	.045	.020	.373	.710	.827	1.209
	pbc	.131	.062	.129	2.102	.037	.642	1.557
	trust	.253	.089	.193	2.841	.005	.520	1.924

a. Dependent Variable: bi

**Table 4.** Coefficients of science majors

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	5.382	1.203		4.473	.000		
	gender	-.019	.199	-.007	-.096	.923	1.000	1.000
	age	-.076	.056	-.099	-1.356	.177	1.000	1.000
2	(Constant)	2.017	1.139		1.771	.078		
	gender	.013	.172	.005	.073	.942	.966	1.035
	age	-.055	.049	-.072	-1.138	.257	.960	1.042
	usefulness	.139	.075	.144	1.862	.064	.646	1.549
	ease	.129	.081	.126	1.588	.114	.611	1.637
	sbn	.183	.078	.180	2.339	.020	.652	1.534
	att	-.019	.071	-.017	-.259	.796	.922	1.085
	pbc	.175	.071	.176	2.464	.015	.750	1.333
	trust	.218	.096	.157	2.262	.025	.797	1.255

a. Dependent Variable: bi

## 6. CONCLUTIONS

This study focused on six different influencing factors of college students' use of AIGC to assist their academic behavior, proposed a new theoretical framework combining TAM and TPB, and analyzed the reasons for the different influencing factors of college students' use of AIGC to assist their academic behavior. The results showed that college students' use of AIGC to assist their studies is influenced by subjective norms, perceived behavioral control, perceived usefulness, perceived ease of use and trust. This suggested that college students may be affected by the subjective feelings of people around them and themselves when using AIGC to assist their studies, what counts is that whether to use AIGC in their studies needs to be carefully considered. It takes a lot of effort for AIGC to be accepted. AI technology should evolve towards being more user-friendly and more able to provide multi-disciplinary needs. This study also confirmed that trust in AIGC is an important factor in whether people decide to use AIGC.

## REFERENCES

- [1] Jeffrey, T. (2020) Understanding college student perceptions of artificial intelligence. *Systemics, Cybernetics and Informatics*, 18(2), 8-13.
- [2] Farhi, F., Jeljeli, R., Aburezeq, I., Dweikat, F. F., Al-shami, S. A., & Slamene, R. (2023) Analyzing the students' views, concerns, and perceived ethics about chat GPT usage. *Computers and Education: Artificial Intelligence*, 100180.
- [3] Zhang, Q., Wang, K., & Zhou, S. (2020) Application and practice of vr virtual education platform in improving the quality and ability of college students. *IEEE Access*, (99), 1-1.
- [4] Ajzen, I., (1991) The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- [5] Roy, R., Babakerkhell, M. D., Mukherjee, S., Pal, D., & Funilkul, S. (2022) Evaluating the intention for the adoption of artificial intelligence-based robots in the university to educate the students. *IEEE Access*, 10, 125666-125678.
- [6] Chai, C. S., Wang, X., & Xu, C. (2020) An extended theory of planned behavior for the modelling of Chinese secondary school students' intention to learn artificial intelligence. *Mathematics*, 8(11), 2089.
- [7] Pertiwi, D., & Purnama, N. B. (2023) Integration of Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB) in E-learning with Zoom. *Asian Journal of Management, Entrepreneurship and Social Science*, 3(04), 248-265.

- [8] Davis, F. D. (1989) Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 319-340.
- [9] Khan, F. A., Khan, N. A., & Aslam, A. (2024) Adoption of Artificial Intelligence in Human Resource Management: An Application of TOE-TAM Model. *Research and Review: Human Resource and Labour Management*, 22-36.
- [10] Chatterjee, S., Rana, N. P., Dwivedi, Y. K., & Baabdullah, A. M. (2021) Understanding AI adoption in manufacturing and production firms using an integrated TAM-TOE model. *Technological Forecasting and Social Change*, 170, 120880.
- [11] Khan, F. A., Khan, N. A., & Aslam, A. (2024) Adoption of Artificial Intelligence in Human Resource Management: An Application of TOE-TAM Model. *Research and Review: Human Resource and Labour Management*, 22-36.
- [12] Choung, H., David, P., & Ross, A. (2023) Trust in AI and its role in the acceptance of AI technologies. *International Journal of Human-Computer Interaction*, 39(9), 1727-1739.
- [13] Ivanov, S., Soliman, M., Tuomi, A., Alkathiri, N. A., & Al-Alawi, A. N. (2024) Drivers of generative AI adoption in higher education through the lens of the Theory of Planned Behaviour. *Technology in Society*, 77, 102521.
- [14] Ajzen, I. (2002). Constructing a TPB questionnaire: Conceptual and methodological considerations.