

The Influencing Factors of Students' Acceptance of Artificial Intelligence Usage at Pingdingshan Vocational College

Zhao Wenze ^{1*} and Jidapa Chollathanrattanapong ²

^{1, 2} Siam University, Bangkok Thailand

* Corresponding author. E-mail: 2066936151@QQ.COM

ABSTRACT

This study investigates the factors influencing students' acceptance of artificial intelligence (AI) at Pingdingshan Vocational College, utilizing the Unified Theory of Acceptance and Use of Technology (UTAUT) as the theoretical framework

A quantitative empirical approach was employed, utilizing structured questionnaires administered to students via random sampling. From a total of 400 distributed surveys, 377 valid responses were collected, achieving a 94.25% effective response rate. The data were evaluated using multiple linear regression analysis

Based on these discoveries, students generally exhibited a high level of AI acceptance, with average scores for all core variables exceeding 4.1 out of 5. The empirical model demonstrated strong explanatory power (adjusted $R^2 = 0.749$, $p < 0.001$). The results confirmed that all four core factors significantly and positively impact students' acceptance of AI. Specifically, social influence (Beta = 0.285) and facilitating conditions (Beta = 0.247) exerted the strongest standardized impacts on acceptance, followed by effort expectancy (Beta = 0.067) and performance expectancy (Beta = 0.048).

AI acceptance among vocational students is heavily shaped by social dynamics and institutional support, alongside the technology's perceived ease of use and academic benefits. Based on these findings, the study recommends cultivating students' internal drive, establishing a comprehensive school technical support system, and promoting the intelligent upgrading of the school's management infrastructure to optimize AI adoption.

Keywords: The Influencing of Acceptance, Artificial Intelligence, Pingdingshan Vocational College

Introduction

In the digital era, artificial intelligence (AI) technologies are rapidly expanding across various sectors, encouraging the education sector to adopt them for quality enhancement and innovation. Vocational colleges, as key bases for applied talent cultivation, face both opportunities and challenges in adopting these intelligent technologies. Pingdingshan Vocational College, with its unique characteristics, also confronts this transformative landscape and the need to integrate AI into its educational framework (Wang, 2025). The critical challenge for vocational colleges is finding appropriate ways to guide students to accept and

effectively utilize AI. This is a pressing issue because AI adoption directly impacts students' skill development, their future career prospects, and the broader innovation of teaching models. Despite the growing importance of AI, empirical studies examining AI acceptance among vocational college students, particularly at the institutional level, remain limited. This gap in the literature is notable, especially when considering the students' diverse professional backgrounds, learning environments, and cognitive levels. To address this gap, this study utilizes the Unified Theory of Acceptance and Use of Technology (UTAUT) model, a widely recognized framework in IT acceptance, as a comprehensive theoretical foundation. Specifically, this research investigates the core factors influencing students' AI acceptance at Pingdingshan Vocational College, focusing on performance expectancy, effort expectancy, social influence, and facilitating conditions. By analyzing the internal relationships and mechanisms among these factors, this study aims to provide valuable theoretical and practical references for optimizing AI acceptance and enhancing the quality of intelligent technology application education in vocational colleges. (Muhamad et al., 2025).

Objective of the study

1. To investigate the impact of performance expectancy on students' acceptance of AI usage at Pingdingshan Vocational College.
2. To investigate the impact of effort expectancy on students' acceptance of AI usage at Pingdingshan Vocational College.
3. To investigate the impact of social influence on students' acceptance of AI usage at Pingdingshan Vocational College.
4. To investigate the impact of facilitating conditions on students' acceptance of AI usage at Pingdingshan Vocational College.

Scope of the study

This study focused exclusively on the student body of Pingdingshan Vocational College, examining the factors influencing their acceptance of artificial intelligence technology. Based on the Unified Theory of Acceptance and Use of Technology, the study analyzed the internal relationships and mechanisms among the four core factors facilitating conditions and social influence, together with students' perceptions of performance and effort expectancy and students' AI acceptance. Methodologically, a quantitative approach was employed, involving an empirical study through a well-designed questionnaire administered to students at the college. With 400 questionnaires distributed and 377 valid responses collected, achieving a 94.25% effective recovery rate, the study ensured data reliability and validity. Based on the empirical findings, strategic recommendations were formulated to optimize AI acceptance among students, offering practical guidance for Pingdingshan Vocational College in intelligent technology application education, thereby enhancing talent cultivation and educational management quality.

Theoretical framework

This study analyzed the key factors influencing students' acceptance of artificial intelligence usage based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model for artificial intelligence technology, combined with the characteristics of students' learning of artificial intelligence, and constructs a corresponding research model. According to relevant theoretical explanations and literature reviews, this

study finally determines a research model on the influencing factors of students' acceptance of artificial intelligence. This model contains four core variables, namely retaining facilitating conditions and social influence, together with students' perceptions of performance and effort expectancy from the UTAUT model.

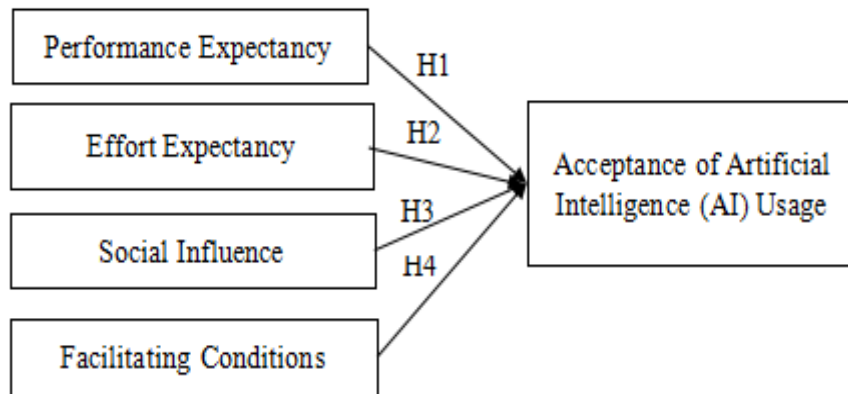


Figure 1: Conceptual Framework

Research Methodology

Grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT), this study constructs a structural model to examine factors influencing AI acceptance among students at Pingdingshan Vocational College, focusing on facilitating conditions and social influence, together with students' perceptions of performance and effort expectancy. A quantitative approach was adopted, with structured questionnaires designed considering vocational education contexts and demographic control variables. Prior to full data collection, the questionnaire underwent content validation by a panel of experts to ensure clarity and relevance. Additionally, a pilot study was conducted with a small subset of students to test and refine the survey items. Data were collected through electronic questionnaires using a random sampling approach, yielding 377 valid responses. Quantitative analyses, including descriptive statistics, reliability and validity tests, correlation analysis, and multiple linear regression, were conducted using SPSS and AMOS to explore relationships between variables and AI acceptance. The study population comprised all enrolled students at Pingdingshan Vocational College (approximately 14,387), with a sample size of 400 determined through simple random sampling to ensure representativeness and statistical power, laying a solid foundation for subsequent empirical analysis.

Hypotheses

- H1: Performance expectancy has a significant positive impact on students' acceptance of AI usage.
- H2: Effort expectancy has a significant positive impact on students' acceptance of AI usage.
- H3: Social influence has a significant positive impact on students' acceptance of AI usage.
- H4: Facilitating conditions have a significant positive impact on students' acceptance of AI usage.

Theoretical framework

This study analyzed the key factors influencing students' acceptance of artificial intelligence usage based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model for artificial intelligence

technology, combined with the characteristics of students' learning of artificial intelligence, and constructs a corresponding research model. According to relevant theoretical explanations and literature reviews, this study finally determines a research model on the influencing factors of students' acceptance of artificial intelligence. This model contains four core variables, namely retaining facilitating conditions and social influence, together with students’ perceptions of performance and effort expectancy from the UTAUT model.

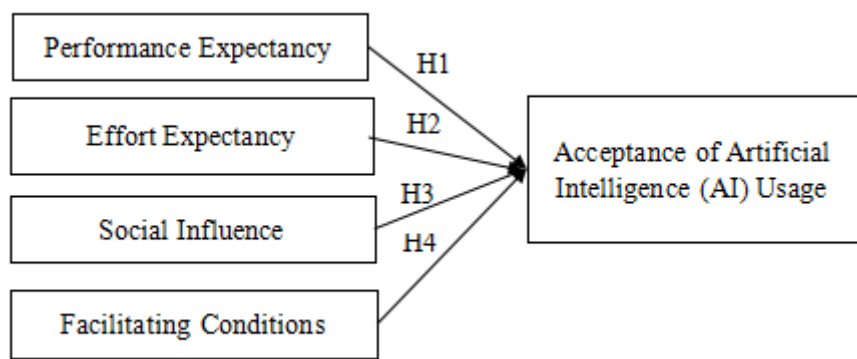


Figure 1 Conceptual Framework

Finding and Conclusion

Reliability and Validity Analysis of the Scale

The study on factors affecting AI acceptance among students at Pingdingshan Vocational College found high reliability in measurement scales for both independent and dependent variables, with standardized loadings ranging from 0.749 to 0.862 and Cronbach's Alpha coefficients above 0.77 (mostly over 0.8). Composite Reliability values exceeded 0.85, ensuring stable measurement. These results provide a solid data basis for analyzing the influencing factors.

The KMO values for the two scales are 0.932, which is greater than 0.8, indicating that they are highly suitable for information extraction and factor analysis. Additionally, the p-value is 0, which is less than 0.05, proving the validity of the scales.

Research data shows high standardized loading coefficients for measurement items of each latent variable: performance expectancy (0.825-0.841), effort expectancy (0.821-0.852), social influence (0.819-0.835), facilitating conditions (0.828-0.838), and acceptance of AI usage (0.802-0.823), indicating strong explanatory power and high data reliability.

Analysis of the Current Situation of the Acceptance Level of Artificial Intelligence Usage

Students at Pingdingshan Vocational College generally exhibit a high acceptance level of AI usage, with all core variables—performance expectancy (4.122), effort expectancy (4.153), social influence (4.121), and facilitating conditions (4.156)—averaging above 4.1 out of 5. This indicates a positive attitude towards AI applications, with students believing that the technology enhances academic performance and career competitiveness (performance expectancy), is easy to learn and apply (effort expectancy), is influenced by peers and teachers (social influence), and is supported by adequate school resources and infrastructure (facilitating conditions).

Multiple Regression Analysis

Table 1 Correlation Between Variables

	Performance Expectancy	Effort Expectancy	Social Influence	Facilitating Conditions	Acceptance of AI Usage
Performance Expectancy	1	.640**	.644**	.898**	.655**
Effort Expectancy		1	.615**	.938**	.617**
Social Influence			.632**	.917**	.607**
Facilitating Conditions			1	.945**	.618**
Acceptance of AI Usage					1

Note: ** Correlation is significant at the 0.01 level (two-tailed).

The data reveals that facilitating conditions and social influence, together with students’ perceptions of performance and effort expectancy are all highly positively correlated with each other and significantly impact students' acceptance of AI usage (all correlations significant at the 0.01 level). Performance expectancy (0.655) drives acceptance by highlighting tangible benefits like improved learning and career prospects; effort expectancy (0.617) emphasizes ease of use, where lower complexity boosts adoption; social influence (0.607) underscores the role of peer and teacher endorsements in shaping acceptance through social norms; and facilitating conditions (0.618) highlight the importance of accessible hardware, reliable networks, and user-friendly software. These findings suggest that promoting AI acceptance requires a holistic approach addressing perceived benefits, usability, social dynamics, and institutional support.

Regression Analysis

Table 2 Multiple Regression Analysis

	Unstandardized Coefficient (B)		Standardized Coefficient (Beta)	p	VIF
	B	Standard Error (SE)			
Constant	0.115	0.041	-	0.001**	-
Performance Expectancy	0.147	0.034	0.048	0.001**	3.235
Effort Expectancy	0.164	0.039	0.067	0.002**	2.487
Social Influence	0.278	0.046	0.285	0.000**	2.039
Facilitating Conditions	0.233	0.047	0.247	0.000**	2.011
R ²	0.754				

	Unstandardized Coefficient (B)		Standardized Coefficient (Beta)	p	VIF
	B	Standard Error (SE)			
Adjusted R ²	0.749				
F	F (4,372) =784.65, p=0.000				
Durbin-Watson Statistic (D-W)	1.820				

The regression analysis reveals that social influence (Beta = 0.285) and facilitating conditions (Beta = 0.247) exert the strongest standardized impacts on AI acceptance, followed by effort expectancy (Beta = 0.067) and performance expectancy (Beta = 0.048), with all variables showing highly significant effects ($p < 0.001$). Collinearity diagnostics ($VIF < 10$) confirm no severe multidisciplinary, while the model demonstrates strong explanatory power (adjusted $R^2 = 0.749$) and overall significance ($F = 784.65, p = 0.000$). The Durbin-Watson statistic (1.820) further supports the absence of auto correlation, ensuring the robustness of the regression results in explaining the relationship between independent variables and AI acceptance.

Therefore, according to the results of the data analysis, Performance expectancy has a significant positive impact supporting Hypothesis 1. Effort expectancy has a significant positive impact supporting Hypothesis 2. Social influence has a significant positive impact supporting Hypothesis 3. Facilitating conditions have a significant positive impact supporting Hypothesis 4.

Summary of research results.

The primary objective of this study was to investigate the factors influencing students' acceptance of artificial intelligence (AI) usage at Pingdingshan Vocational College, utilizing the Unified Theory of Acceptance and Use of Technology (UTAUT) framework. The empirical results demonstrate that students generally exhibit a high level of AI acceptance, and all four core UTAUT constructs significantly and positively impact this acceptance. Overall, these findings validate the applicability of the UTAUT model in the context of AI adoption in vocational education, aligning with foundational technology acceptance research by Venkatesh et al. (2003; 2012). The Dominant Role of Social Influence and Facilitating Conditions A standout finding of this study is that social influence (Beta = 0.285) and facilitating conditions (Beta = 0.247) exert the strongest standardized impacts on students' AI acceptance. This indicates that for vocational college students, the endorsement of peers and teachers, coupled with accessible institutional resources (like hardware, stable networks, and user-friendly software), are the most critical drivers of AI adoption. This strong reliance on external and systemic support is highly consistent with recent literature. For instance, Muhamad et al. (2025) highlighted the critical influence of technology integration and system support on virtual classroom acceptance using the UTAUT framework. Similarly, Wang (2025) found that in the context of large language models (LLMs), learners' motivation is heavily shaped by their environment. The prominent role of facilitating conditions also resonates with findings by Li and Cheng (2025), who explored college students' digital learning behaviors and the necessity of structural support. In the vocational context, where applied skills are paramount, students highly depend on the school to provide the necessary technological infrastructure to bridge the gap between AI theory and practical application. The Supportive Roles of Effort and Performance

Expectancy While significant, effort expectancy ($\text{Beta} = 0.067$) and performance expectancy ($\text{Beta} = 0.048$) demonstrated weaker predictive power compared to social and institutional factors.

Students acknowledge that AI is relatively easy to use and enhances their academic efficiency and career competitiveness, but these personal perceptions are secondary to whether they have the actual tools and social encouragement to use them. This presents an interesting nuance when compared to the traditional UTAUT model. In seminal studies (e.g., Venkatesh et al., 2003), performance expectancy is often identified as the strongest predictor of behavioral intention. However, the current study's findings suggest a contextual shift: because modern AI tools (like generative AI) are inherently designed to be user-friendly and clearly beneficial, the usefulness and ease of use are practically a given for the digital-native generation. This observation aligns with recent specific studies, such as Ma's (2024) analysis of generative AI acceptance among pre-service teachers, where the intuitive nature of modern AI shifts the adoption barrier from *Is it useful?* to *Do I have the institutional backing to use it effectively?*

Conclusion of the Discussion In summary, the results are largely consistent with the broader IT acceptance literature confirming that performance expectancy, effort expectancy, social influence, and facilitating conditions all drive technology adoption. However, the unique contribution of this study is highlighting the hierarchy of these factors within vocational colleges, demonstrating that social dynamics and tangible institutional support systems (facilitating conditions) currently outweigh individual performance expectations when integrating AI into applied educational settings.

Recommendations

This study successfully addressed its four primary research objectives by systematically examining the core factors influencing students' acceptance of artificial intelligence (AI) usage at Pingdingshan Vocational College through the UTAUT framework.

Objective 1 The empirical findings demonstrated that performance expectancy has a significant positive impact on AI acceptance ($\text{Beta} = 0.048$). This confirms that students are more likely to adopt AI when they perceive it as beneficial for enhancing their learning efficiency, academic performance, and future career competitiveness.

Objective 2 The study found that effort expectancy significantly and positively impacts acceptance ($\text{Beta} = 0.067$). This indicates that the perceived ease of learning and applying AI tools plays a supportive role in encouraging student adoption.

Addressing the third objective, results revealed that social influence has the strongest significant positive impact on AI acceptance ($\text{Beta} = 0.285$). This proves that the encouragement, endorsement, and behaviors of peers and teachers are the primary drivers shaping students' willingness to use AI.

Objective 4 Finally, facilitating conditions were shown to significantly and positively impact acceptance ($\text{Beta} = 0.247$). This underscores that tangible institutional resources—such as accessible hardware, reliable networks, and user-friendly software—are critical prerequisites for actual AI adoption.

The results confirm that students' AI acceptance is shaped by an integrated interaction of personal perceptions and external support systems. However, the findings highlight a distinct hierarchy within the vocational education context: external factors (social influence and facilitating conditions) exert a markedly stronger effect on acceptance than internal personal perceptions (effort and performance expectancies). This suggests that while vocational students readily recognize AI's usefulness and ease of use, their actual acceptance is predominantly governed by the social dynamics of their learning environment and the concrete technical infrastructure provided by the institution.

References

- Chen, X. (2024). Exploration of secondary vocational mathematics teaching strategies under the background of core competencies. *Road to Success*, 13(22), 81–84.
- Fang, X., Zhang, X. H., & Li, L. (2018). Influencing factors of teachers' behavioral intention on the STEM online education platform: A survey based on the Wise platform of South China Normal University. *Open Education Research*, 17(3), 59–67.
- Feng, J. B., Zhang, G. L., Jin, S. Z. (2022). Research on countermeasures for improving the virtual experimental teaching ability of primary and secondary school teachers: Based on technology acceptance assessment. *China Educational Technology*, 3(7), 120–126.
- Jiang, L. P., Xie, C. B., Jia, Q. S. (2023). Empowerment, transformation, and reform: Analysis of the “digitalization” theme of the winning achievements of the 2022 National Teaching Achievement Awards in vocational education. *China Vocational and Technical Education*, 9(26), 65–74.
- Li, H. X., Zhao, C. L., Jiang, Z. H. (2017). Influencing factors of preschool teachers' acceptance of information-based teaching: An empirical analysis based on the UTAUT model. *Research in Preschool Education*, 5(4), 14–25.
- Li, R. J., & Cheng, J. J. (2025). Influencing factors of college students' digital and intelligent technology learning behavior: Also discussing the moderating effect of overconfidence. *Continuing Education Research*, 15(2), 106–112.
- Li, Z. W., Ma, X. L., Gao, X. (2022). Structural analysis of specialized code preference, technology acceptance, and online English learning engagement. *Foreign Languages Research*, 24(5), 63–70.
- Ma, M. Q. (2024). Research on the acceptance and influencing factors of pre-service English teachers toward generative artificial intelligence: A qualitative analysis based on the UTAUT model. *Foreign Language Education in China*, 3(4), 67–73.
- Muhamad, W., Suhardi, K., & Bandung, Y. (2025). Evaluation of technology integration's influence on the virtual classroom service system acceptance using the UTAUT framework. *Journal of Computers in Education*, 3(11), 1–29.
- Venkatesh D., Davis G. B, Viswanath R. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 2(4), 425 - 478.
- Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the Unified Theory of Acceptance and Use of Technology. *MIS Quarterly*, 2(1), 157–178.
- Wan, L. Y., & Zhao, C. L. (2016). Research on the influencing factors of information technology adoption and use among primary and secondary school students in ethnic minority areas based on the UTAUT model. *Modern Distance Education*, 17(2), 70–75.
- Wang, Q. (2025). EFL learners' motivation and acceptance of using large language models in English academic writing: An extension of the UTAUT model. *Frontiers in Psychology*, 15(10), 15-18.
- Wang, Y. B., Wan, K., & Ren, Y. Q. (2019). Research on the influencing factors of primary and secondary school teachers' acceptance of robot education. *E-Education Research*, 17(6), 105–111.
- Zhang, H. Y., Qian, D. M., & Ren, Y. Q. (2015). Promoting the teaching application of electronic schoolbags: An empirical study on student acceptance. *Education Research*, 6(10), 92–97.