Journal of Language and Cultural Education, 2024, *12*(3)
ISSN 1339-4584

sciendo

DOI: 10.2478/jolace-2024-0014

Exploring undergraduate students' general attitudes towards Artificial Intelligence: A perspective from Vietnam

Le Minh Tien
Ho Chi Minh City Open University, Vietnam
tien.lm@ou.edu.vn

Abstract

Undergraduate students' attitudes towards Artificial Intelligence (AI) in developing countries like Vietnam are rarely explored despite AI's increasing presence in higher education. This study aims to investigate the attitudes of undergraduate students towards AI. A quantitative research method was used, involving a self-reported survey questionnaire. The sample consisted of 460 undergraduate students (196 males and 264 females) from five public and private universities in Ho Chi Minh City, Vietnam. Data collection took place through a cross-sectional survey in November and December 2023. The General Attitudes Towards Artificial Intelligence Scale (GAAIS), originally developed and validated in English by Schepman and Rodway (2020), was adapted to Vietnamese for this study. The scale comprised 20 items to evaluate students' attitudes towards AI. Data analysis included descriptive statistics, Cronbach's alpha coefficient, t-tests, and one-way Analysis of Variance (ANOVA). The results indicated a Cronbach's Alpha value of 0.705 for the total variable, demonstrating acceptable reliability. Consequently, Vietnamese undergraduate students displayed moderately positive attitudes towards AI. The findings also revealed no significant difference in attitudes based on gender, but there was a notable variation based on the student's year of study at university.

Key words: Artificial Intelligence, attitudes, perception, validation study, undergraduate student, Vietnam

Introduction

Artificial Intelligence (AI) stands at the forefront of technological advancement, profoundly reshaping industries, societies, and human interactions. AI, broadly defined as the simulation of human intelligence in machines, encompasses a spectrum of technologies that enable machines to learn, reason, and perform tasks typically requiring human cognition. At its core, AI leverages algorithms and data to mimic cognitive functions like problem-solving, decision-making, and language understanding. Furthermore, AI's applications are extensive and varied, encompassing sectors like healthcare, finance, transportation, entertainment, and education. AI is reshaping learning experiences by personalising them, improving administrative efficiency, and empowering educators to support student success. AI is vital in helping students collect information, make real-life decisions, solve problems, and improve their skills in various subject areas (Chen et al., 2023). According to An et al. (2023), AI could also change people's fundamental understanding and practices of teaching and learning. However, individuals may differ in their evaluation of the opportunities and risks associated with AI, leading to different attitudes towards it (Shank et al., 2019). Therefore, understanding public attitudes towards AI is crucial for its integration and acceptance.

To date, numerous investigations have examined individuals' perspectives on AI. For instance, Kim and Lee (2020) conducted a study involving 481 high school students in Korea. They discovered that students' attitudes towards AI were linked to their academic performance and experiences with AI. Specifically, students who had direct or indirect experiences with AI and used it more frequently exhibited more favourable attitudes than those lacking such experiences. According to Yüzbaşıoğlu (2020), most Turkish dental students were familiar with AI but had limited knowledge about its operational principles. Park and Woo (2022) demonstrated through a survey of 1,530 South Korean adults that individuals' personality traits influenced attitudes towards AI. Another study by Kwak et al. (2022) involving 189 nursing students in Gyeonggi-do, Korea, revealed that positive attitudes towards AI impacted students' intentions to use AI-based technologies. Surveys among medical students showed diverse attitudes towards AI in radiology, with optimism and apprehension regarding AI's role in medical diagnostics (Pinto dos Santos et al., 2019; Sami et al., 2023). Moreover, Abid et al. (2019) also conducted a study in Pakistan, which revealed that undergraduate medical students had a positive attitude towards AI inclusion in medical education. Another study in Saudi Arabia showed that teachers and students have positive perceptions of artificial intelligence, viewing it as

beneficial for enhancing English language learning and addressing the limitations of traditional teaching (Aljohani, 2021).

Similarly, research on dermatologists' attitudes displayed a mix of excitement and doubt concerning AI's potential in dermatology practice (Polesie et al., 2020). Sindermann et al. (2021) explored attitudes towards AI across various cultures by introducing a brief assessment in German, Chinese, and English, highlighting how cultural elements influence perceptions of AI. A study on first-year nursing students in Croatia indicated slightly positive attitudes towards AI in nursing (Lukic et al., 2023). A recent investigation in China revealed a significant gap in understanding AI among nursing students and healthcare practitioners, despite an overall favourable disposition towards its integration in healthcare settings (Wang et al., 2024). In addition, Mousavi Baigi et al. (2023) found in a systematic review that healthcare students had a positive attitude towards AI in medicine, although lacking the necessary knowledge and skills. Similarly, Aljohani (2021) investigated the opinions and attitudes of EFL teachers and students in Saudi Arabia. The results of this study showed that the respondents had a positive attitude towards using AI in learning English as a foreign language. Conversely, other studies showed that students generally held negative or neutral attitudes towards AI technology (Sheela, 2022; Cruz et al., 2023).

Based on the literature review, the existing research on attitudes towards AI is relatively prosperous, which provides a sound basis for this study. However, the existing literature mainly focuses on Western contexts, so further research on students' attitudes towards AI in local contexts is needed. Therefore, the present study aims to investigate undergraduate students' attitudes towards AI in the Vietnamese context.

Objectives

This study aims to investigate the general attitudes towards AI among undergraduate students. To achieve this purpose, the following questions were formulated:

- What are the general undergraduate students' attitudes towards AI?
- What are some factors associated with undergraduate students' attitudes towards AI?

Methods

Research Design

The current study's design was a quantitative cross-sectional, and the sampling technique was convenience sampling. Data was gathered through a one-time self-administered questionnaire.

Participants

A total of 460 undergraduate students from five private and public universities in Ho Chi Minh City, Vietnam, participated in the present study. Among these participants, 42.6 per cent (n = 196) were male, while 57.4 per cent (n = 264) were female. The ages of the participants ranged from 18 to 23 years, with a mean age of 19.64 years (SD = 1.101). Regarding the academic year of study, 20.0 per cent (n = 92) were first-year students (first year), 40.4 per cent (n = 186) were sophomores (second year), 25.7 per cent (n = 118) were juniors (third year), and 13.9 per cent (n = 64) were seniors (fourth year). Participants came from different fields of study, including foreign languages, social sciences and humanities, economics, natural sciences, and computer sciences. Most participants (96.5 per cent) reported regularly utilising AI technology for various purposes. The demographic characteristics of the respondents are presented in Table 1.

Table 1. Demographic characteristics of the study participants (N = 460)

Variables	Frequency	Percentage
Gender		
Male	196	42.6
Female	264	57.4
Academic Year		
Freshman	92	20.0
Sophomore	186	40.4
Junior	118	25.7
Senior	64	13.9
Majors		
Foreign language	65	14.1
Social sciences & humanities	165	39.5
Economics	106	23.0
Natural sciences	63	13.7
Computer sciences	61	13.3

Using Artificial Intelligence		
Yes	444	96.5
No	16	3.5
Age		
Mean	19.64	
Standard deviation (SD)	1.101	
Purpose of using AI * (n = 1,185)		
Learning	382	32.2
Entertainment	255	21.5
Working	265	22.4
Health care	79	6.7
Translation	201	17.0
Other	3	0.3

** Multiple responses*

Instruments

A survey questionnaire was used in this study to collect data. The sample included 460 students from private and public universities in Ho Chi Minh City, Vietnam, selected through convenience sampling. To ensure reliable data, the researcher visited universities in Ho Chi Minh City (Open University, Ton Duc Thang University, Sai Gon University, University of Economics, and University of Education) to distribute and collect the questionnaires between November 20 and December 5, 2023. Participants were assured of the confidentiality of their responses. Each participant took approximately 10 minutes to complete the survey. The questionnaire consisted of two sections: the first gathered demographic information of the undergraduate students, such as gender, age, academic year, and AI usage; the second included the General Attitudes Towards Artificial Intelligence Scale (GAAIS), originally developed and validated in English by Schepman and Rodway (2020) and adapted for validation in Vietnamese in this study.

The scale consisted of 20 items assessing undergraduate students' attitudes towards AI, including two subscales: positive attitudes towards AI (12 items) and negative attitudes towards AI (8 items). The items were scored using a five-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). In the original version of GAAIS, the scale demonstrated high internal consistency reliability, with a Cronbach's Alpha coefficient (α) of 0.88 for positive attitudes towards AI and α = 0.83 for negative attitudes towards AI (Schepman and Rodway, 2020).

Data analysis

Statistical Package for Social Sciences (SPSS) program version 25.0 entered and analysed the data obtained. Descriptive statistics were used to analyse demographic data from the questionnaire. Cronbach's alpha coefficient (α) was used to measure internal consistency reliability for the entire GAAIS. Inter-group comparisons (male/female; freshmen/sophomores/juniors/seniors) were made using independent t-test or analysis of variance (ANOVA).

Results and discussion

The primary objective of the current study was to adapt the GAAIS to Vietnamese and investigate its validity and reliability in an undergraduate student sample in Vietnam. Cronbach's α coefficient, a reliability measure, is commonly used in social science research to evaluate a scale's internal consistency and content validity, including its subscales. A Cronbach's α value below 0.6 is considered poor, 0.60 to 0.70 is acceptable, 0.70 to 0.80 is good, 0.80 to 0.90 is excellent, 0.90 to 0.95 is somewhat high, and 0.95 and above is too high. In social sciences, a Cronbach's α of 0.60 is deemed acceptable (Shemwell et al., 2015; Hair et al., 2017; Tien, 2022).

Previous studies have shown that the GAAIS has satisfactory internal consistency reliability. Schepman and Rodway (2020, 2022) reported Cronbach's α values of 0.88 and 0.85 for the positive GAAIS (12 items) and 0.83 and 0.82 for the negative GAAIS (8 items), respectively. Similarly, in a Turkish sample, Kaya et al. (2022) found Cronbach's α values of 0.82 for the positive GAAIS and 0.84 for the negative GAAIS. Seo and Ahn (2022) revealed Cronbach's α values of 0.86 (positive) and 0.74 (negative) for the Korean version of the GAAIS. Another study found Cronbach's α values of 0.85 for the positive subscale and 0.80 for the negative subscale (Darda et al., 2023). In a study by Kwak et al. (2022), Cronbach's α values for positive and negative attitudes towards AI were 0.85 and 0.76, respectively. In the current study, the Cronbach α value for the total variable was 0.705 (comprising 20 items), with Cronbach α values of 0.748 and 0.695 for positive and negative attitudes towards AI, respectively. Despite being slightly lower than previous studies, the reliability coefficient of this study is still considered satisfactory. The

Vietnamese version of GAAIS exhibited similar Cronbach α values to prior research, with the positive GAAIS showing a higher reliability coefficient than the negative GAAIS.

Furthermore, this study found very similar means to previous studies, where means for the positive GAAIS were higher than those for the negative GAAIS (Schepman & Rodway, 2020, 2022; Kaya et al., 2022). Additionally, the Kaiser-Meyer-Olkin measure (KMO) analysis result was 0.773. The significance test related to the Chi-square statistic value of Bartlett's test of sphericity was 0.000 ($\chi 2$ = 1,655.86, df = 190, p = .000). The results of Cronbach's α and the descriptive characteristics (mean, standard deviation, skewness, and kurtosis) of the scale are presented in Table 2.

Table 2. Descriptive statistics and Cronbach's α of the GAAIS

Subscales	Item	Mean ± SD	Skewness	Kurtosis	Cronbach's α
Positive		**3.43±0.58**	**-0.20**	**0.124**	**0.748**
	1. For routine transactions, I would rather interact with an artificially intelligent system than with a human	2.74±1.30	0.244	-1.02	0.748
	2. Artificial Intelligence can provide new economic opportunities for this country	3.77±1.01	-0.872	0.507	0.734
	3. Artificially intelligent systems can help people feel happier	3.26±1.12	-0.386	-0.358	0.729
	4. I am impressed by what Artificial Intelligence can do	3.93±0.98	-0.728	0.045	0.732
	5. I am interested in using artificially intelligent systems in my daily life	3.51±1.08	-0.567	-0.206	0.727
	6. Artificial Intelligence can have positive impacts on people's wellbeing	3.59±1.10	-0.644	-0.109	0.720
	7. Artificial Intelligence is exciting/	3.81±1.12	-0.909	0.252	0.732
	8. An artificially intelligent agent would be better than an employee in many routine jobs	2.89±1.25	0.079	-0.939	0.739
	9. There are many beneficial applications of Artificial Intelligence	3.83±1.03	-0.941	0.569	0.719
	10. Artificially intelligent systems can perform better than humans	2.88±1.20	-0.004	-0.823	0.737
	11. Much of society will benefit from a future full of Artificial Intelligence	3.41±1.11	-0.406	-0.371	0.739
	12. I would like to use Artificial Intelligence in my own job	3.58±1.12	-0.622	-0.211	0.718
Negative		**2.99±0.68**	**0.139**	**0.025**	**0.695**
	13. Organisations use Artificial Intelligence unethically	3.55±1.15	-0.601	-0.349	0.723
	14. I think artificially intelligent systems make many errors	3.37±1.09	-0.365	-0.445	0.689
	15. I find Artificial Intelligence sinister	2.73±1.19	0.207	-0.849	0.675
	16. Artificial Intelligence might take control of people	2.99±1.26	-0.090	-0.996	0.640
	17. I think Artificial Intelligence is dangerous	3.00±1.19	0.043	-0.743	0.634
	18. I shiver with discomfort when I think about future uses of Artificial Intelligence	2.53±1.32	1.448	7.456	0.655
	19. People like me will suffer if Artificial Intelligence is used more and more	2.68±1.26	0.214	-1.005	0.643
	20. Artificial Intelligence is used to spy on people	3.07±1.23	-0.165	-0.837	0.652
Overall					**0.705**

Note that negative items were reverse-scored in this analysis. Thus, higher scores on each subscale represent more positive attitudes.

In addition to analysing the scale's reliability, undergraduate students' attitudes towards AI were also analysed based on their gender and academic year in university. In this study, a t-test was utilised to compare male and female attitudes. As seen in Table 3, there were no statistically significant gaps in the attitude scores between male and

female undergraduate students. This finding is consistent with previous evidence (Kim & Lee, 2020; Kaya et al., 2022).

Table 3. Independent t-test results by gender

Subscales	Gender	N	Mean	SD	t	p
Positive	Male	196	3.39	0.576	-1,231	0.219
	Female	264	3.46	0.578		
Negative	Male	196	3.03	0.671	0.968	0.325
	Female	264	2.96	0.694		

The study did not compare students who utilised AI and those who did not use AI, as only 16 students reported not using AI technology. Across years of study, data analysis revealed a statistically significant relationship between years of research and undergraduate students' attitudes towards AI. First-year students and juniors were found to have more excellent positive attitude scores than sophomores and seniors ($p < 0.01$). However, there was no significant gap between years of study in negative attitude scores. Table 4 presents the results of the conducted ANOVA, considering the years of study. Finally, data analysis showed no significant correlation between undergraduate students' major and their attitudes towards AI.

Table 4. ANOVA results according to years of study

Subscale	Years of study	N	Mean	SD	F	p
Positive	Freshmen	92	3.52	0.538	3.84	0.010
	Sophomores	186	3.33	0.563		
	Juniors	118	3.52	0.596		
	Seniors	64	3.46	0.600		
Negative	Freshmen	92	3.03	0.658	0.571	0.634
	Sophomores	186	2.94	0.658		
	Juniors	118	3.03	0.692		
	Seniors	64	3.02	0.782		

Conclusions and limitations

Regularly assessing attitudes towards artificial intelligence is essential, considering the rapid development of these technologies and their significant influence on society. To the researcher's knowledge, no research has been conducted to explore university students' attitudes towards AI in Vietnam. Therefore, this is the first report on the attitudes of Vietnamese undergraduate students towards AI. The results revealed that undergraduate students generally had a mildly favourable view of AI. Regarding the reliability of the scale, the Vietnamese General Attitudes Towards Artificial Intelligence scale (Vietnamese GAAIS) was found to be somewhat similar to the original scale (Schepman & Rodway, 2020), confirming the validity and reliability of the scale for measuring attitudes towards AI.

There are certain limitations to the current study. Firstly, the research was exclusively conducted in Ho Chi Minh City, Vietnam. Including more diverse locations can improve the results. Secondly, the research sample was solely comprised of undergraduate students and did not encompass other demographic groups, leading to a limited sample representation. It is recommended that future studies expand the scope of survey participants to enhance the inclusivity of the study results. Additionally, the present study only used a quantitative method, and combining qualitative methods could provide a better understanding of attitudes towards AI.

In conclusion, understanding students' perceptions of AI is essential for educators, policymakers, and industry professionals aiming to address concerns, enhance education, and prepare the next generation for a future where AI plays a significant role. Despite its limitations, this study expanded scholarly understanding of university students' attitudes towards AI, particularly in the Vietnamese context.

Acknowledgement

The author expresses gratitude to the undergraduate students who participated in this study.

Conflict of interest

The author of this article declares no competing interests

Data availability

Data from the paper are stored at the Mendeley repository.

Direct URL to data: https://data.mendeley.com/datasets/57k8ntns4w/1

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