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The Impact of Artificial Intelligence (AI) on the Career Perceptions and Attitudes of University Students in Ha Noi

[1,]Nguyen Thi Tuyen, [2,]Pham Thuy Nga, [3],Nguyen Thi Hong Ngoc, [4,]Dinh Thi Phuong Thao, [5,]Nguyen Thi Thanh Hoai, [6,]Vu Thi Thanh Hang.
[1,2,3,4,5,6,]*School of Economics, Ha Noi University of Industry*

ABSTRACT: Artificial Intelligence (AI) is rapidly advancing and bringing about profound transformations in the labor market, thereby directly impacting students—the future workforce. This study aims to analyze the influence of AI-related factors, including information quality, perceived usefulness, trust, and perceived risk, on the career awareness and attitudes of students in Hanoi. Survey data were collected from 406 students studying at universities in Hanoi and analyzed using Structural Equation Modeling (SEM) through SPSS and AMOS to test the theoretical model. The results indicate that the proposed theoretical model fits the empirical data well, with all four factors exerting significant effects on the dependent variable. Notably, perceived risk (PR) is identified as the most critical factor, exerting a strong influence on students' attitudes, reflecting their cautious mindset regarding data security concerns and the potential risk of job displacement due to AI technologies. Based on these findings, the study proposes managerial implications focusing on risk management and enhancing students' information evaluation capabilities to foster positive career orientation in the digital era.

KEYWORDS: Artificial Intelligence, AI, Career Perception, Career Attitude, Students, Hanoi.

I. INTRODUCTION

Artificial Intelligence (AI) is rapidly advancing at an unprecedented pace, ushering in a new era that not only transforms production and business activities but also directly impacts the labor market and education. The emergence of generative AI tools such as ChatGPT, Gemini, and Blackbox AI has become a key factor reshaping the global occupational structure. This development poses significant challenges as well as dual opportunities for the future workforce. In Vietnam, particularly in Hanoi—the country's major economic, cultural, and educational center—the adoption and application of AI are accelerating strongly. This requires students to develop comprehensive awareness and appropriate career attitudes to adapt to an ever-changing labor market. Previous studies have mainly focused on the impact of AI on the economy and employment, while psychological and social factors—especially changes in students' career awareness and attitudes—have not been thoroughly explored. Meanwhile, studies on organizational behavior by Nguyen et al. (2025) indicate that factors such as transformational leadership, inclusive leadership, and psychological safety significantly influence employees' knowledge-sharing behavior. These findings suggest the potential application of behavioral frameworks to analyze the impact of AI on students' perceptions and attitudes. This study is conducted to quantify the level of exposure and understanding of Hanoi students regarding AI applications in their careers, as well as to analyze changes in their awareness and attitudes toward the involvement of AI tools in their respective fields. The research team selected university students in Hanoi as the study population to ensure high representativeness. As the capital city, Hanoi hosts numerous universities with diverse academic disciplines, providing a rich and comprehensive research sample. The findings not only offer deep insights into the psychology of the future workforce but also provide recommendations for young people who are uncertain about the labor market, as well as important implications for educational policymakers and universities. For these reasons, conducting the study titled "The Impact of Artificial Intelligence (AI) on the Career Awareness and Attitudes of University Students in Hanoi" is both necessary and valuable, offering significant theoretical and practical contributions.

II. THEORETICAL FRAMEWORK AND RESEARCH MODEL

Theoretical Framework

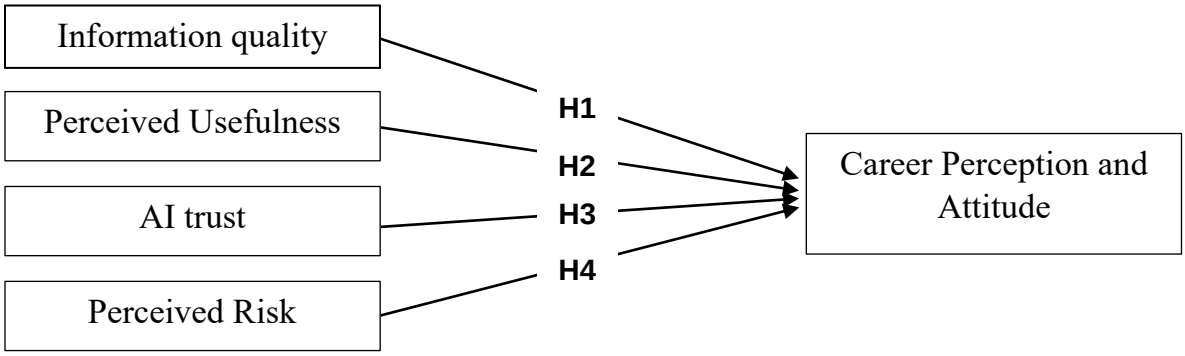
Artificial Intelligence: According to John McCarthy (2018) [1], "Artificial Intelligence is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable." Meanwhile, based on studies by IBM (2024) [2], ISO (2024) [3], and Collins (2021) [4], AI is understood in a broader sense, encompassing tools and applications that support students in learning and career development.

These include intelligent writing software, personalized learning applications, and language-based AI tools such as ChatGPT. Artificial Intelligence is not only a technological field but also a socio-academic phenomenon that profoundly impacts how individuals learn, work, and shape their careers.

Career Awareness: The article was compiled by a group of staff from the Career Awareness Division of the Institute's Education and Work [5]: "Career awareness is understood as a fundamental construct in the literature on career development and decision-making, as well as in the relationship between education and work.Career awareness focuses on exploring occupations and introducing the positions that exist within society (Muro & Kottman, 1995) [6]. According to Perry and VanZandt (2006) [7], career awareness serves as the foundation for learners to begin exploring and shaping their career choices. From the perspective of Eliason and Patrick (2008) [8], career awareness refers to an individual's understanding of available career opportunities as well as their own career needs. In addition, studies in the field of organizational behavior indicate that individual awareness is strongly influenced by the work environment and related factors such as leadership style, support, and psychological safety, thereby shaping how individuals approach information and career opportunities [9], [10], [11].It can be observed that across different stages, career awareness exhibits both a continuous developmental nature and a function of connecting information, the self, and society.

Career Attitude: According to Akkaya (2012) [12], career attitude is defined as a set of beliefs, emotions, and behavioral tendencies of an individual toward a profession, including the level of commitment, sense of responsibility, intrinsic motivation, and perspectives on professional ethics. In addition, Xu, Zhao et al. (2021) [13] argue that career attitude reflects an individual's perception of a particular profession and their psychological tendency to respond behaviorally, forming the foundation of professional ethics. It can be concluded that career attitude is both the outcome of the cognitive process and a factor that directly influences professional behavior.

Proposed Research Model: During the research process, the research team not only focused on analyzing the technological characteristics of artificial intelligence but also comprehensively considered their impact on students' cognition and professional attitudes. Based on the features of artificial intelligence AI and the synthesized theoretical foundation, the research team proposes the following research model:



H1: The quality of information provided by AI has a positive impact on students' professional awareness and attitudes.
H2: The usefulness of AI has a positive impact on students' professional awareness and attitudes.
H3: Trust in AI has a positive impact on students' professional awareness and attitudes.
H4: The level of risk from using AI has a negative impact on students' professional awareness and attitudes.

Research Method

Research Process: The research was conducted following a three-step process: (1) developing the model and hypotheses based on a theoretical review; (2) designing the questionnaire and conducting a preliminary evaluation through expert interviews; (3) collecting and processing data using quantitative methods. To test the relationship between the application of artificial intelligence (AI) and professional awareness and attitudes, the study employed a structural equation modeling (SEM) approach.

Research Design: The study's target population comprises university students in Hanoi, a demographic characterized by a high adoption rate of Artificial Intelligence (AI) applications. Data were gathered via an online survey conducted through Google Forms. Following a rigorous screening process, 406 valid responses

were retained for subsequent empirical analysis. The questionnaire was developed based on the proposed research model, using a 5-point Likert scale (1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree) with all 5 scales provided. Each concept was measured through 5 observed variables, inherited from international studies with high reliability and simultaneously adjusted to suit the student population in Vietnam.

Table 1. Research scale

Variable	Symbol	Number of observed variables	Reference source
Information quality	IQ	5	Du Thi Chung (2024)
Perceived Usefulness	PU	5	Sandeep Singh (2024) Réka Koteczki (2024) Du Thi Chung (2024) Ayatulloh Michael Musyaffi (2024) Muhammad Furqon Nugroho Putro (2025)
Trust	TR	5	Sandeep Singh (2024) Nicole Gillespie (2025) Muhammad Furqon Nugroho Putro (2025)
Perceived Risk	PR	5	Sandeep Singh (2024) Ayatulloh Michael Musyaffi (2024) Nicole Gillespie (2025)
Career Perception and Attitude	CPA	5	Nurul Sukma Lestari (2021) Di Zang (2025) Ishfaq Ahmed (2025)

Source: Compiled by the author group

This scale was developed in the research to test reliability, conduct factor analysis, and validate the SEM model.

Data Analysis: The data processing procedure is implemented in four main steps: Reliability testing of the scale using Cronbach's Alpha coefficient; Exploratory Factor Analysis (EFA) to identify the factor structure; Confirmatory Factor Analysis (CFA) is conducted to assess the fit of the measurement model; Structural Equation Modeling (SEM) is applied to determine whether the theoretical model fits the actual data.

III. RESEARCH RESULTS AND DISCUSSION

Reliability Test and Exploratory Factor Analysis (EFA)

After conducting the Cronbach's Alpha reliability test with a sample size of 406, the research team obtained the following results:

Table 2. Reliability test and factor loading

Construct	Cronbach's Alpha	Measurement Items		Conclusion	Factor Loading
Information Quality	0.925	Information provided by AI has high accuracy	IQ1	Scale is reliable	0,704
		AI provides up-to-date information relevant to industry trends	IQ2		0,723
		AI's answers are clear, logical, and easy to apply in practice	IQ3		0,743
		Information from AI helps me effectively synthesize knowledge from various sources	IQ4		0,725

Construct	Cronbach's Alpha	Measurement Items		Conclusion	Factor Loading
		AI is a reliable reference source for learning	IQ5		0,686
Perceived Usefulness	0.913	AI helps me save time in studying and research	PU1	Scale is reliable	0,681
		AI supports me in thinking more logically when solving problems	PU2		0,727
		AI is an essential tool helping me handle professional tasks	PU3		0,787
		AI expands my knowledge beyond the curriculum	PU4		0,730
		AI helps me enhance my creativity in studying and research	PU5		0,701
Trust	0.902	I believe AI provides objective and unbiased feedback	TR1	Scale is reliable	0,662
		I feel secure using AI for learning tasks or processing important information	TR2		0,711
		I trust AI's ability to analyze and synthesize data	TR3		0,717
		AI is a necessary support tool in my study and work	TR4		0,632
		I believe using AI is beneficial for my future career development	TR5		0,655
Perceived Risk	0.909	Results generated by AI need to be verified before use	PR1	Scale is reliable	0,739
		Using AI poses a risk of personal data leakage	PR2		0,771
		Using AI can lead to plagiarism or academic integrity violations	PR3		0,762
		Relying on AI diminishes my independent thinking ability	PR4		0,758
		AI could replace human labor in professional fields	PR5		0,726
Career Perception and Attitude	0.915	I feel my work performance increases when applying AI	CPA1	Scale is reliable	0.870
		The results of my assignments, reports, and work improve with AI support	CPA2		0.870
		AI helps me save time to focus on more important tasks	CPA3		0.870
		AI helps me detect and minimize errors during work	CPA4		0.864
		hanks to AI, I do not have to handle too	CPA5		0.847

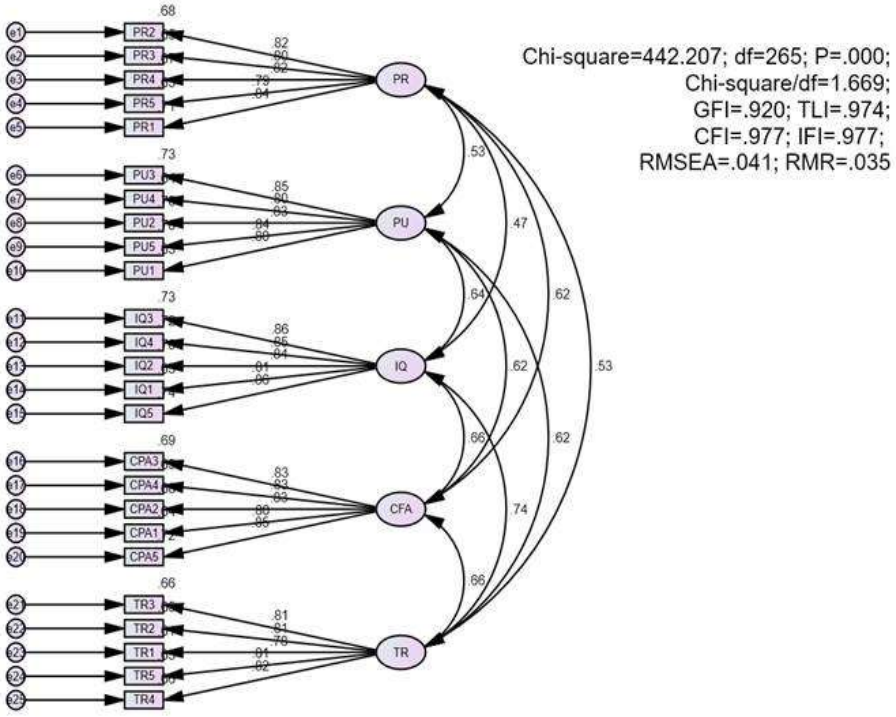
Construct	Cronbach's	Measurement Items		Conclusion	Factor
		many repetitive operations			

Source: Compiled by the research team

The reliability test using Cronbach's Alpha shows that the Alpha coefficients range from 0.902 to 0.925, and the Corrected Item-Total Correlation of all observed variables in the scales is greater than 0.3. The research team confirms that the scales used in the study all achieve high reliability, ensuring internal consistency, and can be further used in in-depth analyses such as Exploratory Factor Analysis (EFA). The EFA analysis indicates that the data is appropriate for the research model (KMO = 0.954; Sig. = 0.000). Four factors were extracted corresponding to the theoretical variables; all observed variables have Eigenvalues greater than 1, and the cumulative variance extracted reaches 68.509%, demonstrating that the scales possess good convergent and discriminant validity.

Confirmatory Factor Analysis (CFA)

Figure 1. CFA Model

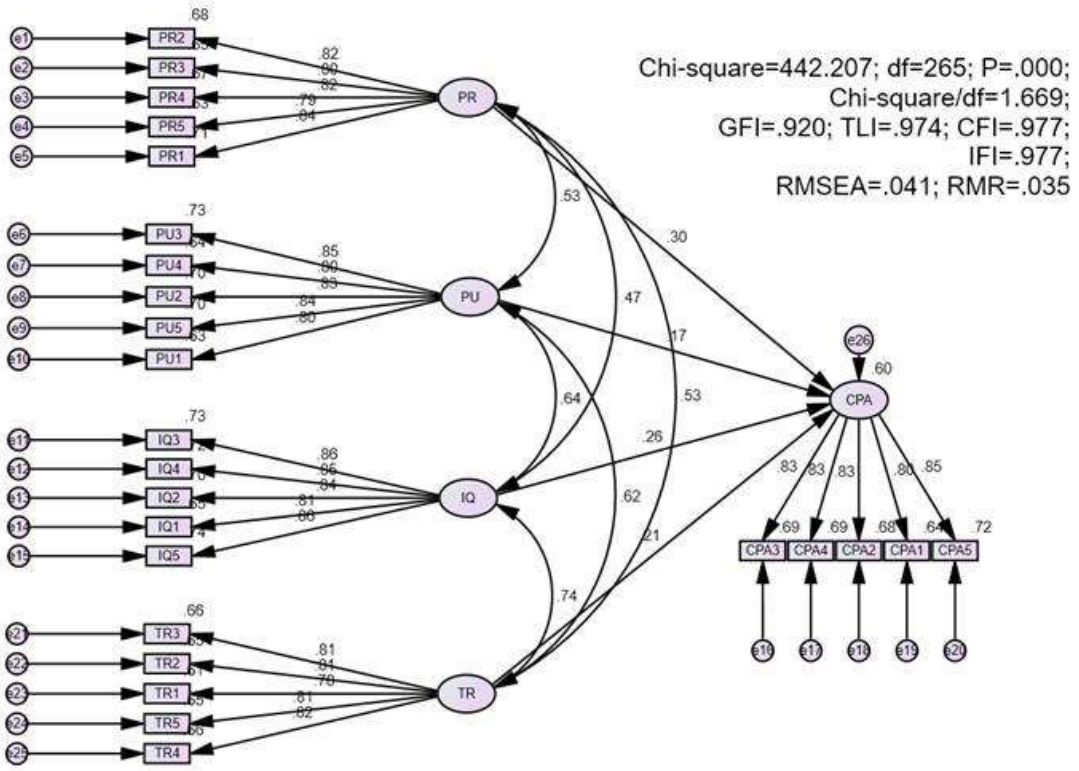


Source: Compiled by the authors based on research results

The results of the Confirmatory Factor Analysis (CFA) show that the standardized measurement model has 159 degrees of freedom. The model fit indices meet the requirements, with Chi-square/df = 1.669 < 3, TLI = 0.974 > 0.8, CFI = 0.977 > 0.9, GFI = 0.920 > 0.8, IFI = 0.977 > 0.9, RMSEA = 0.041 < 0.08, and RMR = 0.035 < 0.5. Thus, the CFA results ensure the necessary level of significance, and the reliability of the scales is confirmed. The unidimensionality of the scales was verified through two analytical steps: EFA and CFA. The EFA results show that all observed variables converge to their expected factors with Factor Loadings greater than 0.5 and have clear discriminant validity, with no high cross-loading between factors. The CFA results reaffirm unidimensionality as the finalized measurement model exhibits excellent model fit indices (Chi-square/df = 1.669 < 3; CFI = 0.977 > 0.9; RMSEA = 0.041 < 0.08). The standardized regression weights of the scales are all high and statistically significant, proving that the observed variables reflect well and tightly converge on the single latent construct they measure.

Structural Equation Modeling Analysis

Figure 2. Structural Equation Modeling (SEM) Model



Source: Compiled by the authors based on research results

The structural model yields the following fit indices: Chi-square/df = 1.669 < 3, TLI = 0.974 > 0.8, CFI = 0.977 > 0.9, GFI = 0.920 > 0.8, IFI = 0.977 > 0.9, with RMSEA = 0.041 < 0.08 and RMR = 0.035 < 0.08. All indices meet the required thresholds. Therefore, the model demonstrates a good fit.

Structural Equation Modeling (SEM) Results

Table 3. Results of Hypothesis Testing in the Structural Model (SEM)

Hypothesis	Relationship	Unstandardized Estimate (β)	Standardized Estimate (β)	S.E.	C.R. (t-value)	P-value	Conclusion
H1	IQ => CPA	0.256	0.257	0.065	3.952	<0.001	Supported
H2	PU => CPA	0.175	0.169	0.058	3.018	0.03	Supported
H3	TR => CPA	0.208	0.210	0.066	3.139	0.002	Supported
H4	PR => CPA	0.291	0.296	0.049	5.926	<0.001	Supported

Source: Compiled by the authors based on research results

The research team conducted Structural Equation Modeling (SEM) to determine the relationships between the factors.The regression parameter estimates (Table 3) indicate that all four proposed hypotheses are statistically

significant (p-value < 0.05). Perceived Risk (PR) exerts the strongest impact on students' career perceptions and attitudes, evidenced by the highest standardized regression weight (β = 0.296; p < 0.001). This suggests that a higher perception of risk corresponds to a greater tendency among students to be concerned and significantly alter their career attitudes (leaning toward caution or more thorough preparation). Information Quality (IQ) has the second-strongest impact (β = 0.257; p < 0.001), confirming that accurate and reliable information from AI is a pivotal factor in shaping students' perceptions. Trust (TR) plays the third most important role (β = 0.210; p = 0.002). Perceived Usefulness (PU) exhibits a positive but the weakest impact among the factors (β = 0.169; p = 0.003). Furthermore, the analysis of the model's explanatory power reveals that the Squared Multiple Correlations (R^2) value for the dependent variable "Career Perceptions and Attitudes" is 0.597. This implies that the four factors in the model (risk, quality, trust, usefulness) collectively explain 59.7% of the variance in the career perceptions and attitudes of Hanoi university students.

Discussion of Research Findings : The analytical results indicate that the proposed research model demonstrates a good fit with the empirical data, and the measurement scales achieve satisfactory reliability and validity. All proposed hypotheses were empirically tested and supported, clearly reflecting the influence of artificial intelligence (AI) characteristics on students' career perceptions and attitudes. Specifically, the findings reveal that Perceived Risk (PR) plays the most pivotal role, exerting a dominant influence on students' attitudes. This aligns with existing perspectives on digital caution, as students become increasingly sensitive to issues related to data security, misinformation, and the potential risk of technological displacement. In addition, Information Quality (IQ) and Trust (TR) are identified as critical drivers that foster positive attitudes. Within the context of AI, this research underscores that perceived risk and information quality are the primary determinants for university students in Hanoi. This implies that, to enhance positive career attitudes in the digital era, risk management and ensuring information accuracy should be prioritized over solely exploiting the functional advantages of technology.Overall, these findings not only validate the applicability of the theoretical model within educational and vocational contexts but also elucidate the multidimensional impact mechanisms of AI, providing educational administrators with more concrete insights for guiding students.

IV. CONCLUSION AND RECOMMENDATIONS

The study indicates that factors related to artificial intelligence (AI) - including information quality, perceived usefulness of information, trust in information, and perceived risk of information - all influence students' career awareness and professional attitudes in Hanoi. Among these, perceived information risk (PR) emerges as the most critical factor, exerting the strongest influence on students' attitudes. This reflects students' cautious mindset regarding issues such as data security, misinformation, and the potential risk of being replaced by technology. Based on the research findings, several recommendations are proposed to enhance students' awareness and foster more positive professional attitudes in the digital era: Given that perceived information risk is the most decisive factor, educational administrators and relevant stakeholders should prioritize addressing students' concerns about information security and the risk of technological displacement. It is necessary to develop protective mechanisms and provide guidance to help students identify and manage risks when interacting with technology. Rather than focusing solely on leveraging the useful features of technology, priority should be given to ensuring the accuracy and quality of AI-generated information. This will help strengthen trust (TR) and perceived information quality (IQ), thereby promoting more positive student attitudes.

Educational administrators need to adopt a more comprehensive understanding of the multidimensional impacts of AI in order to effectively guide students. Training programs should integrate content that enables students not only to use AI effectively but also to understand its limitations and risks, thereby avoiding confusion or overdependence on technology.Students need to cultivate the habit of verifying the sources and authenticity of AI-generated information, rather than placing absolute trust in readily available results. They should also enhance their awareness of cybersecurity when interacting with AI platforms to avoid risks related to personal data protection. AI should be used as a supportive tool for reference, while individual critical thinking must be applied to filter and cross-check information with reliable sources to ensure "Information Quality (IQ)" and "Trust (TR)." Students also need to recognize the multidimensional impact of AI on career orientation. Instead of fearing AI, they should focus on developing skills that are difficult for AI to replace (such as emotional intelligence, creativity, and complex problem-solving). Understanding how AI works will enable students to master the technology and turn it into a powerful assistant rather than a competitor in their future careers.

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