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INTENTION TO USE AI IN ECONOMICS LEARNING: THE ROLE OF AI LITERACY AND ATTITUDE TOWARD AI

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Abstract: *The swift progress of intelligent technologies has modified how learning is delivered, including the way economics is taught and learned in senior high schools. However, students' willingness to use AI depends not only on whether they have access to technology but also on their understanding of AI and their feelings about it. This study looks at how AI literacy affects students' desire to use AI in economics learning, while also looking at how their attitude toward AI plays a role in this process. A quantitative method was employed, involving 170 students from SMA Negeri 4 Surabaya. Data was gathered through a multiple-choice questionnaire, and the results were analyzed using WarpPLS 8.0 with Partial Least Squares Structural Equation Modelling (PLS-SEM). The data suggest learners' views toward and desire to employ AI are positively impacted by AI literacy. Furthermore, students' attitudes regarding AI have an impact on their intention to utilise it, which contributes to the explanation of the connection between AI literacy and students' willingness to use AI to learn economics. These findings show how important it is to improve students' understanding of AI and help them form thoughtful, caring, and positive attitudes towards using AI in education. This study contributes to the literature by demonstrating that students' attitudes toward AI play a crucial mediating role between AI literacy and intention to use AI in economics learning. The findings also provide practical implications for educators by highlighting that AI literacy programs should be integrated with activities that foster positive attitudes and responsible AI use rather than focusing solely on technical knowledge.*

Keywords: Artificial Intelligence Literacy; Attitude toward AI; Intention to Use AI; Economics Learning; Technology Acceptance Model.

INTRODUCTION

The flourishing presence of Artificial Intelligence tools has created a major transformation in educational practice (Babu et al., 2025) AI applications are now used to support information retrieval, writing, feedback, tutoring, assessment, and learning management (Wang et al., 2024).). Adoption of AI has increased in learning, teaching, evaluation, and educational administration, according to recent studies. (Salendab et al., 2025). Other than using AI tools, students now also need to know how AI generates information, evaluate the quality of that information, and use it according to ethical principles (Fan & Zhang, 2024).

Although Artificial Intelligence has become increasingly accessible to students, its educational benefits cannot be fully realized if students lack the intention to use AI appropriately in learning activities (Southworth, Migliaccio, Glover, Net, et al., 2023). Students who aren't very interested in using AI might use it just to finish their assignments, but they don't really learn the material, hesitate to use AI because of concerns about its reliability, or avoid it altogether (Salendab et al., 2025) .This condition indicates that strengthening students' intention to use AI has become an important issue to ensure that AI supports meaningful and responsible learning in economics education (Arseven & Bal, 2025)

In economics education, AI provides students with various learning opportunities, including understanding complex economic concepts, exploring real-world economic cases, analysing data-driven problems, and developing alternative perspectives in policy discussions (Katsantonis & Katsantonis, 2024). Nevertheless, AI may also create risks if students rely on AI-generated answers without verifying accuracy, evaluating source credibility, or understanding the limitations of algorithmic systems. These concerns are consistent with studies highlighting hallucination, overreliance, bias, transparency, explainability, and ethical issues in educational AI (Bewersdorff et al., 2025). Therefore, the adoption AI for economic teaching should be guided by literacy and attitude formation rather than

merely technological access (Salendab et al., 2025).

Initial observations at SMAN 4 Surabaya show that students are beginning to use AI apps like ChatGPT as part of their learning. However, their ability to assess information from AI critically and their readiness to use AI responsibly in economics lessons hasn't kept up. Thus, AI literacy, attitudes toward AI, and students' intention to use AI in economics learning must be examined.

Attitude toward AI is an important psychological construct in technology acceptance research because it reflects individuals' overall evaluation of AI and influences their behavioral intention to use the technology (Ginting & Faizi, 2025). Technology acceptance studies consistently identify attitude, perceived usefulness, trust, explainability, and user confidence as important determinants of behavioral intention. In educational settings, students who develop positive attitudes toward AI are more likely to integrate AI into their learning activities, whereas negative evaluations may reduce their willingness to use AI (Shin, 2021). Therefore, Attitude toward AI is expected to mediate the relationship between Artificial Intelligence Literacy and Intention to Use AI in Economics Learning(Akgun, 2021).

Previous studies have extensively examined Artificial Intelligence (AI) literacy, AI ethics, AI-supported learning, and technology acceptance across various educational contexts (Seo et al., 2021). More recent research has expanded to AI literacy frameworks, AI curriculum development, students' acceptance of generative AI, teachers' readiness to integrate AI, and AI governance in education (Barrett & Pack, 2023) (Bearman & Ajjawi, 2023). However, most existing studies focus on higher education or general educational settings and primarily investigate the direct relationship between AI literacy and technology acceptance (Katsantonis & Katsantonis, 2024). Limited attention has been given to senior high school students, particularly within economics education, where Attitude toward AI may function as a psychological mechanism linking Artificial Intelligence Literacy to students' Intention to Use AI. Consequently, empirical evidence explaining this mediating relationship remains limited. Addressing this gap, the present study investigates the mediating role of Attitude toward AI in the relationship between Artificial Intelligence Literacy and Intention to Use AI among senior high school students in economics learning.

To illustrate the relevance of this research gap in the economics education context, Preliminary observations at SMAN 4 Surabaya indicated that many students had begun using Artificial Intelligence (AI) applications, such as ChatGPT, to aid in the study of economics. However, students' levels of artificial intelligence literacy varied, especially when it came to comprehending AI ideas, critically assessing information produced by AI, and utilising AI ethically. Students' opinions on AI varied as well; some saw it as a useful educational tool, while others voiced scepticism due to concerns about its accuracy and potential ethical issues. The different intentions of students in using AI for economics learning show that AI literacy and their attitude towards AI may be connected, and this connection needs to be studied more closely.

RESEARCH METHODOLOGY

A quantitative method was used to look at how AI literacy, attitude toward AI, and the intention to use AI in economics are connected. The study also checked if attitude toward AI plays a mediating role in these relationships. Moreover, quantitative analysis is an appropriate method for examining theoretical relationships among educational technology constructs, particularly those related to technology acceptance, attitudes, and behavioral intentions (Hair & Alamer, 2022).

Table 1. Population and Sample Distribution

Grade	Number of Classes	Population
X	4	**140**
XI	4	**140**
Total	8	**280**

In this study, 170 students participated. This number is greater than the required minimum sample size, which was calculated with a 5% error margin using the Slovin algorithm. 280 students from grades X and XI at SMAN 4 Surabaya made up the study's total population.

A structured questionnaire with closed-ended questions is used as a tool to collect research data. Based on earlier research, the idea of artificial intelligence literacy is defined as a person's capacity to comprehend AI concepts, employ AI technology, critically evaluate information produced by AI, and take ethical considerations into account while using AI. (Laupichler et al., 2022; Ng et al., 2021; Southworth, Migliaccio, Glover, Glover, et al., 2023). Drawing on earlier studies on attitudes and trust in AI technology, the Attitude toward AI construct was created to encompass the cognitive, emotive, and behavioural components of people's assessments of AI. In the meanwhile, research on technology acceptability and intention to continue in AI-supported learning settings was used to develop the Intention to Use AI construct (Strzelecki, 2023; Tlili et al., 2023). Each problem was rated on a

five-point Likert scale from "strongly disagree" to " each issue" (Chiu, Xia, Zhou, Chai, et al., 2023).

Table 2. Instrumen

No	Variable	Questionnaire Indicators
1	Artificial Intelligence Literacy *(Fan & Zhang, 2024 – Heliyon)*	• Understanding the main concepts and features of Artificial Intelligence. • The accuracy and trustworthiness of information created by AI can be properly assessed. • recognition moral problems connected to AI utilization. • Ability to use AI responsibly in learning activities.
2	Attitude toward AI *(Ahmed et al., 2024 – SAGE Open)*	•Positive perceptions of AI in learning. • Confidence in using AI to support learning activities. • Interest in and receptivity to using AI in economics education.
3	Intention to Use AI in Economics Learning *(Ahmed et al., 2024 – SAGE Open*	• Intention to use AI for completing economics learning tasks. • Willingness to continue using AI in future learning. • Intention to recommend AI to classmates for learning purposes. • Intention to increase the use of AI as a learning support tool.

RESULTS AND DISCUSSION

Results

Table 3. Convergent Validity

Indicator	Factor Loading	Description	P-Value	Description
X1.1	0.802	Fulfilled	<0.001	Fulfilled
X1.2	0.797	Fulfilled	<0.001	Fulfilled
X1.3	0.841	Fulfilled	<0.001	Fulfilled
X1.4	0.771	Fulfilled	<0.001	Fulfilled
Z1.1	0.902	Fulfilled	<0.001	Fulfilled
Z1.2	0.916	Fulfilled	<0.001	Fulfilled
Z1.3	0.895	Fulfilled	<0.001	Fulfilled
Y1.1	0.911	Fulfilled	<0.001	Fulfilled
Y1.2	0.905	Fulfilled	<0.001	Fulfilled

Table 3 shows that all indicators obtained factor loading values ranging from 0.802 to 0.905, exceeding the recommended threshold of 0.70. (J. F. Hair et al., 2019). In addition, all indicators have a p-value < 0.001, meaning all indicators meet convergent validity..

Table 4. Discriminant Validity of X1

Indicator	Loading	Cross Loading		Description
	X1	Z1	Y1	
X1.1	0.802	-0.538	0.661	Fulfilled
X1.2	0.797	0.630	-0.157	Fulfilled
X1.3	0.841	-0.258	-0.019	Fulfilled
X1.4	0.771	0.190	-0.504	Fulfilled

The loading factor for all items in the Artificial Intelligence Literacy construct ranges from 0.771 to 0.802. These values are higher than the cross-loadings obtained for the Attitude toward AI or Intention to Use AI in Economics Learning constructs. This means each indicator can distinguish the construct being measured; therefore, the discriminant validity of the Artificial Intelligence Literacy construct is fulfilled

Table 5. Discriminant Validity of Z1

Indicator	Loading	Cross Loading		Description
	Z1	X1	Y1	
Z1.1	0.902	0.048	-0.119	Fulfilled
Z1.2	0.916	-0.098	0.031	Fulfilled
Z1.3	0.895	0.052	0.088	Fulfilled

The average is greater than other constructs is larger than other constructs for each square variance. The root mean square of variance values for AI literacy, attitude toward AI, and desire to use AI were 0.895, 0.902, and 0.916, respectively. According to these findings, the measurement model appears to be discriminant valid. Each item in the Attitude toward AI construct has a loading value between 0.922 and 0.930, which are higher than the cross-loading values for the Artificial Intelligence Literacy and Intention to Use AI in Economics Learning constructs. This means each indicator can distinguish the construct being measured, thereby meeting the discriminant validity requirements for the Attitude toward AI construct.

Table 6. Discriminant Validity of Y1

Indicator	Loading	Cross Loading		Description
	Y1	X1	Z1	
Y1.1	0.911	-0.087	0.258	Fulfilled
Y1.2	0.905	0.067	-0.139	Fulfilled
Y1.3	0.909	0.020	0.121	Fulfilled

Each item in the Intention to Use AI in Economics Learning construct has loading values that range from 0.911 to 0.905, which are higher than the cross-loading values for the Artificial Intelligence Literacy and Attitude toward AI constructs. This means each indicator can distinguish the construct being measured, thereby meeting the discriminant validity for the Intention to Use AI in Economics Learning construct.

Table 7. The Root of AVE and Its Correlation

Variable	Root of AVE	Cross Loading		Description
	X1	Z1	Y1	
X1	0.803	0.669	0.651	Fulfilled
Z1	0.669	0.904	0.904	Fulfilled
Y1	0.651	0.885	0.909	Fulfilled

Higher square root values of the Average Variance Extracted (AVE) compared to the correlations between constructs confirmed discriminant validity. The AVE scores were 0.803 for AI literacy, 0.904 for attitude toward AI, and 0.909 for intention to use AI.

Table 8. Composite Reliability

Variable	Composite Realibility Coefficient	Description
X1	0.879	Fulfilled
Z1	0.931	Fulfilled
Y1	0.934	Fulfilled

The table shows that every composite reliability score is higher than 0.7, which means the required standard for composite reliability has been met.

Table 9. Cronbach's Alpha Coefficients

Variable	Cronbach's Alpha Coefficient	Description
X1	0.816	Fulfilled
Z1	0.889	Fulfilled
Y1	0.894	Fulfilled

Because each construct has a Cronbach's alpha value more than 0.70, which denotes strong internal consistency, the measuring instrument is regarded as reliable.

Table 10. Cronbach's Alpha Coefficients

Model Fit and Quality Indicator	Fit Criteria	Results	Description
Average path coefficient (APC)	P<0.05	0.532 (P<0.001)	Fulfil Model Fit Requirements
Average R-squared (ARS)	P<0.05	0.625 (P<0.001)	Fulfil Model Fit Requirements
Average adjusted R-squared (AARS)	P<0.05	0.622(P<0.001)	Fulfil model fit requirements
Average block VIF (AVIF)	acceptable if <= 5, ideally <= 3.3	1,799	Ideal
Average full collinearity VIF (AFVIF)	acceptable if <= 5, ideally <= 3.3	3,861	Ideal
Tenenhaus GoF (GoF)	small >= 0.1, medium >= 0.25, large >= 0.36	0.690	Large
Simpson's paradox ratio (SPR)	acceptable if >= 0.7, ideally = 1	1,000	Ideal
R-squared contribution ratio (RSCR)	acceptable if >= 0.9, ideally = 1	1,000	Ideal
Statistical suppression ratio (SSR)		1,000	Accepted
Nonlinear bivariate causality direction ratio (NLBCDR)	acceptable if >= 0.7		Accepted

The model fit study shows that the suggested model meets goodness-of-fit requirements. APC (0.532; $p < 0.001$), ARS (0.625; $p < 0.001$), and AARS (0.622; $p < 0.001$) results show statistical significance, indicating well-defined correlations between model variables. Multicollinearity was not found since the AVIF value of 1.799 and the AFVIF value of 3.861 were below 5. Tenenhaus's Goodness-of-Fit (GoF) score of 0.690 indicates good model fit. Also, all the indicators SPR, RSCR, SSR, and NLBCDR have values of 1.000, which are within the recommended ranges. As a result, it may be said that the suggested model satisfies the goodness-of-fit criteria and is appropriate for the subsequent structural analysis step.

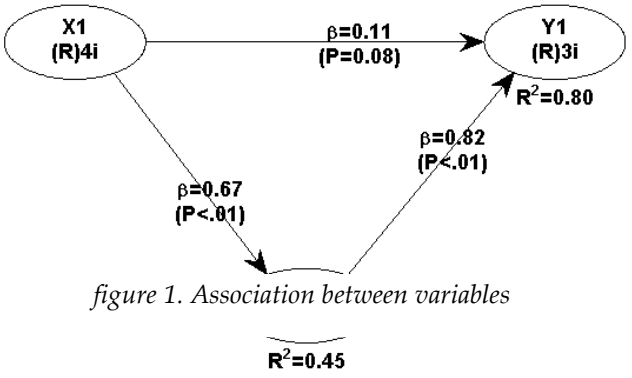

figure 1. Association between variables

Figure 1. Association between variables

Table 11. Direct Effect

Relationship between Variables (Exogenous	Path	P-Value	Description

Variable -> Endogenous)		Coefficient		
Artificial Intelligence Literacy	Attitudes towards AI	0.669	<0.001	Very Significant
Artificial Intelligence Literacy	AI Usage Intentions	0.108	0.076	Not Significant
Attitudes towards AI	AI Usage Intentions	0.820	<0.001	Very Significant

a. H1 The effect of (X1) on (Z1)

Artificial Intelligence Literacy (X1) was found to have a positive effect on Attitude toward AI (Z1), with a path coefficient of 0.669 and a p-value below 0.001. Since the p-value was lower than 0.01, the relationship was categorized as very significant, and H1 was accepted. The positive path coefficient (0.669) indicates that the higher the level of Artificial Intelligence literacy a student has, the more positive the student's attitude towards Artificial.

b. H2 The effect of (X1) on (Y1)

The effect of Artificial Intelligence Literacy (X1) on the Intention to Use AI in Economics Learning (Y1) has a path coefficient of 0.108 <00.076 Since the p-value is greater than 0.07, the impact is substantial, so H2 is not accepted.

c. H3 The effect of (Z1) on (Y1)

H3 was accepted because the statistical analysis showed a strong effect of Attitudes toward AI (Z1) on the Intention to Use AI in Economics Learning (Y1).This connection was shown through a path coefficient of 0.820 and a p-value less than 0.001, meaning that having more positive feelings about AI leads to a greater willingness among students to use it in their economics studies.

Table 12. Indirect Effect

Exogenous Variable	Mediation	Endogenous Variable	Path Coefficient	P Value	Description
Artificial Intelligence Literacy	Attitudes towards AI	AI Usage Intentions	0.549	0.001	full mediation

H4: The Influence of Artificial Intelligence Literacy (X1) on the Intention to Use AI in Economics Learning (Y1) through Attitudes towards AI (Z1)

Attitudes towards AI (Z1) significantly mediate the relationship between Artificial Intelligence Literacy (X1) and the Intention to Use AI in Economics Learning (Y1). The indirect effect is 0.549 (p = 0.001), confirming H4. This result suggests that higher AI literacy can strengthen students' intention to use AI when it first develops more positive attitudes toward AI..

Discussion

The results show that students with stronger AI literacy tend to develop more positive attitudes toward AI. Students with a better understanding of AI concepts, operational skills, and ethical considerations tend to develop more favourable perceptions of AI as a learning resource (Nguyen et al., 2022). This finding not only confirms previous studies but also extends the literature by demonstrating that, within the context of economics learning in Indonesian senior high schools, AI literacy contributes to students' positive attitudes through both technical understanding and ethical awareness. Unlike studies conducted in broader educational settings, the present research highlights that evaluating AI-generated economic information critically is an important mechanism through which AI literacy shapes students' attitudes toward AI (Southworth, Migliaccio, Glover, Net, et al., 2023). The context of economics learning, these competencies enable students to critically interpret AI-generated information and make informed judgments when applying AI to academic tasks (Boda et al., 2026). From a theoretical perspective, this finding strengthens the Technology Acceptance Model by showing that AI literacy functions as an important antecedent of attitude formation. Rather than merely improving students' technical competence, AI literacy helps learners evaluate AI critically, understand its ethical implications, and develop greater confidence in using AI for educational purposes. This suggests that cognitive knowledge and ethical awareness jointly contribute to positive

attitudes toward AI, thereby extending previous technology acceptance studies that mainly emphasised perceived usefulness and ease of use.

The positive relationship also indicates that AI literacy helps reduce uncertainty surrounding AI technologies. Students who understand the capabilities and limitations of AI are more likely to perceive it as beneficial and appropriate for learning purposes. Therefore, improving AI literacy should promote critical thinking, ethical awareness, and thoughtful use of AI in educational contexts in addition to technical skill development (Arseven & Bal, 2025).

Attitude toward AI was identified as the strongest predictor of students' intention to use AI in economics learning. Students who perceived AI as useful, relevant, and beneficial for supporting learning activities demonstrated a stronger intention to continue using AI in educational contexts. This finding supports previous studies showing that positive attitudes significantly influence technology acceptance and continued usage behavior.(Schepman et al., 2023). Students are additional examples of economic economic economic topics. These findings can be found in educational experiences that are more consistently consistent with AI-consistent (Sustaningrum & Haldaka, 2025).

However, the relatively small direct coefficient suggests that literacy alone is not enough to strongly determine intention (Yim & Su, 2025). Students may understand AI but still need positive psychological evaluation before they decide to use AI consistently (Babu et al., 2025). This corroborates research on technology adoption that demonstrates how attitude, perceived utility, trust, and relevance to learning requirements influence intention. Therefore, learning activities that increase self-assurance, perceived importance, and ethical awareness should be used to improve AI literacy (Choung et al., 2023).

The main factor influencing whether or not students desire to employ AI in economics education is how they feel about it. This implies that students are more likely to desire to employ AI as a learning aid if they have a positive perception of it. The conviction that AI is beneficial, pertinent, engaging, and supportive of learning tasks is reflected in a positive attitude. This finding supports previous research showing how student opinions impact the uptake and continued use of AI and generative AI technologies in learning environments (Kasneci et al., 2023).

Since students must analyse dynamic and contextual social and economic issues, attitudes about AI are especially crucial while studying economics. Students' desire to utilise AI as a learning support system depends on their level of faith in the technology, even though it may assist them find examples and explanations. Users are more inclined to adopt AI when they believe the system is clear, transparent, and helpful, according to studies on explainability and trust (Choung et al., 2022). Therefore, teachers need to guide students to use AI critically rather than merely encouraging frequent use (Suriano et al., 2025).

The mediation analysis shows that AI literacy and desire to employ AI are partly explained by attitude toward AI. This suggests that AI literacy influences students' AI usage directly and indirectly via favorable sentiments. The finding suggests that students' knowledge and understanding of AI become more effective when they are transformed into positive evaluations of AI . From a theoretical perspective, this finding strengthens the Technology Acceptance Model by demonstrating that attitude toward AI functions as an important psychological mechanism linking AI literacy to students' behavioural intention. Rather than influencing intention solely through cognitive knowledge, AI literacy becomes more influential when it first shapes students' positive evaluations of AI. This finding extends previous AI acceptance studies by providing empirical evidence that attitude serves as a partial mediator in the context of economics education among Indonesian senior high school students, a context that has received limited attention in previous research (Strzelecki, 2024).

Practically, the finding implies that schools should not limit AI learning to technical operation. Students need to be trained to ask critical questions about AI-generated answers, verify information, compare AI outputs with reliable sources, and reflect on ethical implications (Aripin et al., 2026). These practices are aligned with current recommendations in AI education that emphasise AI literacy, ethical use, transparency, and human-centred learning (Chiu, Xia, Zhou, Sing, et al., 2023)

CONCLUSION

This study shows that Artificial Intelligence Literacy significantly shape students' attitudes toward AI, although it does not directly increase their intentions to use AI in economics learning. The results indicate that students' knowledge and understanding of AI are not enough by themselves to encourage AI adoption in learning activities. Instead, participants tend to intend to use AI when they develop favorable attitudes toward the technology, highlighting the important mediating role of attitudes toward AI.

This study contributes to the literature on Artificial Intelligence integration in education by providing empirical evidence that attitudes toward AI function as an important psychological mechanism linking AI literacy to students'

intention to use AI in economics learning. The novelty of this study lies in examining the mediating role of attitudes toward AI specifically within senior high school economics education, a context that has received limited attention in previous studies. These results imply that improving AI literacy alone is not enough to increase students' AI usage unless they also acquire favorable AI views. The research suggests that economics professors and educational institutions combine AI literacy with ethical AI practices, reflective learning activities, and positive attitude development when deploying AI-supported learning. Beyond economics education, the findings also contribute to broader discussions on responsible AI integration in schools by emphasizing that psychological readiness is as important as technological competence in encouraging meaningful AI adoption. Future studies are recommended to extend this model by incorporating additional psychological and contextual variables, such as perceived usefulness, teacher support, peer influence, self-efficacy, or trust in AI, as well as involving broader educational settings to improve the generalizability of the findings.

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