



Exploring the Influence of Artificial Intelligence (AI) on Islamic Thinking Among Students at Universitas Zainul Hasan Genggong Probolinggo

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Abstract

The increasing application of artificial intelligence (AI) in academic activities, including the study of Islamic materials, raises important questions about its impact on students' Islamic thinking. This study aims to determine the extent to which AI influences Islamic thinking among students of the Islamic Education Study Program at Universitas Islam Zainul Hasan Genggong. This study involved 83 students from the 2021 cohort. Data were collected through a closed-ended questionnaire and analyzed using partial least squares structural equation modeling (PLS-SEM) via the SmartPLS application. The results indicate that the use of AI positively and significantly influences students' Islamic thinking, as evidenced by a path coefficient of 0.810, a t-value of 20.654, and a p-value of 0.000. The R-square value of 0.656 indicates a moderate contribution of AI to Islamic thinking, while the F-square value of 1.905 reflects a strong influence. These findings can serve as a reference for educators in developing learning strategies that maintain a critical approach to Islamic studies amid the widespread use of AI. Additionally, this study is expected to enhance students' awareness of using AI as an academic tool while acknowledging the importance of primary Islamic sources in understanding Islamic teachings.

Keywords

Artificial intelligence; Islamic thinking; Students



Introduction

The development of artificial intelligence (AI) technology continues to show a significant increase every year (Restiawan & Miftahul Ula, 2023). Its presence with new features, functions, and appearances increasingly impacts many aspects of human life (Apriliana, Kornarius, & Caroline, 2024), not least in education (Zakiyah et al., 2024). This development is marked by the increasingly sophisticated ability of AI to process data, analyze information, and provide adaptive solutions according to user needs. Artificial Intelligence (AI) is starting to take a role in learning activities in schools and universities (Bali, Kumalasani, & Yunilasari, 2022). AI is used to support various aspects of the learning process (Fitria, 2021). As a supporting technology, artificial intelligence (AI) acts as a tool that complements the development of educational technology.

Artificial intelligence (AI) has become one of the innovations in education, having a significant impact on the learning process (Huda, Suwahyu, & Makassar, 2024). Based on research by Niyu in the *Journal of Strategic Communication* shows that the percentage of ChatGPT usage among academics, especially lecturers and students in Indonesia, reaches 91.25% (Niyu, Desideria Dwihadijah, Azalia Gerungan, & Herman Purba, 2024). In addition, *Artificial Intelligence* has helped improve the effectiveness and efficiency of the teaching and learning process (Afrita, 2023). This technology is used to provide more personalized learning, help students access information quickly, and facilitate academic evaluation through automated systems.

Artificial Intelligence (AI) technology provides various platforms in supporting learning in Islamic Education Study Program students (Alamin, 2023), such as ChatGPT, Gemini, Zero, Poe and many more. These platforms are often used by students in completing various academic assignments, such as compiling papers, writing scientific articles, summarizing, and paraphrasing. The ease of access to information offered by AI allows students to obtain references quickly and practically (Dan & Wirdati., 2024). Without having to spend a long time searching in conventional sources. In practice, Islamic Religious Education students also utilize AI in supporting understanding in various Hadith Studies, Qur'an Studies, History of Islamic Civilization, Akhlak Tasawuf, Ushul Fiqh, Tafsir Tarbawi, Hadith Tarbawi, Comparative Madzhab, and Fiqhiyah courses. In this context, AI acts as a tool that facilitates understanding of the material, provides instant explanations, and supports analysis of Islamic topics (Munir & Majid, 2024). However, excessive use of AI without critical understanding can lead to dependency and reduce students' abilities (Cahyani, Dewi, & Darmawan, 2023).



However, excessive use of AI does not always have a positive impact, because it can reduce the ability of students' mindset (Nurmilah, 2024). Students tend to rely on instant answers provided by Artificial Intelligence (AI) without conducting critical analysis or deep reflection on the information received (Ayuningtyas & Fahrane, 2024). This condition can hinder the development of critical, analytical, and creative thinking skills that should be honed in the learning process (Attamimi, Ahmad, & Attamimi, 2020). However, a number of studies have shown that when AI is used purposefully and proportionately, it has great potential to support more effective learning. AI can facilitate adaptive learning, provide real-time feedback, and increase students' intrinsic motivation. In addition, AI can also encourage the development of problem-solving skills and deeper conceptual understanding. Therefore, the utilization of AI needs to be accompanied by careful supervision strategies, improved digital literacy, and strengthened ethics-based education policies so that its use remains aligned with substantial educational values (Abdurrahman, 2025).

Various studies on the use of Artificial Intelligence (AI) technology in education have been conducted by academics and practitioners. In general, these studies focus on the effectiveness of AI in improving learning outcomes, student motivation, and the efficiency of the learning process (Syamsidar & Samsinar, 2024). One of the previous studies conducted by (Syahrizal, Yasmi, & Mary, 2023), which developed ITS-based learning applications and *System Development Life Cycle* (SDLC) with the aim of improving the quality of Islamic learning at the secondary school level. Most of these studies highlight the role of Artificial Intelligence (AI) in improving learning effectiveness, motivating students, and optimizing the use of AI technology in the Islamic education system. However, until now, there has been no research that specifically examines the use of AI on Islamic thinking. Therefore, this research seeks to fill the gap by analyzing the influence of AI on Islamic thinking, so as to provide a new perspective in Islamic studies in the digital era.

Islamic thinking demands in-depth critical analysis based on primary sources such as the Qur'an, hadith, and classical Islamic literature, which cannot always be accommodated by instant answers from AI. The use of AI in understanding Islamic teachings has the potential to influence the way students access, interpret and construct their Islamic arguments. But until now, there has been no comprehensive study that discusses artificial intelligence (AI) on students' Islamic thinking. The absence of research in this aspect indicates an academic gap that needs to be filled to understand how interaction with AI can shape the way students analyze and respond to Islamic issues. Therefore, this research has urgency in making a scientific contribution to the development of Islamic thinking in the digital era.



Therefore, this research focuses on identifying and measuring the level of influence of the use of AI on the Islamic thinking of students of the Islamic Education Study Program. The results of this study are expected to make a theoretical contribution to the development of Islamic studies in the digital era, especially in understanding how AI shapes students' mindset in interpreting and analyzing Islamic issues. Practically, the results of this study can be used as a basis for educators in designing learning strategies that maintain a critical approach to Islamic studies amid the widespread use of AI. In addition, this research is expected to increase students' awareness in utilizing AI as an academic tool without neglecting the importance of Islamic primary sources as the main foundation in understanding Islamic teachings.

Method

This research uses a quantitative approach with an associative descriptive research design. This approach was chosen to describe and analyze the variables studied. The descriptive approach is used to systematically describe the characteristics of variable data, while the associative approach aims to test the relationship between variables without concluding a causal relationship. The research focus is directed at students' understanding of Islamic values in an academic context that is increasingly affected by the use of AI-based technology.

The population in this study includes all students of the Islamic Religious Education Study Program class of 2021 at Zainul Hasan Islamic University Genggong, which consists of four classes (A, B, C, and D), with a total of 101 students. To determine the number of representative samples, the Slovin formula was used with a significance level of 5%, which resulted in a sample of 83 respondents. Data were collected through a questionnaire that was prepared based on the theoretical indicators of the two research variables. The questionnaire was developed and adapted to Sugiyono's approach (Sugiono, 2021). By using a Likert scale instrument with four answer options tailored to measure student perceptions of the use of AI and its influence on Islamic thinking. The preparation of the questionnaire refers to the steps developed by Sugiyono, including identification of variables, formulation of indicators, and preparation of statement items.

The data analysis technique in this study used the *Partial Least Squares - Structural Equation Modeling* (PLS-SEM) approach which was analyzed with SmartPLS software (Ghozali, 2023). This method was chosen because it is able to analyze latent relationships between variables simultaneously, especially in studies with medium sample sizes and complex variables. The analysis is carried out through two



main stages, namely the evaluation of the *outer* measurement model which tests the validity and reliability of indicators, and the evaluation of the *inner* structural model which tests the relationship between latent variables. The *R-square*, *F-square*, and *p-value* are used as the basis for hypothesis testing.

Results

The results of data analysis as well as theoretical interpretations of the relationship between the use of Artificial Intelligence (AI) and students' Islamic thinking. Given that this issue has not been widely raised in scientific studies, especially in the context of Islamic education in higher education, this research provides a significant initial contribution in explaining how AI, which is now increasingly integrated in students' academic activities, can affect their perspective, understanding, and construction of thinking towards Islamic values. This research not only fills a gap in the literature, but also provides a new empirical basis for the development of interdisciplinary studies between digital technology and religious education.

The table below presents the *mean*, *median*, *minimum-maximum scale*, and *standard deviation* values of each indicator of the variable use of AI (X) and Islamic thinking (Y) measured in this study.

Table 1. Respondent data on AI usage (X) and Islamic thinking (Y) indicators

Indicator	Mean	Median	Scale min	Scale max	Standard deviation
X1.1	2.795	3.000	1.000	4.000	0.991
X1.2	3.241	3.000	2.000	4.000	0.721
X1.3	2.759	3.000	1.000	4.000	0.977
X1.4	3.193	3.000	1.000	4.000	0.768
X1.5	2.651	3.000	1.000	4.000	0.813
X1.6	2.699	3.000	1.000	4.000	0.832
X1.7	3.217	3.000	1.000	4.000	0.729
X1.8	2.627	3.000	1.000	4.000	0.817
X1.9	2.663	3.000	1.000	4.000	0.796
X1.10	3.193	3.000	1.000	4.000	0.719
Y1.1	2.590	3.000	1.000	4.000	0.851
Y1.2	2.795	3.000	1.000	4.000	0.861
Y1.3	2.639	3.000	1.000	4.000	0.844
Y1.4	2.530	3.000	1.000	4.000	0.841
Y1.5	2.651	3.000	1.000	4.000	0.856
Y1.6	2.783	3.000	1.000	4.000	0.865

Source: Results of Analysis through Smart PLS



Based on descriptive analysis, student perceptions regarding the use of artificial Intelligence (AI) and Islamic thinking are in the moderate category. This is reflected in the average value of the variable indicator of AI usage (X) which ranges from 2.627 to 3.241. The highest indicator appears in the aspect of ease of finding Islamic information, while the lowest indicator is the use of AI to understand classical literature. On the Islamic thinking variable (Y), the mean values ranged from 2.530 to 2.795. This research model was developed based on the summary of respondents' responses consisting of 19 indicators and analyzed using the Partial Least Squares-based *Structural Equation Modeling* (PLS-SEM) approach. The analysis begins with testing the measurement model (outer model) to assess the strength of the indicators in representing the construct. This process includes examining the outer loading value, correlation coefficient, Cronbach's Alpha, and Composite Reliability. Convergent validity is evaluated through the *outer loading* value, where all indicators show values above 0.70. This finding indicates that each indicator has a strong contribution to the construct it represents. Furthermore, discriminant validity was analyzed using the Fornell-Larcker criterion, which showed that the correlation between the construct and its indicators was higher than the correlation with other constructs, thus indicating good construct separation. Finally, reliability tests were conducted through Cronbach's Alpha and Composite Reliability, both of which had values above 0.70, indicating that the instruments in this study have high internal consistency.

1. Analyze the Use of Artificial Intelligence (AI)

The use of artificial intelligence (AI) in the context of higher education is increasingly showing its strategic role, especially as an academic tool in supporting the student learning process. In this study, the variable of AI usage is measured through a number of indicators that represent the frequency, purpose, and intensity of the use of AI-based technology in the academic activities of students of the Islamic Education Study Program. This study was conducted to provide an initial picture of students' perceptions and tendencies in utilizing AI. The calculation results show that the average score on each indicator is in the medium to high category, which indicates that students are quite active in using AI in their daily academic activities, both for finding information, resuming material, and completing Islamic-based assignments. The following details the results of testing the outer loading value and also the reliability test, construct validity which is analyzed using the Cronbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE) values.



Table 2. Results of outer loading value testing on use of artificial intelligence (variable x)

Variables	Outer Loading
X1.1	0.821
X1.2	0.840
X1.3	0.809
X1.4	0.840
X1.5	0.854
X1.6	0.838
X1.7	0.857
X1.8	0.856
X1.9	0.831
X1.10	0.815

The results of the *outer loading* analysis show that all indicators of the variable use of artificial intelligence (X) have a value above 0.70, which ranges from 0.809 to 0.857. This finding indicates that each indicator has a strong contribution in representing the measured construct, thus meeting the criteria for convergent validity. Furthermore, the *Average Variance Extracted* (AVE) value of 0.700 reinforces these findings, because it has exceeded the minimum threshold of 0.50 suggested by Fornell and Larcker, so the construct is declared convergently valid.

Table 3. Results of reliability and validity measurements using Cronbach's Alpha and Composite Reliability on use of artificial intelligence

	<i>Cronbach's alpha</i>	<i>Composite reliability (rho_c)</i>	AVE
Variable X	0.952	0.959	0.700

In terms of reliability, the measurement results show that the *Cronbach's Alpha* value is 0.952 and the *Composite Reliability* is 0.959. Both of these values exceed the 0.70 threshold, indicating that the variable X construct has a very high internal consistency.

2. Analysis of Islamic Thinking on Islamic Education Study Program Students

Islamic thinking is a crucial aspect in the formation of the intellectual and spiritual character of Islamic Religious Education (PAI) students, because it reflects the extent to which they are able to understand and internalize the values of Islamic teachings critically and contextually. In the digital era characterized by the rapid development of technology, including the use of artificial intelligence (AI), the way students process, evaluate, and respond to Islamic information has also undergone a transformation. Therefore, in the context of this study, Islamic thinking is not only understood as the result of religious internalization, but also as a cognitive process that can be influenced by the intensity of students' interaction with AI technology.



The descriptive analysis of this variable aims to provide an initial picture of the tendency of Islamic thinking patterns of PAI students, before further analysis is conducted on the extent to which the use of AI plays a role in shaping the construction of these thoughts.

To gain a deeper understanding of the construction of students' Islamic thinking, further analysis of the validity and reliability of the research instruments was conducted. This test includes convergent validity test through *outer loading* and *average variance extracted* (AVE) values, as well as reliability test using *Cronbach's Alpha* and *Composite Reliability* values. In addition, an *R-square* measurement was also conducted to see how much the use of AI contributed to the Islamic thinking variable. The results of this analysis are presented systematically in the following tables.

Table 4. Results of outer loading value testing of Islamic thinking construction analysis (variable Y)

Variables	Outer Loading
Y1.1	0.825
Y1.2	0.813
Y1.3	0.883
Y1.4	0.854
Y1.5	0.816
Y1.6	0.752

The results of the convergent validity test of the Islamic thinking construct (Y) were carried out by examining the *outer loading* values of the six indicators used. All indicators show values above the minimum threshold of 0.70, namely between 0.752 to 0.883, which means that each indicator significantly represents the construct of Islamic thinking. Indicator Y1.3 has the highest contribution (0.883), while Y1.6 is the lowest but still meets the convergent validity criteria.

Table 5. Results of reliability and validity measurements using Cronbach's Alpha and Composite Reliability of Islamic thinking construction

	<i>Cronbach's alpha</i>	<i>Composite reliability (rho_c)</i>	AVE
Variable Y	0.906	0.927	0.680

The construct reliability test shows excellent results, characterized by a *Cronbach's Alpha* value of 0.906 and a *Composite Reliability* of 0.927, both of which exceed the threshold value of ≥ 0.70 . The *Average Variance Extracted* (AVE) value of 0.680 also indicates that more than 68% of the indicator variance can be explained by the latent construct. Thus, the instrument to measure Islamic thinking can be declared valid and reliable.

Table 5. *R-square* test results of Islamic thinking construction

	R-Square	Adjusted R-Square
Variable Y	0.656	0.652

Furthermore, the *R-square* test results show that the Islamic thinking construct has a value of **0.656**, which indicates that the AI usage variable is able to explain 65.6% of the variation in students' Islamic thinking. Based on Chin's (1998) criteria, this value falls into the *moderate* category. This means that this model has a fairly strong predictive power, making it suitable for use in further structural testing.

3. Analysis of the Effect of Use Artificial Intelligence on Islamic Thinking

To determine the extent of the relationship between the variables studied, a structural model was tested through the PLS-SEM approach. In this context, the use of AI is positioned as an exogenous variable that is thought to contribute to the formation of students' Islamic mindset as an endogenous variable. This analysis not only aims to confirm the significance of the relationship between variables, but also to measure the strength of their influence through the path coefficient, t-statistic value, p-value, and F-square as the main indicators of the effectiveness of the structural model built. The following are the results of the structural model test:

Table 6. The influence of artificial intelligence on Islamic thinking among university students

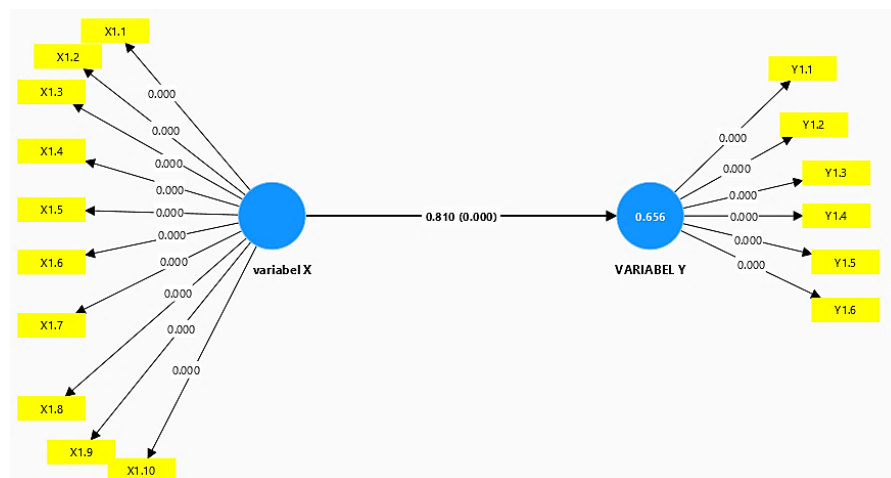
	F-Square
X variable->Y variable	1.905

The results of testing the structural model show that the use of AI has a very strong influence on students' Islamic thinking. This is included in the very strong category. This finding indicates that the variable use of AI makes a very strong contribution in explaining variations in the construction of Islamic thinking.

Furthermore, hypothesis testing is carried out through the bootstrapping procedure to determine the t-count value of each exogenous variable. Based on Table 8, the t-count value of variable X on variable Y is 20,654, which is greater than the t-table value. This result shows that variable X has a positive and significant influence on variable Y. Thus, there is a significant relationship between exogenous and endogenous variables in this research model. By using calculate bootstrapping, researchers can compare the calculated t value with the t table value to see if the structural model parameters are statistically significant. The following is the bootstrapping result model:



Figure 1. Model bootstrapping results



Source: Results of Analysis through Smart PLS

Table 7. Exogenous variables

	Original sample (0)	T-Statistic	P Values
X -> Y	0.810	20.654	0.000

The t-count values of the exogenous variables are shown in Table 8. The variable Use of artificial intelligence (AI) shows a t-statistic of 20.654, which far exceeds the t-table value of 1.656, with a p-value of $0.000 < 0.05$, it can be concluded that the use of AI has a significant positive effect on Islamic Thinking of Islamic Education Study Program students. This result shows that the more often students use AI in academic activities, the greater the influence on their way of thinking in understanding and studying Islamic values.

Discussion

The integration of artificial intelligence (AI) technology in the academic world has become an unavoidable reality, including in the context of Islamic education. The results of this study empirically show that the use of AI on Islamic thought is in the large effect category, as indicated by the F-square value of 1.905. Quantitatively, this reflects that AI makes a significant contribution to the variation of students' Islamic thought. This phenomenon reflects the dynamics of the digital era, where students tend to rely on AI as the main reference in answering academic and religious questions. In this context, AI not only acts as a technical tool, but also as an agent of intellectual transformation. Therefore, the use of AI needs to be addressed strategically with an educational approach that balances the efficiency of information access and the integrity of authentic Islamic values.



However, the resulting influence does not directly affect the essence of Islamic values, but rather the form and direction of students' thinking about Islam. This change can be constructive or reductive, depending on the quality of students' interaction with the information provided by AI. Thus, the use of modern technology such as AI in the academic world cannot be separated from its influence on the orientation of student thinking (Aisyah, 2022), especially in the aspects of religious belief, understanding, and interpretation. This situation provides a reflective space to reassess how technology integration in Islamic education can be directed to uphold scientific values (Ayu Lestari & Muhammad Guntur Alting, 2024).

This research is in line with the paradigm shift in higher education, where speed and accessibility of information are often the parameters of academic success. Students tend to utilize AI to meet academic needs instantly. This is in accordance with the theory of behaviorism put forward by (behaviorism), B.F. Skinner argues that human behavior is formed by external stimuli from the environment (Desmita, 2017). If students' thinking behavior towards Islamic issues is assumed to be a response to AI-based information stimulus, then AI becomes a key factor in shaping their intellectual tendencies. Students do not only act as passive recipients of information, but actively form religious thought structures based on the intensity, frequency, and quality of the information they receive. Therefore, students' contemporary Islamic mindset is indirectly constructed by the characteristics of the technology they use in the learning process.

Practically, these results provide an important message for Islamic educational institutions to develop a balanced and transformative digital literacy strategy. Students need to be equipped with critical literacy skills for AI-based information, and directed to keep the main Islamic sources such as the Qur'an, hadith, and classical literature as the main reference. As emphasized in Albert Bandura's social learning theory, the human learning process is strongly influenced by observation of the environment, including the digital environment. In this case, AI has become part of the digital learning environment that shapes students' thinking horizon. Thus, Islamic thought that develops should not only be a reflection of technological advances, but should also be built on solid scientific and spiritual foundations.

Conclusion

This study concludes that the use of artificial intelligence (AI) has a positive and significant effect on Islamic thinking of students of the Islamic Education Study Program at Zainul Hasan Genggong Islamic University. The path coefficient value of 0.810 and R-square of 0.656 indicate that the intensity of students' interaction with



AI contributes strongly to the way they access, understand, and respond to Islamic information. The use of AI in the learning process of Islamic education students is recommended to continue to be developed, but it must be accompanied by critical digital literacy and strengthening understanding of Islamic primary sources. Based on the results and limitations of this study, future researchers are advised to expand the scope of the population in different study programs and institutions in order to obtain stronger generalization, in addition to using a mixed methods approach to be able to capture the qualitative aspects of Islamic thought more deeply.

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