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THE INFLUENCE OF ARTIFICIAL INTELLIGENCE ADOPTION ON ACADEMIC PERFORMANCE IN ISLAMIC STUDIES: THE MEDIATING ROLES OF DIGITAL LITERACY, RESEARCH COMPETENCE, AND INNOVATION CAPABILITY

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Abstract

The rapid integration of artificial intelligence (AI) into higher education has transformed teaching, learning, and research practices, yet its impact on academic performance in Islamic Studies remains insufficiently understood. This study investigates the influence of AI adoption on students' academic performance, with digital literacy, research competence, and innovation capability serving as mediating variables. A quantitative, explanatory, and cross-sectional research design was employed using data collected from 300 undergraduate students enrolled in Islamic Studies programs. The proposed hypotheses were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings reveal that AI adoption significantly enhances digital literacy, research competence, innovation capability, and academic performance. Furthermore, all three competency-based constructs significantly mediate the relationship between AI adoption and academic performance, indicating complementary mediation. The study contributes to educational technology literature by proposing an integrated competency-based framework for AI-supported learning in Islamic higher education. Practically, the findings provide evidence-based recommendations for curriculum development, digital transformation strategies, and the ethical integration of AI to improve students' academic achievement.

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INTRODUCTION

The rapid adoption of artificial intelligence (AI) has transformed educational systems worldwide by reshaping how knowledge is accessed, produced, and disseminated across various academic disciplines, including Islamic Studies (Mehmood et al., 2024). AI-powered technologies such as intelligent tutoring systems, generative AI, automated research assistants, and adaptive learning platforms have significantly enhanced students' learning experiences by improving access to information, accelerating literature exploration, and supporting academic writing (Yuensook et al., 2026). Within the context of Islamic Studies, these technologies offer opportunities to facilitate the interpretation of classical Islamic texts, strengthen interdisciplinary scholarship, improve Arabic language learning, and support evidence-based religious research. Consequently, AI has become increasingly relevant not only as a technological innovation but also as a strategic educational resource capable of improving academic quality and institutional competitiveness . Nevertheless, the educational value of AI cannot be assumed solely from its availability because its effectiveness depends on students'

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abilities to integrate AI into meaningful learning processes (Zhou, 2023). Understanding the mechanisms through which AI adoption contributes to academic performance is therefore essential for educational institutions, policymakers, and society to ensure that technological advancement supports the development of competent, ethical, and innovative Islamic scholars capable of responding to contemporary global challenges.

Despite the growing accessibility of AI technologies, educational institutions offering Islamic Studies continue to experience considerable disparities in students' academic outcomes and research productivity (Syukur et al., 2024). Many students utilize AI primarily for completing assignments rather than developing higher-order analytical, critical, and research-oriented competencies (Black & Tomlinson, 2025). This phenomenon has generated concerns regarding excessive technological dependence, superficial learning, declining originality, and inadequate mastery of scientific research skills (Pratiwi et al., 2025). Furthermore, substantial differences remain in students' digital literacy, research competence, and innovation capability, resulting in unequal educational benefits from AI adoption (Lin et al., 2025). Institutions also face challenges in integrating AI into curricula while maintaining academic integrity, ethical values, and the epistemological foundations of Islamic knowledge (Ateeq et al., 2024). Consequently, AI implementation frequently emphasizes technological availability instead of strengthening students' competencies required for sustainable academic achievement. These realities demonstrate that improving academic performance within Islamic Studies requires a comprehensive understanding of how AI adoption interacts with individual competencies that enable students to transform technological resources into meaningful learning outcomes, thereby addressing both educational quality and the broader mission of Islamic higher education.

Previous studies have extensively examined the educational implications of AI adoption across higher education, reporting positive relationships between AI utilization and learning effectiveness, academic engagement, and student achievement (Vieriu & Petrea, 2025). Other investigations have demonstrated that digital literacy enhances students' ability to evaluate information critically and utilize emerging technologies effectively, while research competence contributes to improved scientific productivity and academic confidence (Zakir et al., 2025). Similarly, innovation capability has been recognized as an essential determinant of creativity, problem-solving, and adaptive learning in technology-rich educational environments (Bubou & Job, 2022). However, most existing studies investigate these variables independently or within general educational contexts without considering the unique characteristics of Islamic Studies (Chiba et al., 2021). Furthermore, prior research predominantly emphasizes direct relationships between AI adoption and academic performance while overlooking the mediating mechanisms through which AI generates educational outcomes. The interaction among digital literacy, research competence, and innovation capability as complementary mediators remains insufficiently explored, particularly within Islamic higher education. This limitation restricts theoretical understanding regarding how AI contributes to students' academic success and highlights a significant research gap requiring comprehensive empirical investigation.

The present study addresses these limitations by proposing an integrated conceptual framework that positions digital literacy, research competence, and innovation capability as simultaneous mediating mechanisms linking artificial intelligence adoption with academic performance among students of Islamic Studies. This framework extends existing educational technology literature by combining technological adoption theory with competency-based educational perspectives specifically relevant to Islamic higher education (Susilawati et al., 2025). Unlike previous studies that emphasize isolated determinants of academic success, this research conceptualizes AI adoption as a multidimensional educational catalyst whose effectiveness depends upon students' capability to develop digital competencies, conduct high-quality research, and generate innovative academic solutions consistent with Islamic intellectual traditions. The proposed model therefore provides a more comprehensive explanation of the pathways through which AI contributes to educational outcomes. Its novelty also lies in examining these relationships within Islamic Studies, where technological innovation must be harmonized with religious values, ethical considerations, and the preservation of authentic scholarly traditions. Consequently, the findings are expected to enrich both educational theory and institutional strategies for responsible AI integration.

Based on these considerations, this study seeks to answer the central research question: how does artificial intelligence adoption influence academic performance among students in Islamic Studies

through the mediating roles of digital literacy, research competence, and innovation capability? The study argues that AI adoption alone is insufficient to improve academic achievement unless supported by students' capacity to utilize digital technologies critically, conduct rigorous academic research, and develop innovative approaches to learning and knowledge production. Accordingly, digital literacy, research competence, and innovation capability are expected to function as strategic mediating variables that transform AI utilization into measurable academic outcomes. By empirically examining these relationships, this research contributes to the advancement of educational technology theory, competency-based learning, and Islamic higher education scholarship. Furthermore, the findings are expected to provide evidence-based recommendations for curriculum development, institutional policy, digital transformation initiatives, and academic capacity building, thereby supporting the creation of technologically competent, ethically responsible, and globally competitive graduates in the field of Islamic Studies.

METHOD

Research Design

This study employed a quantitative research approach using an explanatory, causal, and cross-sectional research design to examine the influence of Artificial Intelligence (AI) adoption on students' academic performance in Islamic Studies through the mediating roles of digital literacy, research competence, and innovation capability (Chun et al., 2025). A quantitative approach was selected because the primary objective of the study was to empirically test theoretically derived hypotheses by examining the causal relationships among latent constructs using statistical modeling. Unlike exploratory research that focuses on generating new theories, explanatory research is designed to verify existing theoretical assumptions and identify the magnitude and direction of causal relationships among variables. Consequently, this design enables researchers to provide robust empirical evidence regarding the mechanisms through which AI adoption contributes to students' academic achievement within the context of Islamic higher education.

The present study also adopted a causal research design because it seeks to explain how changes in one construct influence changes in another construct through direct and indirect relationships. Specifically, the study hypothesizes that AI adoption positively affects academic performance, while digital literacy, research competence, and innovation capability function as mediating mechanisms that strengthen or transmit this relationship. The causal framework is grounded in contemporary educational technology theories, including Technology Acceptance Theory, Digital Competence Frameworks, and Competency-Based Learning Theory, which collectively argue that technological adoption alone is insufficient to improve educational outcomes unless supported by individual competencies that enable effective technology utilization. Therefore, the causal design provides an appropriate methodological foundation for investigating both direct and mediated effects simultaneously.

Furthermore, this study utilized a cross-sectional survey design in which data were collected from respondents at a single point in time. The cross-sectional approach was considered appropriate because the objective of the research was to capture students' current perceptions regarding AI utilization, digital competencies, research capabilities, innovative behaviors, and academic performance without manipulating experimental conditions. Compared with longitudinal studies, cross-sectional surveys require fewer institutional resources while allowing researchers to examine complex structural relationships among multiple latent variables using Structural Equation Modeling–Partial Least Squares (SEM-PLS). This approach has been widely adopted in educational technology, management, and social science research due to its efficiency and suitability for theory testing in naturally occurring educational settings.

The research framework conceptualizes Artificial Intelligence Adoption as the exogenous construct, Academic Performance as the endogenous construct, and Digital Literacy, Research Competence, and Innovation Capability as parallel mediating variables. The proposed model assumes that AI adoption enhances students' academic achievement not only directly but also indirectly through improvements in digital competencies, research skills, and innovative capacities. This conceptualization reflects the multidimensional nature of educational technology implementation, particularly within Islamic higher education, where technological advancement should support both academic excellence

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and the ethical principles underpinning Islamic scholarship.

Given the predictive orientation of this study and the presence of multiple mediating variables, Partial Least Squares Structural Equation Modeling (PLS-SEM) was selected as the principal analytical technique. According to Hair et al. (2022), PLS-SEM is particularly appropriate for prediction-oriented research, complex causal models, exploratory extensions of existing theories, and situations where the primary objective is maximizing the explained variance of endogenous constructs. Because the present study simultaneously estimates multiple direct and indirect effects involving several latent constructs measured through reflective indicators, PLS-SEM provides greater analytical flexibility than covariance-based SEM while requiring fewer restrictive assumptions regarding multivariate normality (Hair & Alamer, 2022). Consequently, SmartPLS 4 was employed as the primary analytical software for evaluating both the measurement model and the structural model.

Population and Research Setting

The population of this study comprised undergraduate students enrolled in Islamic Studies programs at accredited Islamic higher education institutions. The target population included students who had experience using Artificial Intelligence technologies, such as ChatGPT, Gemini, Microsoft Copilot, Perplexity AI, Claude AI, or other AI-assisted learning platforms, for academic purposes including literature searching, academic writing, translation, data analysis, programming assistance, and learning support. Focusing on students with actual AI experience ensures that respondents possess sufficient familiarity with AI technologies to provide valid evaluations regarding their educational usefulness and influence on academic performance (Phua et al., 2025).

The unit of analysis in this study was individual students because the proposed conceptual model investigates psychological perceptions, digital competencies, research abilities, innovative behaviors, and academic outcomes at the individual level. Each respondent represented one observational unit, and all constructs were measured using self-administered questionnaires designed to capture students' perceptions regarding their experiences with AI-assisted learning. The individual-level analysis is consistent with previous studies investigating educational technology adoption and competency development within higher education (Kaqinari et al., 2022).

To ensure data quality, several inclusion criteria were established. First, respondents had to be actively enrolled undergraduate students in Islamic Studies or related disciplines within Islamic higher education institutions. Second, respondents were required to have used at least one AI application for academic purposes during the previous six months. Third, respondents needed to have completed at least one semester of study to ensure sufficient academic experience for evaluating their learning performance. Fourth, respondents voluntarily agreed to participate after receiving informed consent explaining the objectives, confidentiality measures, and ethical principles governing the research.

Conversely, respondents were excluded if they had never used AI technologies for academic activities, submitted incomplete questionnaires, exhibited response patterns indicating careless responding (such as straight-lining), or failed data quality screening procedures, including attention-check questions and response-time evaluation. Excluding such responses minimizes measurement error and improves the reliability of the structural model estimation.

Sampling Technique and Sample Size Determination

This study employed purposive sampling as a non-probability sampling technique because respondents were selected based on specific characteristics directly relevant to the research objectives. Unlike probability sampling, purposive sampling enables researchers to recruit participants possessing sufficient knowledge and practical experience with Artificial Intelligence technologies, thereby improving the relevance and accuracy of collected information. Since AI adoption among students remains heterogeneous across higher education institutions, selecting respondents with demonstrated AI usage experience is methodologically more appropriate than random selection, which could include participants lacking meaningful exposure to AI applications.

The determination of the minimum sample size followed three complementary approaches commonly recommended in SEM-PLS research to ensure statistical robustness. First, the ten-times rule proposed by Hair et al. (2022) recommends that the minimum sample should be at least ten times the largest number of structural paths directed toward any endogenous construct or ten times the largest

number of formative indicators associated with a construct. In the present conceptual framework, Academic Performance receives four structural paths (one direct effect from AI Adoption and three indirect effects through mediating variables), indicating a minimum requirement substantially lower than the anticipated sample size.

Second, statistical power analysis was conducted using G*Power 3.1 based on Cohen's (1988) recommendations. Assuming a medium effect size ($f^2 = 0.15$), a significance level ($\alpha = 0.05$), statistical power of 0.95, and four predictor variables directed toward the principal endogenous construct, the minimum required sample size exceeded 129 respondents. This calculation ensures adequate statistical power for detecting significant structural relationships while minimizing the probability of Type II errors.

Third, contemporary SEM-PLS literature emphasizes that complex mediation models generally benefit from substantially larger sample sizes than the minimum statistical requirement. Hair et al. (2022) recommend sample sizes between 200 and 500 observations for models involving multiple latent constructs, mediation analysis, and predictive assessment using PLSpredict. Accordingly, this study targeted a minimum of 300 valid responses, thereby enhancing estimation accuracy, increasing statistical power, improving parameter stability, and strengthening the generalizability of empirical findings.

The final sample size was determined after data cleaning procedures, including screening for incomplete questionnaires, duplicate submissions, multivariate outliers, careless responses, and missing data. Only valid responses satisfying all inclusion criteria were retained for subsequent SEM-PLS analysis.

RESULT AND DISCUSSION

Characteristics of Respondents

Table 1. Characteristics of Respondents (N = 300)

Characteristics	Category	Frequency	Percentage (%)
Gender	Male	132	44.0
	Female	168	56.0
Age	18–20 years	91	30.3
	21–23 years	171	57.0
	>23 years	38	12.7
Academic Year	First Year	48	16.0
	Second Year	82	27.3
	Third Year	96	32.0
	Fourth Year	74	24.7
Frequency of AI Use	Occasionally	51	17.0
	Weekly	114	38.0
	Daily	135	45.0
Most Frequently Used AI Tool	ChatGPT	184	61.3
	Gemini	47	15.7
	Copilot	31	10.3
	Perplexity AI	21	7.0
	Others	17	5.7

Interpretation

Table 1 shows that female students constituted the majority of respondents (56.0%), while male students accounted for 44.0%. Most participants were between 21 and 23 years old (57.0%), indicating that the sample primarily represented students in the middle stage of undergraduate study. Third-year students formed the largest academic cohort (32.0%), followed by second-year students (27.3%). Regarding AI utilization, 45.0% reported using AI applications daily, suggesting that artificial intelligence has become an integral component of students' academic activities. ChatGPT emerged as the dominant AI platform, being used by 61.3% of respondents, reflecting its widespread adoption for

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learning, academic writing, literature searching, and research support within Islamic Studies.

Convergent Validity and Discriminant Validity

Table 2. Convergent Validity

Construct	Indicators	Outer Loading	AVE
Artificial Intelligence Adoption	AIA1	0.861	0.703
	AIA2	0.853	
	AIA3	0.825	
	AIA4	0.819	
Digital Literacy	DL1	0.835	0.689
	DL2	0.847	
	DL3	0.823	
	DL4	0.820	
Research Competence	RC1	0.874	0.728
	RC2	0.851	
	RC3	0.836	
	RC4	0.847	
Innovation Capability	IC1	0.866	0.714
	IC2	0.841	
	IC3	0.852	
	IC4	0.825	
Academic Performance	AP1	0.882	0.744
	AP2	0.873	
	AP3	0.841	
	AP4	0.850	

Table 3. Discriminant Validity (Fornell–Larcker Criterion)

Construct	AIA	DL	RC	IC	AP
AIA	**0.839**				
DL	0.612	**0.830**			
RC	0.583	0.691	**0.853**		
IC	0.557	0.645	0.662	**0.845**	
AP	0.639	0.694	0.728	0.701	**0.862**

Interpretation

The measurement model demonstrated satisfactory convergent validity. All indicator loadings exceeded the recommended threshold of 0.70, ranging from 0.819 to 0.882, indicating that each indicator adequately represented its respective latent construct. Likewise, the Average Variance Extracted (AVE) values ranged from 0.689 to 0.744, exceeding the minimum criterion of 0.50 and confirming that each construct explained more than half of the variance of its indicators. The Fornell–Larcker criterion further established discriminant validity, as the square root of each construct's AVE was greater than its correlations with other constructs. These findings indicate that all constructs are empirically distinct while demonstrating satisfactory convergent and discriminant validity.

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Reliability and Composite Reliability

Table 4. Reliability Assessment

Construct	Cronbach's Alpha	rho_A	Composite Reliability
Artificial Intelligence Adoption	0.859	0.864	0.905
Digital Literacy	0.849	0.854	0.898
Research Competence	0.876	0.879	0.914
Innovation Capability	0.867	0.871	0.908
Academic Performance	0.885	0.889	0.921

Interpretation

The reliability analysis indicates that all constructs possess excellent internal consistency. Cronbach's Alpha values ranged from 0.849 to 0.885, while rho_A values ranged from 0.854 to 0.889, both exceeding the recommended threshold of 0.70. Composite Reliability values ranged between 0.898 and 0.921, demonstrating strong construct reliability. Collectively, these findings confirm that the measurement model is highly reliable and suitable for structural model evaluation.

Coefficient of Determination (R^2)

Table 5. R^2 Values

Endogenous Variable	R^2	Interpretation
Digital Literacy	0.375	Moderate
Research Competence	0.340	Moderate
Innovation Capability	0.311	Moderate
Academic Performance	0.691	Substantial

Interpretation

The coefficient of determination indicates that Artificial Intelligence Adoption explained 37.5% of the variance in Digital Literacy, 34.0% in Research Competence, and 31.1% in Innovation Capability, representing moderate explanatory power. More importantly, the structural model explained 69.1% of the variance in Academic Performance, indicating substantial predictive capability. These findings suggest that AI adoption, together with the proposed mediating variables, provides a strong explanation of students' academic performance in Islamic Studies.

Structural Model Assessment

Table 6. Path Coefficients, Effect Size (f^2), and Predictive Relevance (Q^2)

Path	β	t	p	f^2	Decision
AIA → DL	0.612	15.632	<0.001	0.598	Supported
AIA → RC	0.583	13.718	<0.001	0.514	Supported
AIA → IC	0.557	12.903	<0.001	0.449	Supported
DL → AP	0.246	4.516	<0.001	0.086	Supported
RC → AP	0.318	5.903	<0.001	0.141	Supported
IC → AP	0.257	4.808	<0.001	0.098	Supported
AIA → AP	0.188	3.474	<0.001	0.054	Supported

Predictive Relevance

Construct	Q^2
Digital Literacy	0.241
Research Competence	0.228
Innovation Capability	0.209

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Academic Performance	0.487

Interpretation

The structural model demonstrated statistically significant relationships among all hypothesized constructs. Artificial Intelligence Adoption exerted strong positive effects on Digital Literacy (β = 0.612), Research Competence (β = 0.583), and Innovation Capability (β = 0.557). Furthermore, Digital Literacy, Research Competence, and Innovation Capability significantly enhanced Academic Performance, with Research Competence exhibiting the strongest influence. The direct effect of AI Adoption on Academic Performance also remained significant, indicating complementary mediation. Effect size analysis revealed moderate to large contributions of AI Adoption to the mediating constructs, whereas the mediators exerted small to moderate effects on Academic Performance. Predictive relevance assessment showed Q^2 values well above zero, particularly for Academic Performance (Q^2 = 0.487), confirming that the model possesses strong predictive capability.

Common Method Bias and Multicollinearity Assessment

Table 7. Harman's Single-Factor Test and VIF

Assessment	Value	Threshold	Result
Largest Variance Explained	34.27%	<50%	No CMB
Full Collinearity VIF (AIA)	2.15	<3.30	Acceptable
Full Collinearity VIF (DL)	2.48	<3.30	Acceptable
Full Collinearity VIF (RC)	2.61	<3.30	Acceptable
Full Collinearity VIF (IC)	2.33	<3.30	Acceptable
Full Collinearity VIF (AP)	2.71	<3.30	Acceptable

Interpretation

The Harman's single-factor test revealed that the largest single factor accounted for only 34.27% of the total variance, well below the 50% threshold, indicating that common method bias was unlikely to threaten the validity of the findings. Additionally, multicollinearity diagnostics demonstrated that all Variance Inflation Factor (VIF) values ranged from 2.15 to 2.71, substantially below the conservative cut-off value of 3.30. These results confirm the absence of problematic multicollinearity and further support the robustness of the structural model estimates. Collectively, the findings indicate that the dataset satisfies the key assumptions for SEM-PLS analysis, providing a reliable basis for hypothesis testing and interpretation of the structural relationships.

Discussion

The findings demonstrate that artificial intelligence (AI) adoption positively influences academic performance in Islamic Studies both directly and indirectly through digital literacy, research competence, and innovation capability. These results indicate that AI should not be understood merely as a technological tool but as an educational resource whose effectiveness depends on students' competencies in utilizing digital technologies critically, conducting systematic research, and generating innovative academic solutions. The substantial coefficient of determination (R^2 = 0.691) suggests that the proposed conceptual model explains a considerable proportion of the variance in academic performance, highlighting the complementary role of technological adoption and competency development. This finding aligns with Technology Acceptance Model (TAM), which posits that technology adoption enhances performance when users perceive the technology as useful and easy to use (Behrend et al., 2011). However, the present study extends this theoretical perspective by demonstrating that the educational value of AI is realized primarily through the enhancement of students' competencies rather than through technology utilization alone. Consequently, AI adoption in Islamic higher education should be viewed as part of a broader digital transformation strategy that integrates technological innovation with competency-based learning.

The results further support competency-oriented educational theories, particularly Digital Competence Frameworks and Competency-Based Learning Theory, which emphasize that technological resources produce meaningful educational outcomes only when accompanied by adequate

digital capabilities (Shorten et al., 2020). The significant influence of AI adoption on digital literacy confirms that continuous interaction with AI platforms encourages students to develop information evaluation skills, digital communication abilities, and critical engagement with technological resources. Likewise, the positive relationship between AI adoption and research competence indicates that AI can facilitate literature exploration, academic writing, data organization, and evidence synthesis, thereby improving students' research productivity. These findings are consistent with previous studies reporting that AI enhances learning efficiency and research effectiveness across higher education. Nevertheless, unlike earlier investigations that primarily examined direct effects between AI adoption and learning outcomes, this study demonstrates that digital literacy and research competence function as essential explanatory mechanisms that strengthen the translation of AI utilization into improved academic performance. This contribution provides a more comprehensive explanation of the processes through which AI supports academic achievement within the context of Islamic Studies.

Another important finding concerns the mediating role of innovation capability, which significantly contributes to academic performance alongside digital literacy and research competence. Innovation capability reflects students' ability to generate original ideas, adapt to technological change, and apply knowledge creatively in solving academic problems (Kwangmuang et al., 2021). The results suggest that AI adoption stimulates not only cognitive efficiency but also innovative thinking, enabling students to approach learning activities from more analytical and interdisciplinary perspectives. While previous research frequently conceptualized innovation capability as an organizational construct within business and management disciplines, the present findings demonstrate its relevance at the individual student level in higher education (Schaap et al., 2025). Furthermore, the coexistence of significant direct and indirect effects indicates complementary mediation rather than full mediation, implying that AI adoption continues to influence academic performance independently while simultaneously strengthening students' competencies. This distinction contributes to educational technology literature by showing that AI serves both as a direct learning facilitator and as a catalyst for competency development, thereby enriching theoretical discussions regarding the multidimensional mechanisms through which digital technologies affect educational outcomes.

Theoretically, this study advances the literature by integrating Technology Acceptance Theory, Digital Competence Theory, Research Competence perspectives, and Innovation Theory into a unified structural framework specifically designed for Islamic higher education (Abubakari et al., 2024). Previous studies have generally investigated these constructs independently or within broader educational contexts, resulting in fragmented explanations of AI's educational impact (Chee et al., 2025). By examining digital literacy, research competence, and innovation capability as simultaneous mediating variables, the present study offers a more holistic understanding of the pathways linking AI adoption with academic performance. This integrated framework also addresses an important research gap concerning the application of AI within Islamic Studies, where technological innovation must coexist with ethical considerations, academic integrity, and the epistemological foundations of Islamic scholarship. Consequently, the findings contribute to the refinement of competency-based educational models by demonstrating that technological adoption should be conceptualized as an interconnected process involving digital skills, scholarly competence, and innovative capacity rather than as an isolated determinant of learning success.

The practical implications of these findings are highly relevant for educational institutions, curriculum developers, policymakers, and academic leaders responsible for guiding digital transformation in Islamic higher education. Educational policies should move beyond merely providing access to AI technologies and instead prioritize the systematic development of digital literacy, research competence, and innovation capability through curriculum integration, faculty development, and structured academic support. Universities should establish institutional guidelines promoting the ethical and responsible use of AI in accordance with the principles of academic integrity and Islamic educational values while encouraging students to utilize AI as a complementary learning resource rather than a substitute for independent critical thinking. Furthermore, lecturers should redesign learning activities by incorporating AI-assisted research, collaborative problem-solving, and project-based learning that strengthen students' analytical and innovative capacities. Such initiatives are expected to improve academic quality, enhance research productivity, and prepare graduates who are technologically competent, ethically responsible, and capable of addressing contemporary educational

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and societal challenges within the rapidly evolving digital era.

CONCLUSION

This study confirms that Artificial Intelligence (AI) adoption significantly enhances academic performance among students in Islamic Studies, both directly and indirectly through the mediating roles of digital literacy, research competence, and innovation capability. The findings indicate that AI functions not merely as a technological tool but as an educational catalyst whose effectiveness depends on students' ability to develop digital competencies, conduct rigorous academic research, and generate innovative solutions for learning. The significant mediating effects demonstrate that competency development constitutes the principal mechanism through which AI contributes to improved academic achievement. Theoretically, this study advances the literature by integrating Technology Acceptance Theory, Digital Competence Theory, and competency-based learning perspectives into a comprehensive SEM-PLS framework specifically developed for the context of Islamic higher education. By simultaneously examining multiple mediating variables, the study provides a more holistic explanation of the pathways linking AI adoption with academic performance and addresses an important research gap concerning the application of AI in Islamic Studies.

The findings have important practical implications for universities, policymakers, and educational leaders responsible for digital transformation initiatives. Higher education institutions should integrate AI into curricula while simultaneously strengthening students' digital literacy, research competence, and innovation capability through competency-based learning, faculty development, and institutional policies promoting the ethical and responsible use of AI. Such strategies are expected to improve academic quality, research productivity, and graduate competitiveness while maintaining the values of academic integrity and Islamic scholarship. Nevertheless, this study is limited by its cross-sectional design, reliance on self-reported data, and focus on students within Islamic Studies programs, which may restrict the generalizability of the findings. Future research is therefore encouraged to employ longitudinal and multi-group research designs, involve broader educational contexts, and incorporate additional variables such as AI self-efficacy, self-regulated learning, institutional support, and digital learning environments to obtain a more comprehensive understanding of AI-supported academic performance in higher education.

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