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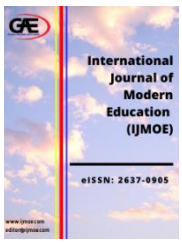

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FACTORS AFFECTING ARTIFICIAL INTELLIGENCE (AI) TOOLS USAGE BY ISLAMIC SPECIALIZATION POSTGRADUATE STUDENT IN INDONESIA AND MALAYSIA

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Abstract:

This study explores the factors affecting the usage of Artificial Intelligence (AI) tools by Islamic Specialization Postgraduate Students in Indonesia and Malaysia. The research aims to identify the AI tools utilized, examine the factors influencing their usage, and investigate the challenges and solutions faced by these students. The study employs a qualitative methodology, utilizing semi-structured interviews with postgraduate students from selected universities in both countries. The Unified Theory of Acceptance and Use of Technology (UTAUT) framework guides the analysis, focusing on performance expectancy, effort expectancy, social influence, and facilitating conditions. The findings reveal that AI tools such as chatbots, text generators, translators, and paraphrasers are widely used by students to enhance their academic work. Performance expectancy and effort expectancy significantly drive AI adoption, with students appreciating the efficiency and ease of use these tools offer. Social influence from peers and lecturers, along with institutional support, also play crucial roles in encouraging AI usage. However, challenges such as accuracy issues and the depth of knowledge provided by AI tools are noted. Students often double-check AI-generated information and prefer traditional learning methods for religious inquiries to ensure accuracy and adherence to Islamic values. The study concludes that while AI tools offer substantial benefits in enhancing learning and research efficiency, their integration must be balanced with ethical considerations and traditional educational practices. Institutions should develop guidelines that align AI usage with religious and ethical frameworks and provide tailored training programs to support students from diverse cultural and religious backgrounds.

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This research contributes to a deeper understanding of AI adoption in Islamic education and offers practical recommendations for fostering a more inclusive and responsible use of technology in academic settings.

Keywords:

Artificial Intelligence (AI) Tools, AI Usage Factors, Islamic Specialization Postgraduate Students, Islamic Education

Introduction

Islamic education in Indonesia and Malaysia shown remarkable improvement years by years, it currently become more mature and try to adopt numerous pedagogical methods, from modern teaching techniques and modern educational tools (Zarkasyi, 2020). Furthermore, in Malaysia, Islamic education curriculum and pedagogical approach are currently being revamp (Abdul Kadir et al., 2022), aims to make Islamic education more effective and relevant to address modern-day challenges.

When it comes to modern-day challenges, modern-day technology and Islamic society needed, while the technology revolutionized transmission of knowledge, as a Islamic society, people in Indonesia and Malaysia should referred to their Islamic scholarly values (Azman, Hamzah, & Abd Razak, 2024). In education in general, artificial intelligence (AI) has been employed as learning platform that cater students need, current digital tools can help administrative task and providing student to numerous resources (Mar, 2024). Innovation like virtual reality (VR) and augmented reality (AR) can help students to understand complicated theological concepts (Ansyah, 2022) and practices, like hajj.

The integration not only sparked enthusiasm, but also concern, as the over-reliance on technology can affect student thinking ability (Delello et al., 2025), furthermore it can erase their ability in analysis and evaluation. This concern also raised among Islamic scholars, since the Quran already emphasizes the importance of knowledge,

يَرْفَعِ اللَّهُ الَّذِينَ آمَنُوا مِنكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ دَرَجَاتٍ ۚ وَاللَّهُ بِمَا تَعْمَلُونَ خَبِيرٌ

"God will raise up, by many degrees, those of you who believe and those who have been given knowledge: He is fully aware of what you do." (Quran, 58:11),

The way to getting knowledge also should be concerned, since Islamic values should be integrated to all aspect of human life and behaviors (Mona, Hussin, & Abdullah, 2019).

However, the advent of AI technologies offers new opportunities for knowledge acquisition, particularly in areas such as textual interpretation (Ijtihad) and data-driven insights. As per Ansyah's (2022) work, Islamic Education is beginning to embrace digital tools that can enhance traditional methods, making it more accessible and dynamic.

Problem Statement

Despite the growing body of research on AI adoption in education, studies specifically addressing its usage in Islamic education and other Islamic science remain scarce. Most existing research focuses on medical fields likes the one by Tung & Dong (2023), leaving a significant gap in understanding AI's usage for religious studies. Also, studies on AI usage

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between Indonesia and Malaysia are limited. While some studies examine students' attitudes toward AI like a study by Alzahrani (2023), many researchers often overlook the unique cultural, religious, and contextual factors influencing Islamic specialization students.

This becomes a research gap in understanding the potential AI tools usage among religious studies. Also, AI tools usage studies in Indonesia and Malaysia still limited, leaving the unique factors like cultural, religion and contextual factors leaves behind. So, this lack focus need to be explore in these regions.

Literature Review

There are several previous research did before this, even though it not had same focus as this research, it may help to gain more insight in this area. For instance, chatbots are increasingly employed in universities to assist students with inquiries about courses and admissions, providing instant responses and reducing the workload on administrative staff (Guntoro, Loneli Costaner, & Lisnawita, 2020).

AI tools acceptance already researched by de Winter et all, using their ChatGPT Acceptance Scale, they revealed that ChatGPT usage has positive correlation with its effectiveness and negative with it concerns (De Winter, Dodou, & Eisma, 2024).

In Islamic educational context, the development of Islamic e-learning platforms and mobile applications has further amplified the reach and accessibility of Islamic education. These digital tools have made it possible for students to access educational content anytime and anywhere, breaking down geographical barriers and promoting lifelong learning (Mar, 2024). Also, innovations such as virtual reality (VR) and augmented reality (AR) have the potential to create immersive learning environments that deepen students' understanding of complex theological concepts (Ansyah, 2022).

However, the integration of modern technology with traditional Islamic education presents unique challenges that require careful navigation. For instance, AI-driven platforms may inadvertently perpetuate stereotypes or misinterpret Hadiths if not carefully curated by educators (Azman et al., 2024). Another issue is the lack of infrastructure among schools and universities, which can hinder the adoption of advanced technologies (Ansyah, 2022).

Within these issues, the Quran's teachings on responsibility and accountability also have implications for how Muslims engage with technology.

يَا أَيُّهَا الَّذِينَ آمَنُوا عَلَيْكُمْ أَنْفُسَكُمْ

“O you who believe, take care of your own selves.” (Quran, 5:105)

The verse can be seen as a reminder to use technology responsibly. Similarly, a warned against the dangers of excessive reliance on technology, citing the Quran's warning that

وَلَا تَقْفُ مَا لَيْسَ لَكَ بِهِۦ عِلْمٌ إِنَّ ٱلسَّمْعَ وَٱلْبَصَرَ وَٱلْفُؤَادَ كُلُّ أُوْلَٰٓئِكَ كَانَ عَنْهُ مَسْـُٔولا

" Do not follow what you have no ˹sure˺ knowledge of. Indeed, all will be called to account for ˹their˺ hearing, sight, and intellect." (Quran, 17:36).

This cautionary note highlights the need for Muslims to maintain a critical perspective on their use of technology.

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Other research suggested that there are at least three components should be considered, (1) Engaging in work that is intrinsically beneficial to humanity, (2) engaging in a religiously permissible profession, and (3) fostering positive relationships with stakeholders who are involved (Ghaly, 2024).

The Quran emphasizes the importance of adhering to Islamic principles in all aspects of life, including the use of technology. As Quran notes,

وَلْتَكُن مِّنكُمْ أُمَّةٌ يَدْعُونَ إِلَى ٱلْخَيْرِ وَيَأْمُرُونَ بِٱلْمَعْرُوفِ وَيَنْهَوْنَ عَنِ ٱلْمُنكَرِ ۚ وَأُوْلَـٰٓئِكَ هُمُ ٱلْمُفْلِحُونَ

" Let there be a group among you who call ˹others˺ to goodness, encourage what is good, and forbid what is evil—it is they who will be successful. " (Quran 3:104).

Scholars have noted that AI can be used to promote this goal by spreading religious values and enriching the ummah's understanding (Zaharah et al., 2024). The development of an Islamic ethical framework is crucial for regulating the use of AI technology among Muslims.

Methodology

Research Design

This research will try to understand factors behind AI tools usage among Indonesian and Malaysian Islamic Specialization Postgraduate Students, using qualitative research design. A qualitative research conducted when research problems needs to be explored, also when the research aim to reduce the power dynamics that frequently arise between a researcher and the participants in a study, while also enabling individuals to share their experiences and have their voices heard (Creswell & Poth, 2018).

Ontologically, individuals experience different experiences, in this research, each Islamic Postgraduate Students had different experience towards AI usage in their academic work. While these experiences are unique and diverse, this research aims to understand their individual factors and how the factors affect them individually. In order to understand an individual perspective, in depth interviews will be conducted, making qualitative methods suitable for this study. Also, interviews can facilitate a dialogue that can reveal the contextual richness of participants experience (Rutledge & Hogg, 2020).

Research Sampling

The participant's selection was done by some criteria, (1) participants must be enrolled in postgraduate programs with a focus on Islamic Specialization course in either Indonesia or Malaysia, (2) participants should have experience in using AI, by had history of AI use in recent months, and (3) participants should be willing to share their experiences and insights regarding AI.

To represent Indonesia and Malaysian Postgraduate Students samples, a university in both Malaysia and Indonesia were chosen, also participants were selected using previous criteria. By focusing on them, the research can delve into the unique cultural and ethical considerations that influence their attitudes toward AI usage. Based on research by Hennink and Kaiser, qualitative research would be saturated between 9-17 participants or 4-8 group discussion (Hennink & Kaiser, 2022). This study aimed to include 10 participants, 5 participants from

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Malaysia and 5 participants from Indonesia. Consequently, this participant count serves as a preventative step against any eventualities that may arise during the study process.

Instruments and Data Collection

Interviews serve as the primary methodology for this investigation. This is due to its adaptability, which has made it a popular technique for data collection in qualitative research. Interview protocols are developed in accordance with the research objectives. The queries employed in this session are unstructured and semi-structured, with an open-ended question at the conclusion that is specific to the primary themes and objectives. In order to facilitate the analysis of the data collected, the researcher chooses to conduct the interviews in English, Bahasa Melayu, or Bahasa Indonesia, as all participants are capable of understanding the language.

The interviews were conducted between Desember 2024 until the end of Januari 2025. The interview sessions were conducted in person, face-to-face verbal or using online tools, conversation in adherence to the ethical requirements and the participant's consent. Every interview session took about 25-30 minutes.

The researcher prepared the questions to be asked and allowed for the possibility of unexpected questions from the participants, as this is a common type of interview used in qualitative research (Creswell & Poth, 2018). The researcher posed open-ended questions to the participants to receive varied responses, allowing the participants to answer in their own words. If the participants' responses did not meet the research questions, follow-up and related questions were asked to ensure that the data obtained was relevant. In some cases, participants, when asked an open-ended question, provided answers that were well-developed and met the research questions.

Techniques of Data Analysis

After all the interview sessions, the recorded audios will be converted into verbatim textual transcripts. The transcripts will be analyzed manually for analysis. The process of analyzing data in this study uses thematic analysis, which involves identifying and interpreting patterns or themes within the data. Researchers organize, review, and transcribe their respective interview data. The transcribed data will be gathered and read repeatedly to become familiar with the content. Discussions on the coding process are conducted, aligning it with the research questions and objectives. The codes will be derived from the data, it will be analyzed and categorized into broad themes, then it will be divided into smaller sub-themes. This analysis process is crucial as it gives meaning to the data obtained from the interviews (Creswell and Poth, 2018).

Findings and Discussions

Participants Background

This qualitative research involved a total of ten respondents, drawn from two universities from Malaysia and Indonesia. From the Malaysian university, participants were enrolled in the Islamic Education and Islamic Finance Banking majors. Meanwhile, respondents from the Indonesian university were from the Islamic Education, Arabic Language Education, Islamic Educational Management majors. This equal distribution of respondents provided a balanced

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perspective, enriching the study with diverse academic backgrounds and cultural insights from both educational and geographical contexts.

Based on participants background, the population was postgraduate students in Indonesia and Malaysia. Both countries located in Southeast Asia, known by their rich Islamic educational histories (As'ad et al., 2021). Their higher education also had their unique blends and approaches in combining Islamic education and modern technology (Bakar, 2011; Sugianto et al., 2024), make universities in both countries great example to conduct this research.

AI Tools Utilized

Table 1: AI Tools Utilized by Respondents

Research Objective	Themes	Findings
AI Tools Utilized	Chatbot and Text Generator	ChatGPT, Deepseek, Gemini, POE-AI
	Translator and Paraphraser	DeepL, Quillbot
	Research Assistance	ChatPDF, OpenReadAI, Perplexity, Scispace

Source: Primary Source

Chatbot and Text Generator

"*When it's really hard to find a discussion partner. Chat GPT always answers the best….*" R1
"*…if the lecturer gives us a assignment, tells us what to do. We don't all understand the assignment right. Usually, I discuss it with AI first, then we understand what it is about. After that, we continue working on it….*" R1

According to R1, finding a suitable discussion partner has become increasingly challenging. However, this issue was mitigated significantly by the use of certain AI tools as a supplementary resource during difficult discussions.

In context of education, this integration also founds in several research, chatbot and text generator serve as interactive agents that facilitate personalized learning experiences, thereby enhancing student engagement and satisfaction (Labadze et al., 2024). Also, chatbot and text generator can offer quick and personalized services to students (Okonkwo & Ade-Ibijola, 2021).

Translator and Paraphraser

"…actually, AI tools were very helpful in translating Arabic texts in papers, journals and final assignments…" R6
According to R6, integrating AI tools has become increasingly valuable in handling academic tasks. R6 also added,
*"…AI matches the Arabic text better than using **** (other translation tools) which is very chaotic in translation. …" R6*
"…I think it's faster than searching on the website…" R3

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While other tools can sometimes produce inconsistent or unnatural translations, AI powered translation tools provide more accurate and contextually appropriate interpretations, making it a reliable resource for scholars navigating the challenges of multilingual academic work.

AI tools like DeepL significantly aid students in understanding complex texts by providing accurate translations, thereby bridging language barriers and fostering inclusivity (Munawwarah & Martriwati, 2024). Meanwhile, AI-powered paraphrasing tools such as Quillbot assist students in rephrasing their ideas, promoting originality and reducing instances of plagiarism (Asmara & Kastuhandani, 2024).

Research Assistance

"...compared to reading articles or books, using AI can answer questions by providing desired points..." R7
"...When doing assignments with help of AI tools, the tasks are completed faster..." R8

AI has become an invaluable tool for interviewees in enhancing their research and academic processes, offering significant efficiency gains across various tasks. AI tools can significantly reduce the time required for other process, thereby allowing researchers to focus on analysis and interpretation (Subharun Pal, 2023). AI-powered tools assist researchers in rephrasing their findings, promoting clarity and reducing the risk of plagiarism (Chubb et al., 2022).

Factor for AI tools

Table 2: Factor for AI Tools Usage by Respondents

Research Objective	Themes	Subthemes
Factor for AI tools	Use Duration	
	Performance Expectancy	
	Effort Expectancy	
	Social Influence	Friends, Lecturers
	Facilitating Conditions	Institutional Supports
	Islamic Ethics and Values	

Source: Primary Source

Use Duration

"*Since I started my postgraduate studies*" R7
"*Yes, the end of 2023*" R3

Shows that at least they already started their AI tools and academic journey at least a year. Other respondents even tailored the AI tools since the years of 2022 like R1, and years of 2023 like R2 and R3.

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The adoption of AI has been marked by significant milestones, such as the rapid increase in generative AI applications, which saw a 65% adoption rate in 2024 (Da Costa et al., 2022). This phenomenon is supported by the notion that positive user experiences enhance perceived value, fostering a sense of reliance and habitual engagement (Hariguna & Ruangkanjanases, 2024).

The habitual use of AI is further reinforced by the seamless integration of these technologies into everyday activities. AI-powered applications, from virtual assistants to recommendation systems, have become ubiquitous, subtly weaving themselves into the fabric of daily life (Al-Shoteri, 2022).

Performance Expectancy

"*That's easy to understand. AI tools always answer the best*." R1

R1 mentioned that AI tools are easy to understand and consistently provide the best answers. This kind of result previously presented, AI tools can significantly reduce the workload for educators by automating tasks such as curriculum development and student assessment, thereby allowing more time for direct student engagement (Sağın et al., 2024). AI tools can analyze vast amounts of data can streamline the research process, making it easier for scholars to generate hypotheses and validate their findings (José Segovia Juárez & Robert Baumgartner, 2023).

Effort Expectancy

R6 highlighted that
"*AI is very helpful in making it easier for me to do my assignments*" R6

This is supported by R1, who simply stated that using AI is easy.
"*it's easy*." R1

AI tools can be easier to use than conventional tools, make the user more comfortable to utilize AI tools that others, and cannot be omitted from daily life (Salas-Pilco & Yang, 2022). AI presents advancement in many industries including education by learning from recurrence historical patterns, make it faster and easier to conduct (Haenlein & Kaplan, 2019; Muthukrishnan et al., 2020). The effort expectancy between AI tools also can be seen among automation grading tools and evaluation, AI tools help in reducing workload of users (Ahmad et al., 2022; González-Calatayud et al., 2021).

Social Influence

Respondent 1 (R1) highlighted the collaborative nature of AI usage within groups of friends, where they recommend different AI tools to each other.
"…in groups with friend, (We tell each other) try using this AI, (and another) those AI…." R1

R1 mentioned that some lecturers suggest it is acceptable to use AI, reflecting a supportive attitude towards integrating AI into learning.
"…there are also some lecturers who suggest that it's okay to use AI...." R1

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R4 added that students are sometimes advised to use AI for inspiration, especially when they encounter difficulties.

Social influence plays a pivotal role in shaping individuals' attitudes towards AI adoption (Camilleri, 2024). Peers often act as catalysts, encouraging each other to explore and utilize. Lecturers, as authoritative figures, provide endorsements and integrate AI into their teaching methods, thereby legitimizing its use and fostering a culture of acceptance (Camilleri, 2024). However, the impact of social influence on AI adoption is not without its complexities. Social influence can drive initial interest, it may also lead to superficial engagement with AI technologies (Camilleri & Kozak, 2022).

Facilitating Conditions

R3 pointed out that there are no facilities on campus dedicated specific to AI tools, a sentiment echoed by R1 and R2,

"…*That means there is no facility on campus....*" R3
"…*But institutionally, the campus doesn't provide it (AI) either....*" R1
"…*No, as far as I know, maybe there is but I don't know.....*" R2

Although some respondents stated that their universities don't have any clear guide on AI tools and AI usage, other already stated that their universities had included AI tools on their curricula. Institution can give their student a conducive environment, make them unlock new avenues of learning and research (Miao et al., 2021).

Furthermore, institutional support can be done by providing access to AI-related sources (Ong et al., 2024). institutions must also invest in training program that can equip their students with the skills needed to navigate the complex aspect of AI (Miao et al., 2021).

Islamic Ethics and Values

R2 mentioned that as long as AI usage is not prohibited by lecturers, campus rules, or religious beliefs, there is no argument against it.

"...as long as it is not prohibited, either by the rules of the lecturer concerned, or from the campus, or from our own religion, there is no argument that prohibits the use of AI...." R2
"...if you ask about halal and haram, you should not use AI and also the laws...." R3
"...I personally don't use AI (to ask about) religion...." R4
"...if it's about Islamic law, I don't really dare to discuss it with Chat GPT. I prefer (to ask) real humans...." R1

R3 advised against using AI to determine what is halal or haram, while R4 personally avoids using AI for religious questions. R1 also prefers consulting real humans for matters related to Islamic law, rather than relying on AI tools.

Scholars concurred on the necessity of monitoring AI concerns through a specific guideline, the acknowledge that society must be educated about the scope of AI impacts and threats through various mass media platforms (Aliff Nawi et al., 2021), in instance society should not reliance on religious fatwas made by AI (Hakim & Azizi, 2023). Referred to Quran that warned

وَلَا تَقْفُ مَا لَيْسَ لَكَ بِهِۦ عِلْمٌ إِنَّ ٱلسَّمْعَ وَٱلْبَصَرَ وَٱلْفُؤَادَ كُلُّ أُوْلَٰٓئِكَ كَانَ عَنْهُ مَسْـُٔولًا

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" Do not follow what you have no ˹sure˺ knowledge of. Indeed, all will be called to account for ˹their˺ hearing, sight, and intellect." (Quran, 17:36).

AI should be seen as enhancing tools for works in professional settings (Ghaly, 2024), that doesn't have any consciousness, nor ontological perspective like human being (Pohan et al., 2023). The Quran underscores the significance of adhering to Islamic principles in all facets of life, including the use of technology. As Quran notes,

وَلْتَكُن مِّنكُمْ أُمَّةٌ يَدْعُونَ إِلَى ٱلْخَيْرِ وَيَأْمُرُونَ بِٱلْمَعْرُوفِ وَيَنْهَوْنَ عَنِ ٱلْمُنكَرِ ۚ وَأُو۟لَٰٓئِكَ هُمُ ٱلْمُفْلِحُونَ

" Let there be a group among you who call ˹others˺ to goodness, encourage what is good, and forbid what is evil—it is they who will be successful. " (Quran 3:104).

Challenges and Solutions

Table 3: Challenges Faced by Respondents and Their Solutions

Research Objective	Themes	Findings
Challenges and Solutions	Challenges	Accuracy, Depth of Knowledge
	Solutions	Double Checking Information, Traditional Learning

Source: Primary Source

Challenges

"*…Actually, in Islamic fields, sometimes (AI) a bit inaccurate. Like for example the verses or hadiths*...." R1
"*…I tried it once when I asked about a verse from the Quran. From the beginning it was right, but at the end he was wrong*...." R4
"*…In general, the mentioned AIs are quite accurate, but there are some things that are less suitable and seem to force answers*...." R8

R1 noted that AI can sometimes be inaccurate when dealing with Islamic content, such as verses or hadiths. This sentiment is echoed by R4, who shared an experience where an AI provided a correct Quranic verse initially but made errors towards the end. R8 acknowledged that while AI tools are generally accurate, there are instances where the answers seem forced or less suitable.

"...the AI answers not directly that the law is this, but usually he gives a definition first, then the mechanics of how, then in the conclusion...." R2
R2 observed that AI does not directly state the law but instead provides a structured response. This typically includes a definition, an explanation of the mechanics, and a concluding statement.

Challenges that AI based on information and decision-making process are not transparent. To address this, organizations should prioritize the development of "explainable AI," which allows

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stakeholders to comprehend the rationale behind AI-driven decisions (Yadrovskaia et al., 2023). Mixed attitudes towards AI, indicate that while there is optimism about AI's capabilities, significant ethical concerns remain, particularly regarding applications that involve human judgment (Schepman & Rodway, 2020).

Solutions

"*…Almost every time I ask a question using AI, I try to find other sources....*" R2
"*…we have to keep cross-checking. If we just swallow it whole, it's a bit fatal....*" R1
R2 mentioned that they almost always seek additional sources after asking a question using AI. This practice is echoed by R1, who stressed the necessity of cross-checking information to avoid blindly accepting it, which could lead to significant errors.

"…learning it sometimes requires traditional methods so that the knowledge learned is more blessed...." R6

R6 expressed that traditional methods are sometimes necessary for learning, as they believe it brings more blessings to the knowledge acquired.
"…I personally don't use AI for religion. The problem is that it's more convenient to look directly to the (Google) Scholar. It still feels better to explore it yourself...." R4

R4 shared a personal preference for using Google Scholar over AI for religious inquiries, finding it more satisfying to explore information independently. To overcome AI information biased, double check information as the simplest way already performed by respondents. Other articles already suggest to balance of both adequate trust and skeptical usage of AI systems recommendations when appropriate, generally described as "well-calibrated trust" (Zhang et al., 2020).

Then, traditional learning and teacher-student dynamic is essential for fostering motivation and engagement, and its disruption could negatively impact student learning (Pahuja et al., 2024).

Conclusion
In conclusion, this research aimed to understand the factors behind AI usage among Indonesian and Malaysian Islamic Specialization Postgraduate Students, utilizing the Unified Theory of Acceptance and Use of Technology (UTAUT) as the main theoretical framework. The study revealed that positive expectancy on performance and effort, the influence of social factors such as peers and lecturers and facilitating condition like institutional support significantly drive AI usage intention. The findings underscore the importance of balancing the benefits of AI, such as personalized learning and research efficiency, with the need to foster critical thinking and independent learning. This balance is crucial to ensure that AI enhances educational experiences without compromising intellectual growth.

The practical implications of these findings suggest that educational institutions should develop guidelines that respect religious and ethical frameworks, ensuring that AI usage aligns with students' moral and spiritual principles. Tailored training programs on AI tools that consider diverse cultural and religious backgrounds can foster a more inclusive and thoughtful approach to technology in education. By doing so, institutions can create an environment where all students feel empowered to engage with AI meaningfully and responsibly. This approach not

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only supports academic success but also promotes a deeper understanding of the ethical implications of AI usage.

However, the study also highlighted several limitations that future researchers should address. The cross-sectional nature of the study may introduce biases and limit the understanding of how AI adoption evolves over time. Additionally, the focus on Islamic Specialization Postgraduate Students in Indonesia and Malaysia restricts the generalizability of the findings. Future research should include a more diverse sample and adopt longitudinal designs to capture the dynamic nature of AI usage. Integrating additional theoretical models could also provide a more comprehensive analysis of the factors influencing AI adoption.

Overall, while the findings validate the applicability of UTAUT in understanding AI adoption, they also reveal areas that require further exploration. The study contributes to the existing body of knowledge by highlighting the nuanced ways in which AI is integrated into educational settings and the importance of balancing technological advancements with ethical considerations. By addressing the identified limitations and expanding the scope of inquiry, future studies can build on these findings and contribute to a deeper understanding of AI's role in education, ultimately guiding institutions in creating more effective and inclusive AI integration strategies.

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