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The Use of AI Chatbots for Academic Research: A Qualitative Study on Indonesia Students' Perceptions

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Abstract: The advancement of artificial intelligence (AI) technology has driven transformations in higher education, particularly through the utilization of AI-based chatbots. These chatbots are employed by students to support various aspects of academic research activities. This study aims to uncover students' perceptions regarding the effectiveness and skillfulness in using AI chatbots to support their understanding and execution of academic research. Employing a descriptive qualitative approach, this study involved 100 students from 12 higher education institutions in Indonesia, selected purposively. The findings revealed five key themes: (1) ease of use and accessibility; (2) comprehensive features and information capacity; (3) ability to assist academic writing; (4) availability of credible academic references; and (5) flexibility and contextualization—students use multiple chatbots depending on their specific needs and contexts. This research provides a theoretical contribution to educational technology studies and practical implications for higher education institutions in designing contextual and adaptive AI literacy training.

Keyword: Chatbot, Artificial intelligence, academic research, ChatGPT, UTAUT

INTRODUCTION

In the rapidly evolving digital era, artificial intelligence (AI) technology has permeated various sectors, including higher education. Among the technological innovations increasingly used by students today are AI-based chatbots such as ChatGPT, Gemini, and Deepseek. These chatbots can instantly and dynamically respond to user queries, making them attractive tools for students in organizing ideas, understanding material, and supporting academic writing. In Indonesia, the rapid adoption of ChatGPT by students highlights the need for flexible, personalized, and easily accessible learning tools. However, research in Indonesia deeply exploring student perceptions of AI chatbot use, particularly in the context of academic research, remains limited. Most previous studies are quantitatively dominated, focusing on measuring factors like perceived usefulness and ease of use without qualitatively delving into student experiences and

perceptions formed through their interactions with these chatbots (Polyportis & Pahos, 2024; Rahman, Hossain, et al., 2025). Additionally, most of these studies have been conducted outside the Indonesian context, such as in Europe and China, which have distinct educational systems and academic cultures (Tian et al., 2024).

Addressing this gap, this study aims to reveal Indonesian students' perceptions of using AI chatbots as research aids. A qualitative approach is employed to deeply capture the subjective meanings constructed by students. This research utilizes Self-Determination Theory (SDT) as the theoretical foundation to understand how AI chatbots can intrinsically influence students' motivation and learning processes. SDT emphasizes the fulfillment of three basic psychological needs: autonomy, competence, and relatedness (Deci & Ryan, 1985). In the context of academic research, using AI chatbots like ChatGPT can enhance students' sense of autonomy as they independently access information and structure their thoughts without complete reliance on lecturers or formal guidance (Alshwiah, 2024). Additionally, AI chatbots contribute to increased competence by providing quick feedback, explaining complex terms, and assisting in structuring academic writing, ultimately boosting students' confidence in conducting research (Rahman, Ismail, et al., 2025; Tian et al., 2024). While they do not replace direct human interaction, chatbots can foster a sense of relatedness through cognitive and emotional support experienced by students when receiving satisfying answers to their research inquiries (Polyportis & Pahos, 2024; Subiyantoro et al., 2023).

This research specifically aims to answer two main questions: (1) How do students perceive suitable AI chatbots for assisting in academic research? (2) How do students perceive their skillfulness in applying AI chatbots to support academic research?

Findings from this research are expected to contribute theoretically to the development of SDT within the educational technology context and provide practical contributions to higher education institutions in formulating responsible AI literacy policies and training.

METHODS

This study employed a descriptive qualitative approach to uncover students' perceptions of using AI chatbots as tools to assist in conducting academic research. This approach was selected due to its ability to capture subjective meanings, personal experiences, and in-depth student interpretations of the phenomenon under investigation. Participants included 100 undergraduate (S1) and master's (S2) students from 12 universities in Indonesia, chosen through purposive sampling, considering their prior experience or at least knowledge of AI, particularly chatbots, in learning or academic research contexts.

The research instrument utilized in this study was a questionnaire-based open interview format designed to explore key themes in student perceptions. The questions covered dimensions such as knowledge, personal experience, perceived quality and preferences, expected skills, and tendencies in using AI chatbots for research purposes. Data collection was conducted online via Microsoft Forms over a full month.

Data analysis employed thematic analysis following Braun and Clarke's (2006) six-step model. The steps included: (1) reading the entire dataset to become familiar with the content and noting initial thoughts, (2) coding interesting data segments to generate initial codes, (3) grouping these codes to identify relevant themes, (4) reviewing themes to ensure their alignment with the data, (5) defining and naming the established themes, and (6) preparing a report by selecting representative data excerpts for illustration. This approach aimed to comprehensively capture the complexity of student perceptions.

The specific questionnaire questions for this research were:

1. Have you ever used AI as a student?
2. Which types of AI from the following have you used?
3. In your opinion, which AI is the best and most suitable for student research? Why?

4. If you had to subscribe to a premium AI service for your research as a student, which AI would you be willing to pay for? Why?
5. If an AI training class for student research were offered, which AI would you be most interested in learning about? Why?

RESULT

Participant

Data collected from 100 informants from 12 universities in Indonesia revealed that students' perceptions of preferences and skills in using AI chatbots are significantly influenced by their demographic backgrounds. The analysis showed that AI chatbots, such as ChatGPT, are utilized not only as technical tools but also as flexible and adaptive learning companions tailored to individual student needs. Table 1 presents the informant data:

Table 1. Pariticipant Profile

Profile	Nilai	Frequency	Percent
Gender	Male	51	51%
	Female	49	49%
Marital status	Married	57	57%
	Single	40	40%
	Separated/Divorce	3	3%
Employment	Employed	57	57%
	Unemployed	24	24%
	Entrepreuner	19	19%
Age	20-24	27	27%
	25-29	21	21%
	30-34	15	15%
	35-39	12	12%
	40-44	12	12%
	45-49	6	6%
	>50	7	7%
Education	Undergraduated	45	45%
	Master	42	42%
	Doctor	13	13%

Source: Author, 2025

Most informants in this study were male students, although the gender ratio was almost balanced, indicating that adopting technologies like AI chatbots transcends gender and is not limited to a specific group. The majority of informants were married and employed either as employees or entrepreneurs. This condition indirectly motivates them to seek efficient, quick, and accessible learning solutions. In this context, the presence of AI chatbots is seen as highly relevant. Students utilize AI to understand research concepts, structure academic writing, and independently evaluate research ideas. The AI's ability to provide concise, direct, and personalized responses is the primary reason students view chatbots as effective tools for guiding their academic research processes.

Most informants were aged between 20 to 29, representing a productive phase in higher education. This age group is generally more receptive to technological innovation and has higher digital literacy, influencing their optimal use of AI chatbot features in academic activities. Respondents were predominantly undergraduate and master's level students.

These findings support the understanding that perceptions of preferences and chatbot application skills cannot be separated from students' social, academic, and technological contexts. AI chatbots have become an integral part of the learning ecosystem, supporting students' independent, focused, and efficient academic research. In other words, students'

demographic backgrounds significantly influence how they integrate AI into their learning and research processes in higher education.

AI Chatbots Used

The use of AI chatbots among students is quite varied. Although there is a tendency for students to favor one particular chatbot, they still recognize and use other AI platforms as well. In response to a survey question, students were asked to select all AI chatbots they typically use, allowing for multiple responses.

Data presented in Table 3 show the number of users and the total percentages, which cumulatively exceed 100% since students could select more than one chatbot.

From the table, ChatGPT emerges as the most frequently used AI chatbot, with usage among 93% of respondents. This dominance indicates that ChatGPT has become the primary tool for students in carrying out academic activities, particularly in information retrieval, material comprehension, structuring academic writing, and formulating research topics.

Gemini AI also has relatively high usage, at 51%, positioning it as the primary alternative to ChatGPT. This suggests increased exposure among students to other AI products likely integrated into the Google or Android ecosystems, making them readily accessible to users familiar with Google Workspace services.

Furthermore, Perplexity AI was used by 30% of respondents, followed by Jenni AI (27%) and DeepSeek (24%). These four chatbots below ChatGPT reflect students' preference for AI variations combining generative capabilities with additional features such as source-based search, automated writing, or academic reference exploration. This underscores that students utilize AI not just for simple Q&A interactions but also for supporting more complex and structured academic processes.

Meanwhile, specialized chatbots like ChatPdf and Blackbox AI were each used by only 3% of respondents. These figures suggest that despite their specific and useful functionalities (e.g., reading PDF documents or coding assistance), their adoption remains limited, possibly due to insufficient promotion, limited free features, or students' lack of awareness of these platforms.

Table 2. Chatbot AI most used

No	Chatbot	Frequency	Percent
1.	ChatGPT	93	93%
2.	Gemini AI	51	51%
3.	Perpelexity AI	30	30%
4.	Jenni AI	27	27%
5.	DeepSeek	24	24%
6.	ChatPdf	3	3%
7.	Blackbox AI	3	3

Source : Author, 2025

Student Perceptions of AI Chatbot Use for Academic Research

Students, as end-users of this technology, have begun integrating chatbots into various academic activities, including research. However, the use of this technology goes beyond technical functionality—it is closely tied to how students perceive the usefulness, effectiveness, and relevance of AI chatbots in academic contexts.

To gain deeper insight into these experiences, this study explored students' perceptions through several open-ended questions. These questions were designed to capture students' subjective views on which types of AI chatbots they found most helpful for research activities and the reasons behind their preferences.

Thematic analysis of the responses revealed various patterns of perception that shape how students evaluate and use AI chatbots in their academic processes. Key themes that emerged include ease of use, feature completeness, support in academic writing, access to scholarly references, and the chatbot's flexibility to adapt to user-specific needs. ChatGPT consistently appeared as the most frequently mentioned chatbot, although the presence of other tools such as DeepSeek, Perplexity AI, and ChatPDF also indicates students' growing diversity in preferences, depending on their goals and usage contexts.

This section presents those findings in detail, discussing how such perceptions are formed and how each type of chatbot plays a role in students' research experiences. It also highlights the implications of these trends for digital literacy development and AI usage policies in higher education.

1. Perceived Ease of Use

One of the main themes emerging from the analysis is ease of use and accessibility, which forms the foundation of students' perceptions of a chatbot's viability for academic research. Most respondents emphasized that the ideal chatbot requires no advanced technical skills, is easily accessible, and features a simple and familiar interface. ChatGPT was consistently mentioned as the chatbot that best fits these criteria.

Student quotes supporting this finding include:

"*So far, it's still ChatGPT because it's easy to use and I'm already familiar with it*." (AR, Master's Student, Universitas Negeri Jakarta)

"*ChatGPT, because it's easy to use and already familiar in daily use*." (DN, Undergraduate Student, Politeknik Negeri Batam)

"*I still use ChatGPT because it's the easiest and least complicated when looking for research ideas*." (FH, Master's Student, Asaindo)

"*ChatGPT doesn't require installation or complex login—it's ready to use and very helpful*." (SK, Undergraduate Student, Universitas Bina Sarana Informatika)

"*I chose ChatGPT because its interface is simple, responsive, and I'm already used to it*." (TM, Master's Student, Universitas Winaya Mukti)

These findings show that familiarity and ease of navigation are key considerations in shaping positive perceptions of AI chatbots.

Theoretically, this aligns with one of the core variables in the Unified Theory of Acceptance and Use of Technology (UTAUT), namely *effort expectancy*, which refers to the degree to which a person believes that using a technology will be free of effort. Students in this study demonstrated that ease of use is a crucial prerequisite for them to actively adopt and utilize AI chatbots in research activities. This is consistent with previous studies showing that perceived ease of use is a strong predictor of new technology adoption, especially in higher education and digital learning environments (Rahman, Ismail, et al., 2025; Venkatesh et al., 2003).

2. Perceived Performance

The second major theme is the completeness of features and the breadth of information capacity offered by AI chatbots, which enhance performance in academic research. Students' perceptions of chatbot effectiveness extend beyond basic Q&A functions and include advanced capabilities such as academic writing assistance, text revision, citation generation, and literature recommendation. ChatGPT and DeepSeek were the two most frequently mentioned chatbots in this regard.

ChatGPT was praised for providing thematically relevant answers with broad contextual adaptation, while DeepSeek stood out for its ability to deliver results based on trusted academic sources.

Clear illustrations of this are provided in student responses:

"*ChatGPT because its usage is broader and features are diverse. I can ask for text corrections or even get a draft research proposal outline*." (DR, Master's Student, Universitas Negeri Jakarta)

"*DeepSeek and ChatGPT provide information sources, references, and deep explanations relevant to my research topics*." (MA, Master's Student, Universitas Winaya Mukti)

These findings are highly relevant when viewed through the lens of *performance expectancy*, another key variable in UTAUT, which measures the degree to which using a technology is believed to enhance performance or productivity. Students who view chatbots as contributing to speed, efficiency, and quality in their research process demonstrate high performance expectations of these tools. In academic research contexts, AI that not only answers but also helps construct arguments, find literature, and evaluate written outputs is clearly considered highly valuable.

This supports the conclusion that student adoption of AI chatbots is driven not only by ease of use (*effort expectancy*), but also by the belief that the technology tangibly improves their academic performance—consistent with prior research (Polyportis & Pahos, 2024; Rahman, Hossain, et al., 2025).

3. Perceived Usefulness

The third consistently emerging theme from the thematic analysis is students' perception of usefulness—considered one of the most crucial factors in evaluating this technology. Students do not only use chatbots to answer general questions but also utilize them intensively for structuring academic writing, improving grammar, and revising manuscripts. In this context, ChatGPT and ChatPDF were the two most frequently mentioned AI platforms.

ChatGPT was regarded as highly effective in assisting the construction of academic paragraphs, addressing conceptual or methodological questions, and providing alternative academic phrasing. Meanwhile, ChatPDF was used by students who needed to understand PDF journal content quickly and systematically without reading the entire document manually.

Respondents' quotes illustrate how these chatbots function as practical and efficient academic writing assistants:

"*ChatGPT helps me build outlines and compose paragraphs in an academic writing style*." (NA, Master's Student, Politeknik Negeri Batam)

"*I use ChatGPT when I get stuck writing the methodology section or adjusting the academic language*." (IR, Master's Student, Universitas Winaya Mukti)

"*ChatPDF is really helpful when I need explanations for long journal articles, so I can quickly get summaries of the main points*." (HL, Undergraduate Student, Universitas Muhammadiyah Makassar)

"*I usually ask ChatGPT to revise my writing so it's more academic and coherent*." (YF, Master's Student, Universitas Negeri Jakarta)

"*ChatGPT feels like my personal editor—fast, flexible, and understands academic writing structure*." (DS, Undergraduate Student, Asaindo)

These findings demonstrate that students highly value the *perceived usefulness* of AI technology, which directly contributes to improving their academic writing quality. The concept of perceived usefulness is a core variable in the Technology Acceptance Model (TAM), defined as the extent to which a person believes that using a technology will enhance their task performance.

Students who feel supported in writing, constructing academic arguments, or comprehending complex journal content clearly view chatbots not just as passive tools, but as productive partners in their academic journey. This interpretation is consistent with previous

studies, including Tian et al. (2024) and Bilquise et al. (2024), which show that the stronger the perception of direct usefulness, the greater the intention to adopt and continue using the technology in educational contexts. In this case, AI chatbots such as ChatGPT and ChatPDF have met students' expectations as concrete, efficient, and relevant writing tools—making perceived usefulness a key explanation for continued and integrated use of chatbots in academic research.

4. Perceived Benefit

The fourth theme arising from the analysis is *perceived benefit*, which reflects students' need for valid, credible, and verifiable sources of knowledge when writing academic papers. In this context, students considered an ideal AI chatbot to be one that not only answers questions generally, but also provides supporting data, academic references, journal links, and citations.

The two most frequently mentioned chatbots in this category were DeepSeek and Perplexity AI. These platforms were appreciated for delivering transparent, reference-based answers that could be used directly in academic contexts without requiring time-consuming verification.

Quotes from informants illustrate that the ability to provide explicit references is key:

"*DeepSeek because it can show clear sources from journals and doesn't just give random answers*." (MR, Master's Student, Universitas Negeri Jakarta)

"*Perplexity AI, because every answer includes a reference link, so I can verify it immediately*." (AY, Master's Student, Politeknik Negeri Batam)

"*I like using Perplexity AI because it helps find references and provides source lists with DOIs*." (TK, Undergraduate Student, Universitas Muhammadiyah Bone)

"*When I need data I can directly cite, I use DeepSeek because it's accurate and uses official sources*." (ZH, Master's Student, Universitas Winaya Mukti)

"*Perplexity AI is very helpful because its answers come with journal citations and scientific news sources*." (LN, Undergraduate Student, Asaindo)

Conceptually, this aligns closely with the *perceived benefit* variable in the Health Belief Model (HBM), which refers to the extent to which a person believes that using a technology provides real advantages or benefits in achieving their goals. In technology adoption studies, perceived benefit is often a key variable in explaining users' intention to reuse a system or digital tool.

Students who believe that chatbots like Perplexity and DeepSeek offer accountable information naturally perceive these technologies as adding significant value to their academic research efforts. In adoption theory, perceived benefit is usually seen as a strong driver of usage loyalty—where users not only try a technology but integrate it into their daily workflow. This is consistent with literature by Alshwiah (2024) and Tian et al. (2024), which emphasizes that practical benefits in education are one of the main motivators for sustained technology use.

5. Perceived Value

The fifth theme that emerged is *perceived value*—students' belief that no single AI chatbot is perfect, and that each has strengths and limitations depending on the context of use. Students showed a tendency to combine several types of chatbots to address various aspects of academic research, such as finding references, writing, analyzing scholarly articles, or understanding methodologies.

ChatGPT remains the most commonly mentioned tool, but not as the only solution. Instead of relying exclusively on one platform, students adopt an adaptive and strategic approach in choosing AI tools according to their specific needs at different times.

Some respondents explicitly expressed this multimodal approach:

"*All are good based on their roles and purposes. Sometimes I use ChatGPT, sometimes Perplexity for references*." (EA, Master's Student, Universitas Negeri Jakarta)

"*It depends on the need—sometimes I use Jenni AI for writing, but for idea generation I prefer ChatGPT*." (RK, Undergraduate Student, Politeknik Negeri Batam)

"*I use multiple AI tools because none is complete; I adjust based on the function*." (BT, Master's Student, Asaindo)

"*If I only use one AI, it feels lacking. So I combine ChatGPT and DeepSeek*." (SW, Master's Student, Universitas Winaya Mukti)

"*ChatGPT for general tasks, Perplexity for references, and sometimes Jenni AI for editing*." (VN, Doctoral Student, Universitas Muhammadiyah Makassar)

This finding is highly relevant when analyzed using the Value-based Adoption Model (VAM), particularly the variable of *perceived value*, which measures the extent to which users feel that the benefits of a technology outweigh the sacrifices made—whether in terms of time, effort, or cost.

In this context, students actively evaluate the value of each chatbot based on functional fit to their needs, rather than relying exclusively on one. Their decision to use multiple chatbot types shows a rational evaluation process that considers efficiency, outcome quality, and flexible technological use.

In technology adoption literature, perceived value is a proven strong predictor of behavioral intention to use, as outlined in the VAM model (Kim et al., 2007). Students who feel that combining various AI tools yields higher value are more likely to continue using and exploring those technologies. This suggests that practical value and contextual flexibility in AI usage are key factors driving sustained adoption—and opens the door for multi-platform AI integration in more personalized, strategic, and efficient academic research processes.

CONCLUSION

This study aimed to answer two main research questions:

(1) What are students' perceptions of most suitable AI chatbot for assisting in the implementation of academic research?

(2) What are students' perceptions of their skills in applying AI chatbots to support academic research?

First, students' perceptions of the most suitable AI chatbot for assisting academic research are largely dominated by ChatGPT. It is perceived as the easiest to use, most familiar, and capable of answering academic questions with broad contextual understanding. Students regard ChatGPT as an effective learning tool because it requires no advanced technical skills, features a simple and intuitive interface, and provides fast, personalized responses. This finding aligns with the concept of *effort expectancy* in the UTAUT theory, which suggests that ease of use is a key factor in forming positive perceptions of technology.

Second, students' perceptions of their skills in applying AI chatbots reflect a need for more functional and specific features. Students utilize chatbots not only to retrieve information but also to structure academic writing, revise texts, understand methodologies, and search for or verify academic references. ChatGPT, DeepSeek, and Perplexity AI were the most frequently mentioned chatbots in this context. This aligns with the variables of *performance expectancy* and *perceived usefulness*, which indicate that students believe the use of AI chatbots significantly enhances the productivity and quality of their research.

Furthermore, the findings also confirm a multimodal approach by students in using various chatbots depending on context and need. No single chatbot is perceived as all-encompassing; instead, students choose adaptively based on the strengths of each platform. This reinforces the concept of *perceived value* in the Value-Based Adoption Model (VAM),

which explains that technology adoption is influenced by rational evaluation of relative benefits compared to the effort or cost involved.

Thus, this study fully answers both research questions and emphasizes that students' perceptions of AI chatbots are multilayered: beginning with technical convenience, moving toward functional effectiveness, and ultimately considering flexibility and strategic value in academic research contexts. These findings form a crucial foundation for the development of AI literacy in higher education and for formulating policies to integrate AI technologies into research and academic writing curricula.

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