

Gender and Academic Level Differences in Artificial Intelligence Usage for Academic Writing in Indonesian Higher Education

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Abstract:

The rapid spread of AI chatbots has begun to reshape how university students plan, draft, revise, and evaluate academic writing. Although recent studies have examined students' perceptions of generative AI in higher education, less is known about how students in regional Indonesian universities understand and use these tools, particularly when viewed across gender, age, and academic level. This study investigated the perceptions and reported use of AI chatbots among 267 students from four universities in East Kalimantan. A mixed-method survey design was used. Quantitative responses were analyzed through descriptive statistics and Spearman's rho correlation, while open-ended responses were coded to identify the AI tools students reported using for academic writing. The results show that AI use was widespread, with 94.76% of respondents indicating that they had used AI in academic writing. Students generally held positive views of AI chatbots, especially for improving writing effectiveness, language quality, and the revision process. At the same time, their responses revealed continuing ethical and pedagogical uncertainty, particularly around learning, authorship, and the boundary between assistance and cheating. Correlation analysis showed weak relationships between students' perceptions and gender, age, or semester, suggesting that AI chatbot use was broadly shared across demographic groups. The study offers regional evidence from Indonesian higher education and underscores the need for clearer AI literacy instruction, responsible-use guidelines, and process-based academic writing pedagogy.

Keywords: *AI chatbots, academic writing, higher education, gender, academic level*

1. INTRODUCTION

AI chatbots have become part of the ordinary writing environment in higher education. Students now encounter tools that can help them brainstorm topics, generate outlines, revise sentences, translate expressions, check grammar, summarize reading materials, and ask for explanations while writing. In second- and foreign-language academic writing contexts, this shift is especially visible because students often need fast support with vocabulary, organization, coherence, and academic tone (Al-Mamary & Abubakar, 2025). Barrot (2023) notes that ChatGPT may assist second-language writers with language form, style, cohesion, and writing conventions, while Mahapatra (2024) shows that ChatGPT can support undergraduate ESL writing when it is used as formative feedback rather than as a substitute writer. Similar arguments have been made in broader reviews of ChatGPT in education, where researchers observe both its practical support for learning and its uneven reliability across tasks (Lo, 2023; Tili et al., 2023). Yet the educational meaning of AI chatbot use is not simple. The same tool that helps a student clarify an argument may also make it easier to submit text that does not reflect the student's own thinking. Kasneci et al. (2023) describe large language models as educationally promising but also problematic because of issues related to accuracy, bias, assessment, and learner competence. Cotton et al. (2024), Perkins (2023), and Bittle and El-Gayar (2025) similarly warn that generative AI has unsettled the boundary between assistance and misconduct in higher education. In academic writing, this boundary matters because writing is not only a product to be submitted (Chiu, 2024). It is also a learning process through which students develop reasoning, evidence use, voice, and disciplinary participation.

Recent scholarship therefore suggests that universities should treat AI use as a pedagogical issue rather than merely a technical issue. Crompton and Burke (2023) show that AI in higher education has expanded across teaching, learning, assessment, and administration, while Zawacki-Richter et al. (2019) earlier noted that AI research in higher education often focused more on technology than on learners' educational experiences. This imbalance remains relevant in the era of generative AI. Students' adoption of AI chatbots is also shaped by acceptance-related factors. Habibi et al. (2023) found that ChatGPT acceptance among Indonesian higher education students is associated with performance expectancy, effort expectancy, social influence, facilitating conditions, and behavioral intention. Strzelecki (2024) reported that students' acceptance of ChatGPT is influenced by perceived usefulness, hedonic motivation, habit, and behavioral intention. Grassini et al. (2024) also found that UTAUT2-related factors shape university students' acceptance of ChatGPT. These studies suggest that students do not use AI chatbots simply because the tools are available. They use them when the tools feel useful, easy to access, socially normalized, and compatible with academic demands.

Evidence from student-perception studies supports this interpretation. Chan and Hu (2023) found that university students generally viewed generative AI positively, particularly for personalized support, idea development, and learning assistance, although they also expressed concern about accuracy, privacy, ethics, and long-term consequences. Stöhr et al. (2024) found that students' use and perceptions of AI chatbots varied across gender, academic level, and field of study, but the overall pattern showed strong student engagement with AI tools. Schei et al. (2024), in a scoping review of empirical studies, also reported that students often value AI chatbots for efficiency, feedback, and task support, while remaining concerned about reliability and the possible weakening of learning processes. In language and writing education, AI chatbots have been discussed as tools that may support revision, feedback, and learner autonomy

(Dakakni & Safa, 2023). Kohnke, Moorhouse, and Zou (2023) argue that ChatGPT offers possibilities for language teaching and learning, but its use requires digital competence and ethical awareness. Warschauer et al. (2023) further explain that AI-generated text creates new affordances and contradictions for multilingual writers, particularly because it can provide linguistic support while also complicating questions of authorship and voice. From this perspective, AI-supported academic writing should not be reduced to cheating or convenience.

Another research reviewed how top-ranking universities responded to generative AI tools in assessment guidelines, showing that institutional guidance was developing quickly but unevenly (Moorhouse, Yeo, & Wan, 2023). Furthermore, Farrokhnia et al. (2024) identified both strengths and threats of ChatGPT in education, including personalized support, efficiency, misinformation, plagiarism, and weakening of higher-order thinking. These studies show that students' AI use cannot be separated from the clarity of institutional rules, assessment design, and classroom-level explanation. When guidelines are vague, students may still use AI, but they may not know how to distinguish responsible assistance from academic misconduct.

Despite the rapid growth of international literature, regional Indonesian evidence is still limited. Many studies discuss AI use in broad international, national, or metropolitan contexts, whereas fewer examine how students in specific Indonesian regions use and interpret AI chatbots in academic writing. East Kalimantan is a meaningful site for such inquiry because it includes varied higher education institutions and student populations, yet it is rarely foregrounded in AI-in-education research. Studying students from this region can therefore add more situated evidence to the field and avoid treating Indonesian higher education as a single uniform context. To address this gap, this study investigates students' perceptions and use of AI chatbots in academic writing among students from four universities in East Kalimantan. The study focuses on students' reported AI use, perceptions of usefulness, learning, ethics, and institutional guidance, and the extent to which these perceptions are associated with gender, age, and academic level. By combining descriptive statistics, Spearman's rho correlation analysis, and qualitative coding of open-ended responses, this study aims to contribute regional empirical evidence to current debates on responsible AI integration in academic writing.

The study was guided by the following research questions:

1. How do students from four universities in East Kalimantan use AI chatbots in academic writing?
2. What are students' perceptions of AI chatbots in relation to usefulness, learning, ethics, and institutional guidance?
3. To what extent are students' perceptions associated with gender, age, and academic level?

2. RESEARCH METHODOLOGY

2.1 Research Design

This study used a mixed-method survey design where the quantitative strand consisted of descriptive statistics and correlation analysis of students' responses to Likert-scale questionnaire items. The qualitative strand involved content coding of open-ended responses in which students mentioned the AI tools they used for academic writing. This design was considered appropriate because the study aimed not only to measure patterns of perception statistically, but also to identify the range of AI tools that students brought into their writing practices.

2.2 Research Context and Participants

The study was conducted in the higher education context of East Kalimantan, Indonesia. The original questionnaire produced 276 responses through Google Forms. However, the analysis in this article focused only on students from four East Kalimantan universities in Indonesia. After data cleaning and the exclusion of respondents from outside these institutions, the final analytic sample consisted of 267 students. The questionnaire collected demographic information, students' AI-use responses, and perception items related to AI chatbot use in academic writing. For ethical reporting, the institutional identifiers were anonymized after cleaning and are presented only as University 1, University 2, University 3, and University 4. The same anonymized codes are used consistently in the demographic description and university-distribution table.

2.3 Instrument

The questionnaire consisted of demographic items and perception items related to AI chatbot use in academic writing. First, the demographic part asked about name, age, university, study program, and semester. The AI-use section asked whether students used AI in academic writing and invited them to mention the AI tools they used. Second, the perception section included Likert-scale items addressing students' attitudes toward AI chatbots, perceived usefulness, perceived writing improvement, ethical concern, prohibition, cheating, and institutional guidelines. The Likert-scale items were coded as follows: 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.

2.4 Data Collection and Analysis

Several data-cleaning procedures were carried out before analysis. First, institutional names were standardized using the coding decisions described above. Second, semester data were standardized. Third, study program names were standardized while retaining smaller categories in the demographic table so that the academic diversity of the sample remained visible.

Quantitative data were analyzed through descriptive statistics and Spearman's rho correlation. Descriptive statistics were used to calculate frequency, percentage, mean, and standard deviation for demographic variables and Likert-scale items. Spearman's rho was selected because the perception items were ordinal. Correlation analysis examined the relationships between students' perceptions and three demographic variables: gender, age, and academic level. Academic level was represented by semester.

The qualitative data from open-ended responses were examined through content coding. Students' written responses about the AI tools they used were reviewed and grouped into tool categories. These categories were then interpreted to identify broader patterns of AI-supported academic writing practice.

2.5 Ethical Considerations

The data were analyzed anonymously. Respondents' names were not reported in the findings. Because gender was not directly collected in the questionnaire, the gender analysis was treated as an exploratory demographic inference. The study avoided making claims about respondents' self-identified gender and focused on aggregate patterns rather than individual identities.

3. RESULTS

3.1 Participant Profile

The final dataset consisted of 267 students from four universities in East Kalimantan. The sample was dominated by respondents from University 2, followed by University 1, University 4, and University 3. The demographic profile below provides the context for interpreting students' AI chatbot use and perception patterns.

Table 1: University Distribution

University	n	%
University 2	160	59.93
University 1	60	22.47
University 4	28	10.49
University 3	19	7.12
Total	267	100.00

Because the questionnaire did not ask students to self-report gender, gender was inferred based on the conventional use of Indonesian names. The coding placed previously unidentified cases in the female category. Based on this inferential coding, female respondents formed the majority of the sample. This classification should be read as a methodological limitation rather than a direct record of students' self-identified gender.

Table 2: Gender Distribution Based on Name Inference

Gender based on name inference	n	%
Female	183	68.54
Male	84	31.46
Total	267	100.00

The sample was mainly composed of middle-year undergraduate students. Semester 6 students represented the largest group, followed by Semester 4 and Semester 2 students. This distribution suggests that many respondents had already experienced several semesters of academic writing tasks by the time they completed the questionnaire.

Table 3: Semester Distribution

Semester	n	%
Semester 2	36	13.48
Semester 4	67	25.09
Semester 6	141	52.81
Semester 8	18	6.74
Semester 10	3	1.12
Semester 12	2	0.75
Total	267	100.00

Most respondents were younger undergraduate students. A total of 237 students, or 88.76%, were up to 23 years old. A more detailed breakdown shows that the largest group was aged 20–21 years old, representing 58.43% of the sample.

Table 4: Detailed Age-Range Distribution

Detailed age range	n	%
≤19 years old	32	11.99
20–21 years old	156	58.43
22–23 years old	49	18.35
≥24 years old	30	11.24
Total	267	100.00

The respondents came from a wide range of study programs. English Education was the largest group, followed by International Relations, Islamic Education, Public Health, and Nursing.

Table 5: Study Program Distribution

Study Program	n	%
English Education	100	37.45
International Relations	65	24.34
Islamic Education	19	7.12
Public Health	17	6.37
Nursing	14	5.24
Education / Teacher Training, general	9	3.37
English Literature	7	2.62
Management	5	1.87
Public Administration	5	1.87
Tadris English	4	1.50
Accounting	4	1.50
Economics / Business	4	1.50
Islamic Education Management	3	1.12
Informatics Engineering	2	0.75
Elementary School Teacher Education / PGSD	2	0.75
Agrotechnology	2	0.75
Tarbiyah / Islamic Education Faculty, general	1	0.37
Social and Political Sciences, general	1	0.37
Agriculture	1	0.37
Computer Education	1	0.37
Unclear	1	0.37
Total	267	100.00

3.2 Students' Use of AI in Academic Writing

AI use in academic writing was highly common among the respondents. Of the 267 students, 253 students, or 94.76%, reported that they used AI in academic writing. Only 14 students, or 5.24%, reported that they did not use AI. This result indicates that AI-supported writing was already part of students' academic routines rather than a marginal practice.

Table 6: AI Use in Academic Writing

AI Use in Academic Writing	n	%
Yes	253	94.76
No	14	5.24
Total	267	100.00

The open-ended responses revealed that students used a variety of AI tools, including ChatGPT, Gemini, Claude, Perplexity, QuillBot, Grammarly, DeepSeek, NotebookLM, Copilot, and Blackbox. Their responses suggest that AI use was not limited to one platform or one purpose. Students appeared to use different tools for idea generation, paragraph development, translation, paraphrasing, grammar checking, source exploration, explanation, and clarity improvement. This range of tools shows that AI-supported academic writing is increasingly multi-platform and process-oriented.

3.3 Descriptive Statistics of Student Perceptions

The descriptive statistics indicate that students generally held positive perceptions of AI chatbots in academic writing. The highest mean score was found for the item stating that chatbot use was common among fellow students. High mean scores were also found for positive attitude, perceived effectiveness, writing improvement, and the presence of institutional guidelines. However, students also expressed ethical and pedagogical uncertainty, especially concerning AI's future impact on learning and whether using AI to complete assignments or exams should be considered cheating. The scale was coded as 1 = strongly disagree, 2 = disagree, 3 = agree, and 4 = strongly agree.

Table 7: Descriptive Statistics of Student Perceptions

Item	Strongly disagree n (%)	Disagree n (%)	Agree n (%)	Strongly agree n (%)	Mean	SD
1	2 (0.75%)	9 (3.37%)	173 (64.79%)	83 (31.09%)	3.26	0.55
2	2 (0.75%)	12 (4.49%)	212 (79.40%)	41 (15.36%)	3.09	0.47
3	2 (0.75%)	37 (13.86%)	167 (62.55%)	61 (22.85%)	3.07	0.63
4	3 (1.12%)	27 (10.11%)	201 (75.28%)	36 (13.48%)	3.01	0.53
5	2 (0.75%)	26 (9.74%)	194 (72.66%)	45 (16.85%)	3.06	0.54
6	13 (4.87%)	82 (30.71%)	141 (52.81%)	31 (11.61%)	2.71	0.73
7	1 (0.37%)	49 (18.35%)	191 (71.54%)	26 (9.74%)	2.91	0.54
8	12 (4.49%)	123 (46.07%)	112 (41.95%)	20 (7.49%)	2.52	0.70
9	8 (3.00%)	111 (41.57%)	112 (41.95%)	36 (13.48%)	2.66	0.75
10	29 (10.86%)	161 (60.30%)	73 (27.34%)	4 (1.50%)	2.19	0.64
11	1 (0.37%)	28 (10.49%)	182 (68.16%)	56 (20.97%)	3.10	0.57

Table 8: Item Statements

Item	Statement
1	Chatbot use in academic writing is common among my fellow students.
2	Overall, I have a positive attitude toward the use of chatbots in academic writing.
3	I am concerned about how AI chatbots will affect students' learning in academic writing in the future.
4	The chatbot I use makes me more effective in producing academic writing.
5	The chatbot I use improves my ability in academic writing.
6	Chatbots produce academic writing that is better than what I can produce myself.
7	The chatbot I use improves my grades in academic writing.
8	The use of chatbots contradicts educational goals, particularly in academic writing.
9	Using chatbots to complete assignments and exams in academic writing is a form of cheating.
10	The use of chatbots should be prohibited in academic writing.
11	My lecturers or university have rules or guidelines for the responsible use of chatbots in academic writing.

Overall, 95.88% of students agreed or strongly agreed that chatbot use was already common among their peers. Similarly, 94.76% agreed or strongly agreed that they had a positive attitude toward chatbot use in academic writing. Regarding perceived usefulness, 88.76% agreed or strongly agreed that chatbots made them more effective in producing academic writing, while 89.51% agreed or strongly agreed that chatbots improved their academic writing ability. The positive responses were accompanied by clear ethical concern. A total of 85.40% of students agreed or strongly agreed that they were concerned about how AI chatbots might affect students' learning in academic writing in the future.

In addition, 55.43% agreed or strongly agreed that using chatbots to complete assignments and exams could be considered cheating. However, only 28.84% agreed or strongly agreed that chatbot use should be prohibited. This pattern suggests that students did not simply reject AI chatbots. Rather, they appeared to recognize the need for clearer boundaries between responsible academic support and inappropriate substitution of student work.

3.4 Correlation Analysis across Gender, Age, and Academic Level

Spearman's rho correlation was used because the perception items were ordinal Likert-scale data. Gender was coded inferentially based on name convention, with male coded as 0 and female coded as 1. Academic level was represented by semester. Overall, the relationships between gender, semester, age, and perception items were weak. Most correlations were not statistically significant, suggesting that students' perceptions of AI chatbots were relatively consistent across demographic groups.

Table 9: Spearman's Rho Correlations between Demographic Variables and Perception Items

Item / Variable	Gender rho	p	Semester rho	p	Age rho	p
Chatbot use is common	-0.065	.288	0.075	.224	0.078	.206
Positive attitude	0.008	.891	-0.093	.131	-0.030	.627
Concern about future learning	-0.035	.571	-0.099	.107	-0.154	.012
Effectiveness	0.001	.989	0.020	.744	0.038	.539
Writing skill improvement	-0.028	.650	-0.024	.698	0.041	.505
Better than own writing	-0.053	.388	0.027	.664	0.063	.301
Grade improvement	0.001	.989	0.016	.793	0.002	.968
Contradicts educational goals	-0.041	.510	-0.032	.608	-0.035	.566
Cheating in assignments/exams	-0.095	.123	-0.092	.134	-0.100	.103
Should be prohibited	0.086	.161	-0.032	.603	-0.049	.425
University has guidelines	-0.138	.025	-0.083	.177	-0.035	.569

Two statistically significant but weak correlations were found. First, age was negatively correlated with concern about the future impact of AI chatbots on learning, $\rho = -0.154$, $p = .012$. This suggests that older students were slightly less concerned about the future learning impact of AI chatbot use. Second, gender was negatively correlated with students' perception that their university had responsible-use guidelines, $\rho = -0.138$, $p = .025$. Since female was coded as 1 and male as 0, this suggests that female students were slightly less likely to agree that their institution had clear responsible-use guidelines. However, both relationships were weak and should be interpreted cautiously.

Table 10: Construct-Level Correlation Results

Construct	Mean	Cronbach's Alpha	Gender rho	p	Semester rho	p	Age rho	p
Positive / benefit perception	3.02	.694	-0.028	.651	-0.029	.635	0.054	.375
Ethical-pedagogical concern	2.61	.650	-0.008	.891	-0.098	.109	-0.121	.048

At the construct level, the positive or benefit perception scale had a higher mean than the ethical-pedagogical concern scale. This result indicates that students' positive perceptions of AI chatbots were broadly shared across gender, age, and academic level. The weak negative relationship between age and ethical-pedagogical concern may suggest that older students feel slightly more confident in managing AI use, but the effect size was small. Therefore, the finding should be treated as exploratory rather than conclusive.

4. DISCUSSION

The results of this study indicate that AI chatbot use has become a normalized academic writing practice among students in East Kalimantan. The proportion of students reporting AI use was very high, and most respondents also agreed that chatbot use was common among their peers. This finding is consistent with Chan and Hu (2023), who found that university students were generally willing to integrate generative AI into their learning practices, and with Stöhr et al. (2024), who reported widespread student engagement with AI chatbots across academic levels and fields of study. However, the present study extends this discussion by showing that this pattern is not limited to highly internationalized or metropolitan universities. In the present sample, AI-supported writing was already visible across regional institutions and diverse study programs (Meyer, 2023). The finding that students viewed AI chatbots positively can be interpreted through the literature on perceived usefulness and technology acceptance. Habibi et al. (2023) showed that Indonesian students' ChatGPT acceptance is shaped by performance expectancy, effort expectancy, social influence, facilitating conditions, and behavioral intention. Strzelecki (2024) and Grassini et al. (2024) similarly found that perceived usefulness, habit, motivation, and facilitating conditions influence ChatGPT acceptance in higher education. The present study reflects these patterns. Students did not simply report that AI chatbots were available; they perceived them as useful for producing academic writing more effectively, improving writing ability, and supporting grades. In other words, AI acceptance appears to be linked to students' everyday academic pressures and their desire for practical writing support.

The open-ended responses further show that students' AI use was distributed across several tools, including ChatGPT, Gemini, Claude, Perplexity, QuillBot, Grammarly, DeepSeek, NotebookLM, Copilot, and Blackbox. This variety matters because it shows that students do not treat AI as a single platform. Instead, they appear to assemble a personal writing ecology: one tool for drafting, another for translation or grammar checking, another for source exploration, and another for coding or technical tasks. This finding is in line with Barrot (2023), who describes the potential of ChatGPT for supporting L2 writing conventions, and with Kohnke et al. (2023), who argue that generative AI can support language learning when users develop appropriate digital competence. It also resonates with Warschauer et al. (2023), who argue that AI-generated text creates both resources and tensions for multilingual writers. At the same time, students' positive attitudes were accompanied by ethical and pedagogical hesitation. Many students agreed that AI chatbots could improve writing, yet they were also concerned about how AI might affect future learning. This ambivalence echoes Kasneci et al. (2023), who describe large language models as educationally useful but risky because of hallucination, bias, assessment challenges, and the need for new competencies. Farrokhnia et al. (2024) similarly identify ChatGPT's strengths and opportunities alongside threats such as misinformation, academic integrity problems, and weakened higher-order thinking. The present findings show that students themselves recognize this tension.

The contrast between cheating and prohibition is especially revealing. More than half of the students agreed or strongly agreed that using chatbots to complete assignments and exams could be considered cheating, but far fewer supported a complete prohibition of chatbot use in academic writing. This pattern suggests that students are not asking for unrestricted AI use. Rather, they appear to need clearer distinctions between acceptable support and unacceptable substitution. Cotton et al. (2024), Perkins (2023), Dwivedi et al. (2023), and Bittle and El-Gayar (2025) all emphasize that generative AI requires institutions to rethink assessment and academic

integrity rather than relying only on detection or punishment. The present findings support that view. Prohibition alone may not fit students' actual practices, but silence or vague permission is equally risky. The institutional dimension of the findings also deserves attention. Students generally agreed that their lecturers or universities had rules or guidelines for responsible chatbot use, yet ethical uncertainty remained visible in the data. Moorhouse et al. (2023) found that university guidelines on generative AI and assessment were emerging unevenly across institutions, and Rudolph et al. (2023) Chauncey and McKenna (2023) proposed that responsible AI chatbot use requires concrete instructional examples, not only broad policy statements. In the context of academic writing, lecturers need to explain what students may do with AI, how AI assistance should be acknowledged, which uses are prohibited, and how students can demonstrate their own thinking through drafts, reflections, and revision histories.

The weak correlations between gender, age, semester, and perception items provide another contribution. Most relationships were small and statistically non-significant, indicating that students' perceptions were relatively consistent across demographic groups. Stöhr et al. (2024) investigated AI chatbot use across gender, academic level, and fields of study and showed that demographic variables can shape patterns of engagement. In the present study, however, gender and semester did not strongly explain students' perceptions. This may indicate that AI chatbot use has moved beyond a specific student subgroup and has become a shared academic practice among undergraduate students in the sampled universities. The finding is important because it suggests that AI literacy should be introduced broadly rather than targeted only at certain demographic groups. The age-related result requires careful interpretation. Older students were slightly less concerned about the future impact of AI on learning, but the correlation was weak. One possible explanation is that older or more academically experienced students may feel more able to manage AI selectively. They may have stronger awareness of assignment expectations, more confidence in judging AI output, or more experience revising academic texts.

The findings also strengthen the argument for AI literacy in academic writing instruction. Ng et al. (2021) conceptualize AI literacy as involving the ability to understand, use, evaluate, create with, and address ethical issues related to AI. Long and Magerko (2020) similarly describe AI literacy as a set of competencies that allow people to critically evaluate and communicate with AI technologies. In this study, students were already using AI tools, but their responses suggest that use alone does not guarantee literacy. They still need support in evaluating AI-generated content, checking sources, recognizing bias or fabricated information, protecting authorship, and making transparent decisions about AI assistance. AI literacy therefore needs to be embedded into writing pedagogy rather than treated as a separate technical topic (Jin, 2025). From a pedagogical perspective, AI chatbots should be positioned as formative writing supports, not replacement writers. Mahapatra (2024) provides evidence that ChatGPT can support ESL academic writing when used as a feedback-oriented tool. Barrot (2023) also highlights its potential for language support while warning about overreliance. These insights are relevant to the present study because students' positive perceptions can become productive only if lecturers design tasks that keep students actively engaged in the writing process.

The regional contribution of this study is also significant. While international studies have provided valuable evidence on generative AI in higher education, local contexts shape how students interpret usefulness, ethics, and institutional expectations. Indonesian higher education includes diverse linguistic, institutional, and regional conditions. The East Kalimantan data show that students in regional universities are already participating in global AI-supported writing

practices, but their needs must be addressed through locally meaningful guidance. This regional evidence contributes to a more nuanced picture of AI in higher education by showing that responsible AI integration should not be designed only from the perspective of large metropolitan universities or Global North institutions. Overall, the findings suggest that universities should avoid two extreme responses: treating AI chatbots as harmless tools that require no guidance, or banning them without considering how students already use them. A more educational response would involve transparent rules, assignment redesign, AI literacy instruction, and continuing dialogue between lecturers and students. Students need to know when AI can be used for brainstorming, feedback, language refinement, or revision, and when its use becomes inappropriate because it replaces independent work. Such guidance can help preserve the educational value of academic writing while acknowledging that AI chatbots have already become part of students' academic lives.

5. CONCLUSION

This study examined how 267 university students from four universities in East Kalimantan perceived and used AI chatbots in academic writing. The findings show that AI use was highly common among the respondents, with most students reporting that they had used AI tools for writing-related academic tasks. At the same time, the study shows that students' acceptance of AI chatbots was not free from ethical and pedagogical concern. Many students recognized the benefits of AI, but they also worried about its future effect on learning and about whether using chatbots for assignments or exams could be considered cheating. The relatively low support for complete prohibition suggests that students do not necessarily want AI to be banned. Rather, they need clearer guidance about what counts as responsible assistance, what counts as misconduct, and how AI use should be acknowledged in academic writing. The correlation analysis showed only weak relationships between students' perceptions and gender, age, or semester. This indicates that AI chatbot use and positive perception were broadly shared across demographic groups in the sample. Although older students showed slightly lower concern about AI's future impact on learning, the association was weak and should be interpreted cautiously. The overall pattern suggests that AI literacy should be introduced to all students, not only to particular demographic groups or academic levels.

This study contributes to the literature by offering empirical evidence from a regional Indonesian higher education context, particularly East Kalimantan. Its novelty lies in combining demographic recoding, descriptive statistics, correlation analysis, and qualitative coding of reported AI-tool use. The study also shows that regional students are already engaged in global AI-supported writing practices, but they still need locally relevant academic guidance. Pedagogically, the findings support the need for process-based writing instruction, AI-use disclosure, source verification, reflective writing logs, and clearer institutional rules for responsible chatbot use. Several limitations should be acknowledged. First, gender was inferred from students' names because the questionnaire did not include a self-reported gender item. Therefore, gender-related results should be treated cautiously. Second, the sample was limited to four universities in East Kalimantan, so the findings cannot be generalized to all Indonesian higher education contexts. Third, the study relied on self-reported survey data, which may not fully capture students' actual AI-supported writing practices. Future studies should include self-reported demographic data, interviews, classroom observations, writing samples, prompt histories, and comparative analysis across regions, disciplines, and academic levels. Such studies

would provide a deeper understanding of how students negotiate usefulness, authorship, academic integrity, and learning when using AI chatbots for academic writing.

Conflict of Interest

The authors declare that there is no conflict of interest related to the conduct, analysis, or publication of this study. The study was conducted for academic purposes, and no financial, institutional, or personal relationship influenced the interpretation of the data or the reporting of the findings.

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