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AI-Assisted Research Writing: Graduate Students' Experiences, Outcomes and Academic Integrity

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Abstract. This study examined the relationship between artificial intelligence (AI) tool use and writing outcomes among graduate students engaged in thesis writing, grounded in the Technology Acceptance Model. Using a convergent parallel mixed methods design, the study involved 96 graduate students enrolled in thesis writing courses at a government higher education institution in Bulacan, during the first trimester of the 2025–2026 academic year. Qualitative data focused on students' adherence to academic integrity regulations. Quantitative measures assessed perceived usefulness, perceived ease of use, behavioral intention to use, and self-reported writing performance. The results indicated that ChatGPT, Grammarly and QuillBot were the most used AI tools. Statistical analysis demonstrated a strong positive relationship between experience with AI tools and writing performance outcomes. The qualitative analysis surfaced themes about AI tool adoption, namely linguistic support, organization of ideas, and cognitive scaffolding and ideation—alongside themes reflecting ethical awareness, namely selective use and resistance, responsible and transparent authorship, critical evaluation, accountability in AI tool use, and alignment with institutional guidelines. These results show that technological advances are now integral to writing courses and are used in the preparation and oversight of students' research. The study's key implication is that to use AI tools in thesis writing in an ethical manner, institutions must develop clear ethical frameworks that protect scholarly integrity while accepting the changing reality of human–AI collaboration in academic research.

Keywords: academic integrity; Artificial Intelligence tools; graduate students; Technology Acceptance Model; writing outcomes

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1. Introduction

The development of generative artificial intelligence (AI) tools such as ChatGPT and other large language models has significantly influenced scholarly writing and research. Deep and Chen (2025) confirm that AI tools can boost students' and researchers' writing efficiency by helping with idea development and formative feedback, with tools such as Grammarly, ChatGPT and QuillBot now enabling students to receive instant feedback on grammar and argumentation. Tokdemir Demirel (2024) states that these tools have become the most adopted in academic writing contexts, with students using them across different stages of the writing process. Zhao et al. (2024) further found that students use these tools in individualistic, task-specific ways, suggesting that they position AI tools as a writing companion tied to their specific areas of weakness.

Although AI tools are widely used in educational contexts, research on whether these tools affect students' actual writing performance remains in its early stages. Dahri (2024) confirms that perceived usefulness significantly predicted behavioral intention to use AI tools in academic settings, validating the Technology Acceptance Model (TAM) core constructs in AI-enhanced learning environments. Despite this, Xue (2026) notes that fewer studies have examined how TAM variables relate to measurable writing performance outcomes, specifically among graduate students engaged in thesis writing. Beyond performance, using AI in academic writing requires careful ethical consideration. Rodafinos (2025) cautions that errors, overreliance, and academic integrity violations remain real risks when an AI tool is used without proper orientation.

Kofinas (2025) found that the rise of tools like ChatGPT has fundamentally complicated how authorship is defined, while Alsharefeen and Al Sayari (2025) found that 75% of faculty members had already encountered AI-related plagiarism, yet felt unprepared to respond to it. These findings reveal that the ethical dimension is predominantly discussed at the institutional level rather than examined from the perspective of student writers themselves. Local empirical data specifically concerning thesis writing among graduate students remains limited, particularly in the Philippine higher education context. There is also limited empirical evidence capturing how graduate students describe and practice responsible AI tool use during thesis writing.

This study addressed these gaps by examining AI tool use, TAM variables, writing outcomes, and academic integrity among graduate students in thesis writing courses through a convergent parallel mixed methods design. As Deep and Chen (2025) argue, effective AI integration demands a deliberate institutional response that equips students with the critical awareness to use these tools responsibly. Azevedo (2025) further contends that institutional AI policies must actively outline acceptable uses of AI tools while ensuring they do not compromise pedagogical goals. The findings of this study can help universities develop targeted training programs, ethical guidelines and supervision policies that foster responsible AI tools use in graduate research writing while supporting students' autonomous scholarly development.

The research questions are presented below:

1. What AI tools are commonly used by graduate students in writing a thesis?
2. What is the extent of graduate students' experience with AI tools during thesis writing in terms of perceived usefulness, perceived ease of use and behavioral intention to use?
3. What is the extent of the writing outcomes of graduate students after using AI tools?
4. Is there a significant relationship between graduate students' experience with AI tools and their writing outcomes after using them during thesis writing?
5. How do graduate students adhere to principles of academic integrity in using AI tools?

2. Literature Review

2.1 Technology Acceptance Model in AI-Assisted Academic Writing

The theoretical framework used in this study is the TAM, which was first developed by Davis (1989). It outlines the perceived usability of a technological tool as a predictor of the perceptions, beliefs and intentions of the users to use and keep using a technological tool. TAM is the main lens through which the motivation of graduate students for using AI tools in writing their theses was viewed in this study. In TAM, there are three constructs of interest in this study.

Perceived usefulness (PU) is the level of confidence that graduate students have that the use of AI tools can improve the quality and efficiency of their thesis writing. Perceived ease of use (PEOU) is a measure of how students consider AI tools to be easy, convenient and not technically demanding during the writing process. The degree of the intention of students to use and recommend AI tools in their future academic writing work is known as behavioral intention to use (BI) (Davis, 1989; Shroff et al., 2011). Together, these three constructs elaborate on how and why graduate students embrace and maintain the use of AI tools in their research writing. Although TAM was initially used in the context of organizational and information systems, its applicability has gone beyond this with the swift adoption of AI tools in higher education.

The fundamental concepts in learning environments facilitated by AI are explained by Dahri (2024), who discovered that PU was a strong predictor of attitude toward use and BI in students who used ChatGPT to complete academic tasks. In a meta-analysis of TAM studies in AI education situations, Xue (2026) determined that the model is still strong in explaining AI adoption behaviors in various educational environments; the pathways between PU and attitude and between attitude and BI are always significant. TAM thus not only offers this research a framework for how graduate students adopt and use certain AI tools, but also a framework for how PU and ease of use can be translated into quantifiable results in writing and academic behavior.

2.2 AI Tools in Academic and Research Writing

The landscape of AI-assisted academic writing has expanded rapidly, with students in higher education now drawing on a growing suite of tools that include ChatGPT, Grammarly, QuillBot, Gemini, Wordtune, Jenni AI and Paperpal,

among others, to support various stages of the writing process (Deep & Chen, 2025). These tools have become embedded in how students draft and refine their academic work, and their adoption reflects a broader shift in academic writing practice where human intellectual effort and AI assistance increasingly operate side by side. Mahapatra (2024) conducted mixed methods intervention research on the impact of ChatGPT on ESL student academic writing and found that ChatGPT was the most effective as a formative feedback tool, helping students improve content, organization, grammar and coherence simultaneously. Students in the AI-assisted group obtained significantly higher scores for academic writing post-intervention compared to students receiving traditional instruction alone. This finding is especially applicable to the graduate students in research writing, where feedback regarding the argumentation and the organization of the content is as crucial as superficial linguistic accuracy.

To complement the work of ChatGPT on content-level support, in a study of the perceptions of QuillBot among students, Laila and Daulay (2024) proved that QuillBot is best appreciated by students as a tool that is accurate in paraphrasing and maintaining sentence-level coherence, thus becoming particularly useful among graduate students who have to restructure a dense body of academic writing. In another work, Anwar (2025) conducted research with postgraduate EFL learners who used Grammarly as an AI-enhanced feedback tool and found that students in the group using AI features achieved significantly better post-test scores in writing proficiency, and that there were positive correlations between the use of AI features and improvements in content, organization and cohesion.

All the above results suggest that every tool has a complementary niche: ChatGPT in generative and feedback features, QuillBot in paraphrasing and restructuring, and Grammarly in linguistic accuracy and style subtlety. In research on the impact of generative AI on the quality and speed of professional writing by graduate students, Connell Pensky and others (2025) discovered that AI support (with guidance) shortened writing time by half and enhanced average writing quality (both for native and non-native English speakers). The present study is one of the few that explicitly aimed at graduate-level writing, and the results of the study prove the idea that AI tools may have significant implications for writing when used by graduate students for thesis writing.

3. Methodology

3.1 Research Design

This study used a parallel convergent mixed methods design, since the research questions required both numerical measurement and in-depth human narratives to be answered adequately. According to Adhikari and Timsina (2024), this methodology allows quantitative and qualitative data to be collected simultaneously, processed separately and then combined to create a more complete picture of what is being studied. This approach was appropriate because, while the quantitative strand assessed the statistical relationships between AI tool use, TAM variables and writing outcomes, the qualitative strand captured how and why graduate students use AI tools in the ways that they do, including the ethical reasoning behind their decisions.

3.2 Respondents of the Study

The respondents of this study were 96 graduate students out of 120 enrolled in thesis writing courses during the first trimester of the 2025–2026 academic year across programs at a government higher education institution in Bulacan. The remaining 24 did not form part of the study due to non-response during the data collection period; 10 were enrolled in dissertation writing courses and 12 in thesis writing courses. The Graduate School Office, through its clerk, confirmed the 96 students as the active and responsive population for this study. Since all responsive members of the population were included, no sampling technique was applied as the study employed a universal sampling strategy.

3.3 Data Collection

Prior to data collection, all respondents provided informed consent and were informed that their participation was voluntary. The data were collected by means of a survey in Google Forms, where structured and open-ended questions were used. The quantitative part involved the use of a tool adopted from Davis (1989), which assessed PU, PEOU, and BI AI tools. Responses were measured using a five-point Likert scale with the following descriptions: 1 – To a Very Small Extent, 2 – To a Small Extent, 3 – To a Moderate Extent, 4 – To a Great Extent, and 5 – To a Very Great Extent. The Cronbach alpha coefficients of the PU and PEOU were initially reported by Davis (1989) as.98 and.94, respectively.

In the case of BI, the results of the TAM instrument have shown high internal consistency and alpha values ranging from .88 to .95 in validated studies (Shroff et al., 2011). The writing outcomes scale, adapted from Woodrow (2011), has likewise been validated in prior research. Since the instrument has been widely and repeatedly validated in various research settings, the current study did not recalculate reliability, which is considered reasonable when using previously validated tools according to Hair et al. (2019).

3.4 Data Analysis

The relationship between the use of AI tools and the outcome of writing was measured using Spearman's rho, the rank-order percentage coefficient of correlation. The qualitative component elicited narratives about students' adherence to academic integrity when using AI tools for academic writing. The qualitative aspect of the research was the graduate students who answered the open-ended questions incorporated in the survey tool. There were 30 respondents from the total population of 96 enrolled graduate students who were at the thesis writing stage. The sample size is deemed adequate when carrying out a qualitative inquiry, as Guest et al. (2006) conclude that thematic saturation is achieved with a sample of 12 responses. Mason (2010) supports the claim that most qualitative studies requiring thematic saturation and meaningful results would do well with a sample of 20 to 30 responses.

Further, the five stages of qualitative analysis workflow developed by Bingham (2023) and the inductive coding method based on process and in vivo coding, proposed by Saldaña (2013), were also used. Experiences described by the participants were captured using process coding, which is especially suitable for learning how graduate students go through the process of thesis writing. In

addition, in vivo coding retained original words used by the participants as codes with respect to the authenticity of their lived experiences. Out of the 30 responses, the researcher came up with 44 process codes. After phase 3 of the analytical workflow, "Reassembling the Data", related codes were clumped together to determine the appearance of patterns, and the themes were developed out of them. The five phases of Bingham (2023) were operationalized as follows: reading the responses many times, coming up with the first codes, focusing on similar codes or categorization, generating themes and analyzing themes. Intersection and harmony between the statistical associations and the narratives of the participants were integrated at the discussion–interpretation phase of the paper through the so-called meta-inference section.

Throughout the study, ethical guidelines were strictly complied with, including informed consent, voluntary participation and confidentiality. In addition, member checking was employed, wherein the researcher returned the generated themes and interpretations to selected respondents for verification. Member checking is widely recognized as a process that enhances the accuracy and validity of results in qualitative research (Creswell & Clark, 2018; Creswell & Poth, 2018; Given, 2008, as cited in Lloyd et al., 2024). Through this process, the study established the credibility of its findings and minimized the risk of researcher misinterpretation.

4. Results

4.1 AI Tools Commonly Used by Graduate Students in Thesis Writing

Table 1: AI Tools Used by the Graduate Students

AI Tools Used by the Graduate Students	Frequency (F)	Percentage (%)
ChatGPT	77	80.2
Grammarly	56	58.3
Quillbot	38	39.6
Google Gemini	36	37.5
Microsoft Copilot	28	29.2
Elicit	9	9.4
Jenni AI	7	7.3
Scite.ai/Research Rabbit	5	5.2
Writefull	3	3.1

The results show that ChatGPT was the most popular AI tool, and over three-fourths of them noted that they use it regularly in writing their thesis, which is why it is the most popular tool by far. The second most used tool was Grammarly, with over half having used it, implying that checking grammar and writing quality continues to be an important consideration in academic writing. Quillbot came in third with almost two-fifths of the respondents having used it, which means that paraphrasing and rewriting help are significant preferences. Google Gemini was positioned in fourth place, and the percentage of those who used it was slightly higher than the other three, as it has gained traction in the field of academic research work. It is noteworthy that the four AI tools are the most used

among the options that were presented to the respondents. The survey was conducted in a "check all that apply" format, where the respondents could specify all their commonly used AI tools. Outside the top four, Microsoft Copilot was in fifth place, and Writefull had the fewest users, with only three respondents indicating use. The findings show that general-purpose and broadly marketed AI tools are often the most used by graduate students, whereas more specialized research-oriented instruments, including Elicit, Research Rabbit and Scite.ai, are not often used by the respondents.

4.2 Extent of Graduate Students' Experience with AI Tools During Thesis Writing

Table 2: Graduate Students' Experience with the Use of AI Tools

Experience in the Use of AI Tools	Mean	Standard Deviation (SD)	Interpretation
A. Perceived Usefulness (PU)			
AI tools improve the quality of my research writing.	3.91	0.93	To a great extent
AI tools help me accomplish writing tasks more efficiently.	3.88	0.95	To a great extent
AI tools increase the completion of my research requirements.	3.89	0.95	To a great extent
AI tools make it easier to organize and analyze research information.	3.95	0.95	To a great extent
AI tools enhance the overall outcome of my research writing.	3.86	0.97	To a great extent
Weighted Mean and SD for PU	3.90	0.94	To a great extent
B. Perceive Ease of Use (PEOU)			
Learning how to use AI tools for research writing is simple for me.	3.57	1.02	To a great extent
I can use AI tools without much technical difficulty.	3.53	1.09	To a great extent
AI tools are user-friendly for my writing and research tasks.	3.77	1.04	To a great extent
I can easily integrate AI tools into different stages of my research writing.	3.58	1.02	To a great extent
Using AI tools requires minimal effort on my part.	3.42	1.10	To a great extent
Weighted Mean and SD for PEOU	3.57	1.06	To a great extent
C. Behavioral Intention to Use (BI)			
I intend to continue using AI tools for my academic writing.	3.65	0.97	To a great extent
I plan to use AI tools in future research activities.	3.79	1.01	To a great extent
I would recommend AI tools to other graduate writers.	3.81	0.99	To a great extent

Experience in the Use of AI Tools	Mean	Standard Deviation (SD)	Interpretation
Weighted Mean and SD for BI	3.75	1.01	To a great extent
Grand Weighted Mean and SD	3.74	1.00	To a great extent

Table 2 shows the degree of experience graduate research writers have using AI technologies when writing a thesis. All indicators obtained mean scores for perceived usefulness that ranged from 3.79 to 3.95, with a weighted mean of 3.90 (SD = 0.94), which is interpreted as "to a great extent." This reveals that respondents have the assumption that AI tools help enhance the quality, efficiency, productivity, organization, and overall outcome of research writing. Perceived ease of use (PEOU) had mean ratings between 3.42 and 3.77, with the weighted mean of 3.57 (SD = 1.06), with its description of "to a large extent". This implies that AI technologies are rather simple to learn, easy to use and adaptable to various stages of research writing for graduate writers. The indicators showed mean scores ranging from 3.65 to 3.81 for BI to use, with a weighted mean of 3.75 (SD = 1.01), indicating "to a great extent". This indicates that respondents strongly intend to keep using AI tools, use them in future research, and recommend them to other graduate students.

4.3 Extent of the Writing Outcomes of Graduate Students After Using AI Tools

Table 3: Extent of Writing Outcomes

Writing Outcomes	Mean	SD	Interpretation
1. AI tools help me finish my drafts faster than usual.	3.74	0.97	To a great extent
2. My writing quality improves when I use AI tools.	3.82	0.96	To a great extent
3. I produce more coherent and well-structured papers when assisted by AI.	3.76	0.99	To a great extent
4. AI tools help reduce the time spent on editing and proofreading.	3.93	0.95	To a great extent
5. Overall, AI-assisted writing improves my thesis outcomes.	3.85	0.93	To a great extent
Weighted Mean and SD	3.82	0.96	To a great extent

The findings show that all five indicators were rated highly, which are all regarded as "to a great extent". The item "AI tools help minimize time spent on editing and proofreading" had the highest mean score (M = 3.93, SD = 0.95), suggesting that graduate writers benefit most from time savings throughout the revision process. The next, which showed high results of the overall satisfaction with AI-assisted writing, was the assistance given by AI to improve thesis results. Also, graduate school writers reported significant benefits in coherence and quality of writing. They reported changes in their writing performance using AI tool based on the overall weighted mean of the performance of writing outcomes of 3.82 (SD = 0.96), with its descriptive interpretation of "to a great extent" despite the variation evidenced by the standard deviation of 0.96.

4.4 Relationship Between Graduate Students' Experience with AI Tools and Their Writing Outcomes After Using It

A Spearman rank-order correlation test was used to determine whether there is a significant relationship between graduate researchers' experience with AI tools and their writing outcomes, since the dataset deviates from a normal distribution.

Table 4: Correlation Between Experience with AI Tools and Writing Outcomes

Variables	N	Mean	SD	Spearman's rho (rs)	p-value	Interpretation
Experience with AI Tools	96	3.74	1.00	.757**	<.001	Strong positive correlation
Writing Outcomes	96	3.82	0.96			

As shown in Table 4, the p-value (< .001) is lower than the 0.05 level of significance, indicating that the relationship between experience with AI tools and writing outcomes is statistically significant. Therefore, the hypothesis stating that there is no significant relationship between experience with AI tools and writing outcomes is rejected. Furthermore, the results show a strong positive relationship between the researchers' experiences with AI and their writing outcomes, as revealed by the correlation coefficient of .757. This result indicates that there is a 75.7% degree of relationship between the variables. Moreover, this result means that respondents who report higher levels of experience with AI tools tend to demonstrate better writing outcomes.

4.5 Adherence of the Graduate Students to Principles of Academic Integrity in Using AI Tools

There were two questions asked of the respondents that targeted the motivation behind using AI tools and what they do to make sure they exercise academic integrity.

4.5.1 Reasons for graduate school writers' choice of AI tools

Table 5: Reasons for Choosing AI Tools in Writing a Thesis

Related Codes	Categories	Themes
P2, P3, P8, P11, P27, P28, P29 P30, P31, P32, P33, P34, P35, P37, P42 In vivo: "Formalize my sentences."	Linguistic Refinement *Focus: Mechanics improvement*	Linguistic Support *17 similar codes*
P1, P8, P13, P14, P16, P22, P23, P24, P25, P26 In vivo: "Wear different hats."	Efficiency & Time Management *Focus: Speed, convenience, and managing workload.*	Organization of ideas – time management *10 similar codes*
P4, P5, P6, P7, P9, P10, P12, P15, P17, P21, P36, P43 In vivo: "lots of ideas to pour."	Cognitive Scaffolding & Ideation *Focus: Organizing thoughts, generating ideas, and expanding resources.*	Idea generation *12 similar codes*
P18, P19, P20, P38, P39, P40, P41, P44 In vivo: "My own critical thinking."	Ethical Boundaries & Divergence *Focus: Integrity preservation.*	Selective Use & Resistance *8 similar codes*

Based on the findings, AI is primarily viewed by the participants as a writing assistant, especially in the context of language efficiency and polishing. Codes belonging to Linguistic Refinement, such as the in vivo code *"formalize my sentences,"* are used to improve sentence structure, word use and academic tone. This means that participants use AI to refine their work but not to create something else. In addition, Efficiency & Time Management is a powerful category, which demonstrates how AI can be used to handle complicated personal and academic responsibilities.

Such expressions as *"wear different hats"* mean that AI is helpful in arranging work and simplifying the process of writing but does not replace the role of a writer. The category Cognitive Scaffolding & Ideation represents the way AI can support the process of organizing thoughts and developing ideas, but the help and support given by AI tools are bounded by Ethical Boundaries & Divergence, where the graduate school writers are aware of the scope and avoid AI because they do not want to lose integrity.

4.1.2 Graduate school students' action in following academic integrity

Table 6: Students' Actions in Following Academic Integrity

Related Codes	Categories	Themes
P1, P3, P5, P7, P22, P38, P39, P45, P47 In vivo: "I don't copy AI-generated text directly."	Setting clear boundaries on AI use	Practicing responsible, transparent, and human-centered authorship. *9 similar codes*
P2, P10, P17, P18, P19, P20, P21, P41, P42, P48 In Vivo 1: "Countercheck all the details." In vivo: "Verifying all information independently."	Limit AI support	Exercising critical evaluation and selective use of AI tools *10 similar codes*
P9, P13, P14, P16, P24, P30, P37 In vivo: "Mentioned it in the paper." In vivo: "I declare the use of AI."	Honest declaration	Promoting accountability in AI use *7 similar codes*
P12, P15, P26, P28, P29, P32, P40, P43, P44 In vivo: "Guidelines of research ethics."	Adherence to Ethical Standards and Institutional Policies	Aligning AI use with institutional guidelines and ethical research practices *9 similar codes*

According to the findings, students consciously depict AI as a tool rather than a writer, exhibiting human-centered and responsible authorship. Respondents emphasized in Setting Clear Boundaries on AI Use that they limit AI to support services like language assistance or clarification and do not directly replicate content produced by AI. A strong sense of ownership over academic work is demonstrated by statements such as, "*I don't copy AI-generated writing directly*" and "*I use AI exclusively as support, not as a source of distinctive ideas.*" This shows that participants are committed to maintaining originality by making sure that concepts, claims, and interpretations continue to be the result of their own thought process. Lastly, adherence to ethical standards and institutional policies indicates conformity with the research management office's ethics guidelines.

4.6 Meta-Inferencing

The combination of quantitative and qualitative results demonstrates a great level of convergence in most dimensions of the research, with one area of minor deviation that contributes to the overall findings.

Table 7: Meta-Inference of Quantitative and Qualitative Findings

Research Statement	Quantitative Findings	Qualitative Findings	Merging
Commonly used AI Tools	ChatGPT, Grammarly, QuillBot, and Google Gemini are the most frequently used tools.	Participants explicitly mentioned using these tools for drafting, paraphrasing, and editing.	Convergent
Extent of Experience (TAM Variables)	Perceived usefulness, ease of use, and BI are rated to a great extent.	Themes: efficiency and time management; cognitive scaffolding; ease of integration.	Convergent
Writing Outcomes	AI tools significantly improve speed, organization, and quality of writing.	Themes: linguistic and mechanical support; enhanced productivity; clearer outputs.	Strongly Convergent
Relationship between AI Use and Writing Outcomes	Strong positive correlation between AI usage and writing outcomes.	Participants report improved performance and confidence with frequent AI use.	Convergent
Ethical Practices in AI Use	Students demonstrate responsible AI use.	Theme: ethical boundaries (verification, originality, avoidance of plagiarism); some mention of overreliance.	Mostly Convergent (with slight divergence)

Convergence of four of five research questions provides high validity in the internal consistency of the study findings, i.e., common tools used by AI, the level of experience, the writing results and the relationship between the use of AI and the writing results. The two data strands independently supported that graduate students are likely to use AI tools such as ChatGPT, Grammarly and QuillBot and that they find these tools useful and easy to integrate and that they improve their academic writing. The qualitative data helped add depth of meaning to statistically significant relationships found in the quantitative phase.

The minor deviation in the field of ethical practices demonstrates an aspect of complexity that cannot be explained using survey data. Although the quantitative data showed that students tend to be responsible when using AI tools, the qualitative descriptions demonstrated that some students tend to be over-reliant on AI, while others are devoted to originality and checking the AI-generated text. Such disparity is not a weakness of the quantitative findings; on the contrary, it shows the areas that require further research. Students might be ready to claim that AI tool use is ethical overall, but their behavior may be more circumspect than aggregate scores may suggest.

5. Discussion

5.1 The AI Tools Commonly Used by Graduate Students

Table 1 reveals a clear hierarchy of adoption, with ChatGPT emerging as the most used, followed by Grammarly, QuillBot and Google Gemini, while the remaining tools like Microsoft Copilot, Elicit, Jenni AI, Research Rabbit, Scite.ai and Writefull had comparatively lower usage frequencies. This pattern of adoption can be understood through the lens of the TAM, as Davis (1989) argues that the likelihood of technology adoption is significantly influenced by PU and ease of use, suggesting that tools with the highest adoption rates are those that graduate students find most practical and accessible in their writing process. The dominant usage of ChatGPT indicates that graduate students rely on it across different phases of thesis writing, from drafting to revision and idea development, which is consistent with TAM-based research asserting that technologies perceived as enhancing work performance are more likely to be adopted extensively

Grammarly's strong second-place ranking shows that its real-time grammar and style feedback directly supports the linguistic accuracy and clarity indispensable in scholarly writing. The moderate but notable adoption of QuillBot reflects its established reputation as a paraphrasing and rewriting assistant, and as Kurniati and Fithriani (2022) found, postgraduate students perceive it positively for vocabulary development, rewriting options, and overall language improvement. Gemini, while ranking fourth, still recorded a considerable adoption rate. As Barrot (2025) noted, Gemini can provide suggestions that enhance grammar, vocabulary, coherence and clarity, although its comparatively lower adoption may reflect students' tendency to trust more familiar and established platforms, a pattern consistent with TAM's emphasis on user experience as a determinant of technology acceptance.

Beyond the top four, Microsoft Copilot recorded 28 users, and Elicit, Jenni AI, Research Rabbit, Scite.ai and Writefull each registered considerably fewer, suggesting that adoption remains concentrated on general-purpose tools rather than specialized research platforms. Bista and Bista (2025) observe that doctoral students selectively adopt multiple AI tools based on specific writing needs, each offering distinct benefits such as improved clarity – a finding that helps explain the varied but deliberate distribution of tool usage observed in this study. Overall, the integration of AI tools into graduate thesis writing is neither incidental nor uniform, but a purpose-driven process in which each tool occupies a distinct functional role. These trends carry significant implications for graduate programs, as students are already cultivating informal AI tool practices that merit formal acknowledgment and context-sensitive institutional policy.

5.2 Extent of Graduate Research Writers' Experience with AI Tools During Thesis Writing in Terms of Perceived Usefulness, Perceived Ease of Use, and BI to Use

Table 2 shows that AI tools are well accepted by graduate students in thesis writing, which is in line with TAM being used to explain the BI adoption through PU and PEOU in terms of technology use (Davis, 1989). This claim is supported by the consistently high average scores of PU, PEOU and BI in this study and indicates an overall positive attitude toward AI-aided academic writing. The

perceived benefit is high, which proves that graduate students consider AI tools significant for improving the quality of writing. In research by Venkatesh and Davis (2000), they state that AI tools can be seen as sources of significant academic task performance and efficiency when users feel that such tools have distinct functional benefits. Likewise, the PEOU is positively rated, referring to the use of AI services which do not demand significant technical effort and have few operational and cognitive barriers. Venkatesh et al. (2003) and Teo's (2019) previous studies corroborate that the user-friendliness of the interface and the ease of integration with work processes contribute to the increase in user confidence of intelligent systems.

This level of ease of use is significant in the context of graduate students in their writing, because the mental load tied to writing a thesis is already a concern. The high scores in BI to use are in favor of TAM's argument that PU and PEOU mutually affect the desire of individuals to remain attached to technology. Dwivedi et al. (2023) proves that the academic relevance and usefulness of AI tools are associated with strong BI. In general, the grand weighted means shows that there is an excellent uptake of AI tools by graduate students, more likely to be accepted as assistive tools in academic writing.

5.3 Extent of the Writing Outcomes of Graduate Research Writers After Using AI Tools

The average mean of 3.82 with an SD of 0.96 shows that graduate students' experience reveals improvements in their thesis writing outcomes when using AI tools. This confirms the claims of Davis (1989) and Venkatesh and Davis (2000) of the perceived benefits of use, perceived performance, making people contemplate the continued use of technology where TAM is concerned. The ratings of less time spent on editing and proofreading (M = 3.93) show that AI tools could be used to carry out the mechanical aspects of revision, which will leave students with more time to practice higher-order reasoning, such as the development of arguments and critical thinking (Kasneci et al., 2023). Shi et al. (2025) note that AI tools make a significant contribution to efficiency in addition to their beneficial outcomes, as shown by the computed mean of 3.82 and coherence with a mean of 3.76.

Consistent with the findings of Kasneci et al. (2023), if the computed mean was greater than the overall AI experience mean (M = 3.74), it shows that AI tools can produce substantial advantages and allow incorporating this into graduate research education. Nevertheless, the data variation (SD = 0.96) implies that it does not provide equal benefits to all users, as the usage and perception differences alter their impact. There is a need to provide individualized support based on different degrees of experience, ensuring that such an application does not affect academic integrity (Gruenhagen et al., 2024). All in all, the findings support that AI tools should be included in graduate education but should not be used at the expense of academic integrity and independent scholarly development.

5.4 Relationship Between Graduate Research Writers' Experience with AI Tools and Their Writing Outcomes

One of the most serious implications of the present study is the strong positive correlation between the experience of graduate students who use AI tools and the writing outcomes ($r_s = .757$, $p < .001$). This correlation is not merely a statistical finding but has a very apparent and practical implication: graduate students who devote more time and attention to AI tools in their thesis writing are more likely to write more efficiently and with higher overall quality. This is not merely about access to technology, but the extent to which the students have become familiar and confident in purposefully using these tools in various phases of the thesis writing process.

This finding has implications for graduate education. The idea is that AI tool experience is an enabler of writing performance. The better a graduate student knows how to use AI tools strategically, the more they can use them to meet the cognitive and linguistic challenges of writing the thesis. This interpretation is supported by Connell Pensky (2025), who found that graduate students who were taught how to use generative AI correctly showed significant positive changes in the quality of their writing, proving that the effects of AI are not inherent but depend on the level and purpose with which a student approaches the technology. Davis (1989) opined that BI is being motivated by PU and ease of use. However, the correlation outcome in the present study takes it a step further, as they indicate that sustained behavioral engagement with AI tools, because of positive PU and ease of use, not only predicts intention but also indicates a tangible improvement in writing performance.

However, the SD of experience and outcomes of 1.00 and 0.96, respectively, shows that these advantages are not evenly distributed among all respondents, which means that not all graduate students use AI tools equally or to the same extent. This difference highlights the importance of AI literacy; students who cannot strategically use AI tools might not get the full benefit of them in thesis writing. In addition, it should be mentioned that the correlational character of the information does not allow making causal inferences because it is possible that other factors, including the writing skills before AI experience, digital literacy, institutional support, etc., may also play a role in the observed correlation between AI experience and writing results.

5.5 Adherence of the Graduate School Writers to Principles of Academic Integrity in Using AI Tools

In the qualitative phase of this study, using inductive coding, two questions were answered by the graduates.

5.5.1 Reasons for graduate students choosing AI tools

Linguistic Support:

The findings indicate that one of the main factors that make graduate students adopt AI tools when writing their thesis is linguistic and mechanical assistance, instead of content generation. This is evidenced by such feedback by respondents: *"AI helps me formalize my sentences"(R2), "It helps fix my grammar and editing precise words" (R21), "I use ChatGPT in the my paperwork to refine the context of my statements*

and to find more citations and RRLs" (R7) and *"It helps me develop writing mechanics" (R22).* These in vivo expressions are significantly supported by process codes such as formalizing phrases, editing to be precise, checking consistency, and refining tone, which, in combination, imply that students think of AI as a linguistic tool and not a content creator. This trend indicates that AI is being applied to bring clarity, coherence, and compliance with the rules of writing an academic paper, without diluting the originality of the ideas. This usage can be related to the research of Marzuki et al. (2023), who found that students writing in a second language use AI to decrease the cognitive load of translation and sentence construction and focus on higher-order thinking processes.

Likewise, the desire to improve tone and achieve consistency contributes to the results of Fitria (2021), which emphasize the popularity of such tools as Grammarly and ChatGPT to comply with the academic style requirements and change the meaning of the text without introducing any non-essential changes. Moreover, this practice represents what Bista and Bista (2025) refer to as AI-assisted copyediting, in which students buy out the technical elements of the writing, i.e. grammar, structure, and accuracy, but not the intellectual content. This supports the presumption that graduate students are not waiting passively until AI generates ideas when they are trying to create some but rather are using it as an aiding tool in refining their thesis.

Organization of Ideas:
Time management and the generation of ideas are two aspects that belong to the theme Organization of Ideas, which is dominant in the answers of the respondents. "*I use AI tools for proofreading, revisions for clarity and organization of my research, and for faster retrieval of references" (R8),* while another emphasized time constraints, stating, "*To be efficient and to have more ideas if I'm too pressed in time" (R25).* Similarly, a respondent noted the practicality of AI use, *"I choose because of ease of use, convenience, cut on time spent" (R23).* These answers show very clearly the way AI tools can serve as organizational and generative aids in the writing process. To reinforce those assertions, process codes like saving time and effort, structuring large volumes of literature, and generating ideas under time pressure explain how AI can help students manage the mass of Review of Related Literature (RRL) effectively and allow them to generate ideas under time pressure.

This observation is consistent with the results of Deep and Chen (2025), who confirmed that AI tools are enablers for writing in higher education, specifically, simplifying literature reviews, structuring research data, and assisting students at various points throughout the academic writing process. In addition, the data indicates that AI tools are used by graduate students to arrange information in a way that is easy to understand, which supports the idea that it is regarded as a cognitive scaffold, helping students to better synthesize more complex information. This is in line with the expanding literature from Zendy (2025), which documents that more than 50% of researchers and scientists are now using AI tools in their literature reviews.

Selective Use and Resistance:
Selective Use and Resistance is a theme that highlights the conflict that exists between efficiency and academic integrity among graduate student writers. This is supported by the verbatim answers of the respondents, such as, "*I use AI tools to assist with grammar, clarity, and organization, but not for generating core research content. This ensures efficiency while maintaining originality, academic integrity, and ethical research practice*" (R26) and "*My goal is to ensure that my thesis reflects my own critical thinking and maintains academic integrity, while still benefiting from the practical advantages AI can offer.*" (R17).

These words are a clear indication that although AI tools are embraced as support tools, they are consciously limited to ensure that authorship and intellectual property are not compromised. In addition, even where an AI tool is used to provide technical support, as in the example of R28 stating that "*to make proofreading, grammar and spelling checking faster*", it only provides superficial support but not in the content creation. It means that students are actively negotiating the limits of AI tool usage so that it does not conflict with their personal and academic ethics. These practices confirm the results of Perkins (2023), who stated that students' actions are likely to be shaped by personalized moral standards that differentiate between cheating (AI-generated content) and joint usage (brainstorming and editing).

Here, the AI tool appears as an augmentation tool, and not a replacement for the human brain. Moreover, the resistance portrayed in "*lacking AI knowledge and preferring traditional search*" indicates a certain level of skepticism and a further adherence to traditional writing habits. This is in line with the views of Warschauer et al. (2023), who also believed that it is worth more to maintain the original voice of the writer than to produce technically perfect work.

5.5.1 Graduate school writers' actions in ensuring academic integrity when using AI
The results show that graduate students' use of AI in their thesis writing aligns with the current concepts of academic integrity. By limiting AI to editing, refining, and language support assignments, students are intellectually accountable, which ensures that the essence of academic output is generated by the researchers themselves. It is also reflected in the statement of R24, who said, "*The conception was mine and draft and the correction is AI*", which shows a definite distinction between the human and AI input. Equally, R29 expressed their full ethical position*: "I guarantee academic integrity by using AI only to support language and verifying all sources, disclosing AI help where necessary, and retaining complete ownership of ideas, analysis, and conclusions.*" These descriptions support the idea that intellectual output is created by the researchers themselves, which is consistent with Perkins (2023), who proposes the need to separate aid and authorship to remain honest and accountable in academic work.

In addition to adhering to university academic integrity policies regarding AI use, the ethical application of AI tools demonstrates a considerate attitude to academic writing. An example of this was posed by R30, when expressing his consciously imposed rules: "*Use AI as aid, not a generator of original ideas, arguments, and conclusions. All-important concepts, analyses, and interpretations are my own product*

and the result of my own studies." This attitude echoes the claim of Steneck (2006) that responsible research is accurate and that of Floridi et al. (2018) that meaningful human judgment is irreplaceable in the ethical application of AI. Transparency is also a crucial dimension of this ethical approach, reflected in the statement of R11, who said, *"I declare the application of AI to my research, ensuring that I check the facts of the outcome of AI responses."* These practices show that graduate students not only accept the academic integrity standard as a requirement but have internalized it as fledgling researchers and graduate students.

5.6 Meta-inferencing

The degree of convergence realized in this study is in line with the recent development in mixed-method research that emphasizes the role of integration in producing credible findings. As postulated by Younas and Fàbregues (2026), interpretations are not only complementary but enriched concepts when quantitative and qualitative aspects are developed to fit each other, especially by employing well-designed mixed methods research questions and integrative processes. According to them, convergence is an indication of a greater depth of integration, where one or more threads of evidence reinforce the validity and explanatory force of study. This point of view is reflected in the current results, as the correlation between numerical patterns and narratives of respondents gave a more detailed insight into the use of AI tools, PU, and writing results than either of the approaches could do individually.

The high rate of convergence in most of the findings suggests that graduate students have not adopted AI tools as time-saving tools, but rather as an academic friend in the process of writing a thesis. The fact that the reported data of students matched statistically with what they said in their narratives indicates that AI has become so ingrained into graduate students' thinking, drafting, revisions, and organizing of their thesis work. The minor deviation in ethical practices, however, speaks of a more warning tale. The qualitative stories indicate that real-life practices do not necessarily correspond with proclaimed values.

This suggests that there is a big difference between being aware of the guidelines of ethical AI usage and actually putting them into practice in the high-stress environment of writing a thesis. Graduate students who must write a thesis are under immense academic pressure, deadlines, adviser expectations, language requirements and the complexity of having to make original arguments – this pressure can silently drive some students to overreliance on AI, even when they are sincerely trying to be responsible. The divergence thus suggests that the ethical application of AI in the process of writing a thesis is not merely one purpose, but of long-lasting self-control and institutional mentoring that needs to be developed.

When taken as a whole, the convergence and small divergence indicate that graduate students are at a crucial stage in their academic careers. Although they can use AI to write the thesis and be productive, they lack the necessary skills to do it reliably. For students to truly benefit from AI without compromising on the

scholarly integrity and intellectual property that a thesis is meant to deliver, higher education institutions should actively integrate AI literacy regarding the ethical aspect of AI-aided thesis writing into graduate school instruction, mentorship, and university policies.

6. Conclusion

This paper discusses the increasingly close relationship between AI technologies and graduate research writing and how students maneuver their use within the constraints of academic requirements. The implications of the findings on the rethinking of research competence in the digital age by institutions and educators are enormous. Technological availability is not enough to effectively use AI; it must be supplemented with the creation of a highly sophisticated understanding of how these tools can be used to advance, instead of disabling, true scholarship.

The focus of the respondents on identification, disclosure, and authorial control indicates that the creation of intelligent standards that can regulate the integration of human and AI is more significant to the future of academic writing than the alternative of harmonizing the two. The consequence of this is that AI literacy is already a mandatory component of research competence, the same way information literacy was previously, and graduate programs can no longer afford to disregard it. The gaps in the performance of the respondents also point out the necessity to introduce equal support mechanisms that can address the disparities in students' technological backgrounds and academic needs. This article argues that the two-sided view of AI in higher education is not only a matter of impulsive thrill or a reflexive response.

Instead, it implies a careful, comprehensive process in which higher education institutions, professors and students collaboratively decide on how far they can go without compromising academic integrity and moral responsibilities. In the coming years, graduate programs should take constructive action by incorporating AI literacy into their research activities, creating clear outlines and contextual policies on the use of AI, and funding professional development in order for faculty members to mentor students on ethical issues of human–AI collaboration in academic writing. Whether AI should be part of graduate research is no longer a question; it has become a reality, and the academy needs to emerge as a force to influence its use fairly.

7. Limitations of the Study

The study included graduate students taking thesis writing across graduate programs, but not those taking doctoral programs, thus limiting the applicability of the results to the master's level research context. The study also did not mention the titles of the graduate programs of the participants, which could also restrict the possibility of identifying program-specific differences. Moreover, the certificate issued by the University Librarian, which includes percentages of AI-generated content, compliance with plagiarism and academic integrity, was not provided as a data source in this study, since the certificate is only released after all the revisions have been made but before the final hard binding of the thesis;

participants were still in the process of writing the thesis at the time of the data collection.

Conflict of Interest

The researcher declares that there is no conflict of interest in the conduct of this study.

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