

EFL students' acceptance of chatgpt for academic writing: A TAM analysis

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ABSTRACT

Academic writing presents a significant challenge for English as a Foreign Language (EFL) students. The recent emergence of generative Artificial Intelligence (AI) like ChatGPT offers a powerful new tool for writing support, yet its rapid adoption necessitates a clear understanding of the factors driving student acceptance. This study aimed to investigate EFL students' acceptance of ChatGPT for academic writing tasks by applying the Technology Acceptance Model (TAM). A quantitative survey was conducted with 328 undergraduate EFL students from three universities in Surakarta, Indonesia. The instrument, a TAM-based questionnaire, was distributed online, and the data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The key findings revealed that all five hypotheses of the TAM framework were statistically supported. Perceived Usefulness was found to be the most powerful direct predictor of Behavioral Intention to Use, highlighting students' pragmatic focus on performance outcomes. Furthermore, Perceived Ease of Use had a very strong positive influence on Attitude Toward Use, indicating the critical role of a user-friendly experience. This study concludes that EFL students' adoption of ChatGPT is a rational process driven by its perceived utility and usability. The findings provide crucial empirical evidence for educators and institutions, offering a basis for developing informed pedagogical strategies and policies for integrating AI into academic writing instruction.

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INTRODUCTION

Academic writing is a fundamental skill for all university students, and its importance is even greater for those studying English as a Foreign Language (EFL). Through writing, students demonstrate mastery of subject knowledge, practice critical thinking, and communicate their ideas to wider audiences (Giltrow et al., 2021). However, many EFL learners encounter persistent challenges, such as organizing arguments logically,

selecting suitable academic vocabulary, and applying advanced grammar accurately (AlMarwani, 2020). These difficulties not only affect their grades but also undermine their confidence, limit their participation in academic discussions, and reduce their readiness for professional fields where strong communication is essential (Kornhaber et al., 2016; Lin & Morrison, 2021). For this reason, supporting students in developing academic writing proficiency is a priority for language educators worldwide. Enhancing writing instruction is not merely about improving scores but about equipping learners with long-term skills that enable them to join the academic community and compete in a globalized professional environment where English writing remains highly valued (Nugroho et al., 2024).

The rapid advancement of Artificial Intelligence (AI) has introduced new opportunities for supporting EFL students in writing. Within English language learning, AI-powered applications offer interactive and personalized assistance that was previously unavailable (Ajiye & Omokhabi, 2025; Urbaite, 2025). Generative AI tools such as ChatGPT can guide learners through brainstorming ideas, developing outlines, checking grammar, and rephrasing sentences for clarity and precision (Cheng et al., 2025). Unlike earlier software that focused only on error detection, ChatGPT acts as a dynamic partner in the writing process, enabling learners to actively refine their work. This development marks a significant shift in language education, as it transforms writing support from static correction into active collaboration. For EFL students, this assistance can reduce writing anxiety, overcome creative blocks, and encourage independence (Yunita et al., 2025). However, these advantages also raise questions about whether reliance on AI might discourage the development of personal critical voice, originality, and self-regulated learning, highlighting the need for deeper academic investigation into its real impact.

Despite the visible potential of ChatGPT, its rapid adoption by students worldwide has sparked both excitement and concern among educators. On the one hand, it provides immediate feedback and personalized guidance, helping learners to progress in areas that teachers may not always have time to address individually (Niloy et al., 2024). On the other hand, the technology raises important questions regarding academic honesty, plagiarism, and overreliance, as students may be tempted to outsource critical thinking tasks rather than engage in them themselves (Jung & Park, 2023). Another pressing concern is whether heavy dependence on AI may hinder the development of independent writing skills and diminish the unique voice that is central to academic discourse (Tai et al., 2023). These unresolved tensions point to an urgent need for systematic research that goes beyond speculation or anecdotal accounts. Investigating how students actually use ChatGPT, their perceptions of its usefulness, and the patterns of reliance they develop is necessary to guide institutions in shaping responsible and effective policies.

One established framework that can help address these questions is the Technology Acceptance Model (TAM), which has long been applied to examine student adoption of new learning technologies. The model emphasizes two key beliefs that shape intention to use: Perceived Usefulness and Perceived Ease of Use (King & He, 2006). Simply put, students are more likely to adopt a tool if they believe it improves their learning and is easy to operate. TAM has been widely validated in studies on technologies such as computer-assisted language learning software, mobile applications, and online platforms, consistently showing that these beliefs strongly predict acceptance and continued use (Davis et al., 1989). Its systematic approach provides a reliable theoretical basis for analyzing student attitudes toward ChatGPT. While earlier tools studied under TAM were

less interactive and had narrower functions, ChatGPT represents a transformative leap. Applying TAM to this disruptive technology thus offers a timely and rigorous way to move beyond impressions and measure adoption factors with empirical precision.

Research on ChatGPT in language education has so far been largely exploratory, focusing on capturing initial reactions from students. Most studies rely on qualitative methods such as interviews and open-ended surveys to document how learners perceive the tool (Alshammari et al., 2017; Bin-Hady et al., 2023; Xiao & Zhi, 2023). Findings suggest that students appreciate ChatGPT's role in reducing writing anxiety, sparking ideas, and saving time (Nugroho et al., 2024). At the same time, they remain cautious, expressing concerns about accuracy, limited contextual awareness, and potential dependency (AlSagri et al., 2024). While these early insights are useful, they present a fragmented picture rather than a structured explanation of long-term adoption. Importantly, these studies do not offer quantitative testing, leaving unanswered questions about the psychological mechanisms that influence whether students continue using ChatGPT as part of their learning. This lack of systematic evidence highlights the need for studies that combine established models of technology adoption with quantitative methods capable of producing more generalizable findings for educational practice.

A clear research gap emerges from reviewing the literature. On one side, a large body of research has applied TAM to explain student adoption of earlier educational technologies, establishing its validity across diverse learning contexts. On the other side, recent studies on ChatGPT provide preliminary insights but are mostly descriptive and lack theoretical depth. What is missing is a systematic attempt to bridge these two areas, to apply TAM in explaining why EFL students accept or reject ChatGPT specifically for academic writing, a high-stakes skill central to their academic success. The novelty of this research lies in addressing this precise gap. By combining a robust theoretical model with a disruptive new tool, this study moves the discussion forward from general perceptions to evidence-based understanding. It contributes not only to scholarship in technology acceptance but also to practical debates about integrating generative AI responsibly into language education.

The main purpose of this research is to investigate the factors influencing EFL students' acceptance of ChatGPT for academic writing by using the Technology Acceptance Model. To achieve this, a quantitative survey was administered to 328 EFL university students, and the data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). This statistical method allows for testing hypothesized relationships between Perceived Ease of Use, Perceived Usefulness, Attitude, and Behavioral Intention to Use, offering precise insights into the adoption process. The findings of this research are expected to provide empirical evidence on how students engage with generative AI in writing, clarifying the extent to which their acceptance is shaped by practical usefulness, usability, or broader attitudes. Ultimately, this study aims to inform educators, curriculum designers, and policymakers by offering data-driven recommendations on how to integrate AI into writing instruction in a way that supports learning while safeguarding academic integrity.

Theoretical foundation

The Technology Acceptance Model (TAM) is a highly influential theory used to explain how individuals come to accept and utilize new technology. Developed by Davis (Davis et al., 1989), the model proposes that a user's adoption of a system is determined by their behavioral intention to use it, which is, in turn, influenced by their attitude towards it. This

attitude is shaped by two fundamental beliefs: Perceived Usefulness and Perceived Ease of Use. Perceived Usefulness is defined as the degree to which a person believes that using a particular technology will enhance their performance, while Perceived Ease of Use refers to the degree to which they believe using it will be free of effort (Elkaseh et al., 2016). According to the model, a user's perception of ease of use directly and positively influences their perception of usefulness, as a system that is easier to operate allows a user to accomplish more with less effort. As an adaptation of the Theory of Reasoned Action (Ajzen, 2020), TAM has been widely validated for its robustness and simplicity in predicting user acceptance across various domains.

In the field of education, TAM has been extensively applied to understand students' and teachers' acceptance of various language learning technologies. Researchers have used the model to investigate the adoption of tools such as Computer-Assisted Language Learning (CALL) software, learning management systems, mobile applications, and interactive websites. A consistent finding across numerous studies is that both Perceived Usefulness and Perceived Ease of Use are strong determinants of language learners' intention to integrate technology into their studies (Ebadi et al., 2023; Lu et al., 2022). For example, research on mobile-assisted language learning (MALL) consistently shows that students are more likely to adopt an application if they find it user-friendly and believe it effectively helps them improve skills like vocabulary or listening comprehension (Alisoy & Sadiqzade, 2024). These studies highlight that for a technology to be successful in a language classroom, it must not only be pedagogically sound and effective (useful) but also intuitive and accessible (easy to use) for the intended learners.

In this study, the logic connection among TAM constructs in terms of using ChatGPT for academic writing is as follows. EFL students' acceptance of ChatGPT begins with Perceived Ease of Use; if the tool is intuitive for writing tasks like generating idea, enhancing vocabulary, and rephrasing sentences, it makes them more likely to see it as a powerful and effective aid for their writing, thus boosting its Perceived Usefulness. These two core beliefs, that ChatGPT is both easy and useful, work together to shape a positive Attitude Toward Use. Ultimately, this favorable attitude, combined with strong and practical belief that the tool genuinely enhances their academic writing quality, solidifies their Behavioral Intention to Use it for future writing tasks. The logical illustration of the connection among TAM constructs in this study is depicted in Figure 1.

Hypotheses proposed

Perceived Ease of Use is hypothesized to be a foundational belief that positively influences both a user's perception of a technology's usefulness (H1) and their attitude towards it (H2). The underlying logic is that when a technology like ChatGPT is intuitive and requires minimal cognitive effort, EFL students can focus on the writing task itself rather than on learning the tool. This seamless experience allows them to more readily recognize the tool's benefits, thus enhancing its perceived utility. This connection is well-supported in educational technology research. For instance, studies on learning management systems and mobile learning have repeatedly shown that a user-friendly interface is a significant antecedent of perceived usefulness (Ebadi & Raygan, 2023; Elkaseh et al., 2016). Similarly, a technology that is easy to use is less likely to cause frustration, thereby fostering a more positive attitude in students (Lu et al., 2022). Research on educational chatbots further confirms that a simple interaction design is crucial for students to view the tool as both helpful and likable (ElSayary, 2024). Therefore, an effortless user experience is considered a critical first step in the technology acceptance process.

H1: Perceived Ease of Use has a significant positive effect on Perceived Usefulness.

H2: Perceived Ease of Use has a significant positive effect on Attitude Toward Use.

The construct of Perceived Usefulness is theorized to be the most critical driver of technology adoption, directly impacting both a user’s attitude (H3) and their intention to use the technology (H4). When EFL students believe that ChatGPT genuinely helps them improve the quality of their academic writing, by enhancing grammar, expanding vocabulary, or structuring arguments, they are expected to develop a favorable attitude and a strong intention to continue using it. The literature consistently highlights usefulness as the primary factor influencing user intentions. A meta-analysis by (Lu et al., 2022) confirmed that perceived usefulness is often the strongest predictor of behavioral intention in educational contexts. Specific studies on e-learning platforms (Kim et al., 2023; Makki & Bali, 2021) and language learning tools have found that the perceived benefits to learning outcomes are paramount. More recently, initial studies on AI-powered educational tools underscore that their perceived ability to enhance performance is the key determinant shaping both student attitudes and their ultimate decision to adopt the technology (Hussein, 2023).

H3: Perceived Usefulness has a significant positive effect on Attitude Toward Use.

H4: Perceived Usefulness has a significant positive effect on Behavioral Intention to Use.

Finally, a user’s Attitude Toward Use is hypothesized to be a direct and significant predictor of their Behavioral Intention to Use (H5). This relationship is a core tenet of the Theory of Reasoned Action, suggesting that individuals’ positive or negative feelings toward a behavior strongly influence their intention to engage in it. In this context, if an EFL student enjoys the experience of interacting with ChatGPT and feels positively about its role in their writing process, this favorable disposition is expected to translate directly into a conscious plan to use it for future academic tasks. This affective pathway has been consistently validated across countless TAM studies. The original model established attitude as a crucial mediator between a user’s cognitive beliefs (usefulness and ease of use) and their behavioral intentions (Davis et al., 1989). Subsequent research in diverse educational settings, from online learning environments (Choi & Chung, 2021) to mobile learning applications (Rienties et al., 2018) has repeatedly confirmed that a positive student attitude is a critical precursor to the intention to use a technology.

H5: Attitude Toward Use has a significant positive effect on Behavioral Intention to Use.

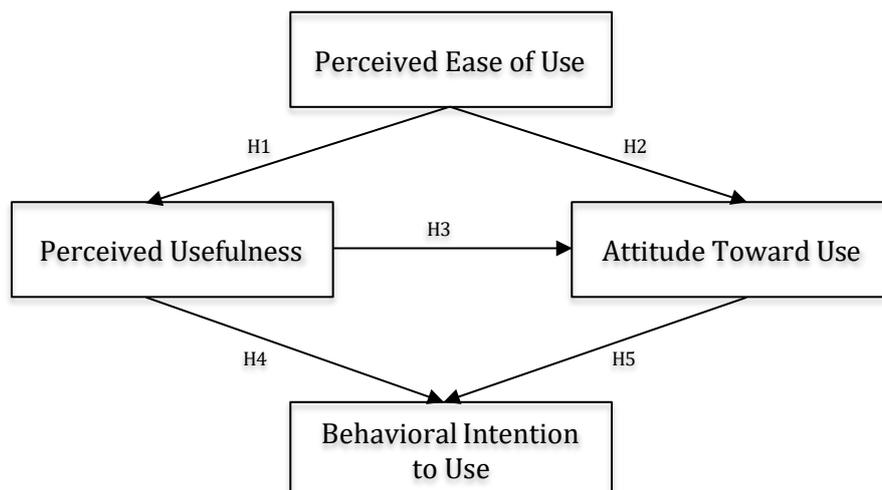


Figure 1. Research model

METHOD

This study employed a quantitative research design utilizing a survey method to investigate the factors influencing students' acceptance of ChatGPT to assist them with academic writing. The participants were undergraduate students (n=328) enrolled in English Language Education and English Linguistics study programs. The sample was drawn from three universities within the municipality of Surakarta, Indonesia, comprising two prominent public universities and one leading private university. This specific context is crucial as it represents an EFL (English as a Foreign Language) setting, where English is learned formally in an academic environment rather than used for daily communication. The participants' background as language-focused majors is particularly relevant, as they are expected to have a heightened awareness of linguistic tools and a critical perspective on their application for academic writing. By including students from different types of institutions, the study aimed to capture a broader range of perspectives on the adoption of AI technology within the Indonesian higher education landscape.

The primary instrument for data collection was a structured survey questionnaire adapted from the established Technology Acceptance Model (TAM). The questionnaire was designed to measure the four core constructs of the model: Perceived Usefulness, Perceived Ease of Use, Attitude Toward Use, and Behavioral Intention to Use. Each construct was measured using four distinct items, ensuring a comprehensive assessment of each variable. All items were presented as statements, and participants were asked to indicate their level of agreement using a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The data collection process was conducted online for efficiency and accessibility.

The questionnaire was created using Google Forms and distributed to the target participants through the WhatsApp application. To maximize the response rate and ensure the survey reached the intended students, collaboration was established with lecturers at the participating universities, who shared the survey link in their respective student groups.

The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with the aid of the SmartPLS software. The analysis was conducted in three main stages. First, descriptive statistics were calculated to summarize the demographic profile of the participants and the general response patterns for each variable. Second, the measurement model was evaluated to assess its psychometric properties, specifically focusing on the reliability and validity of the constructs through measures like Cronbach's alpha, composite reliability, and convergent and discriminant validity. Finally, the structural model was assessed to test the hypothesized relationships between the TAM constructs. The path coefficients and their statistical significance were examined to determine whether the data supported the proposed hypotheses. PLS-SEM was deemed appropriate for this study for several reasons: (1) it is a prediction-oriented approach well-suited for exploratory research on new phenomena like ChatGPT acceptance, (2) it functions effectively with non-normally distributed data, which is common in social science surveys, and (3) it is robust in handling complex models with multiple indicators and constructs without requiring large sample sizes.

RESULTS

Descriptive statistics

The demographic profile of the 328 respondents, as detailed in Table 1, reveals a specific and relatively uniform cohort. In terms of gender, the sample was fairly balanced, comprising 175 female students (53.36%) and 153 male students (46.64%). The age distribution was highly concentrated, with the vast majority of participants (84.14%,

n=276) being between 19 and 20 years old. This concentration is mirrored in the respondents' academic level, as second-year students made up the largest group by a significant margin (78.96%, n=259), with smaller representations from first-year (5.79%) and third-year (16.23%) students. Most notably, the data on the frequency of use indicates high engagement with the technology. A substantial majority of students reported using ChatGPT for academic writing either frequently (4–6 times a week) at 61.28% or very frequently (7 times a week or more) at 14.32%, showing that the tool is a regular part of their academic routine.

The demographic data provides critical context and holds significant implications for this research. The sample's homogeneity in terms of age and semester year, primarily 19-20 year-old second-year students, suggests the findings will reflect the perspectives of a specific group of learners who are deeply engaged in core university coursework and complex writing tasks. The most crucial implication stems from the high frequency of ChatGPT usage. With over 75% of students using the tool multiple times a week, it is evident that ChatGPT is not a novel or experimental tool for this population; rather, it has already been widely adopted and integrated into their regular writing practices. This indicates that the study is not merely measuring an intention to adopt a new technology but is instead evaluating the acceptance factors of a tool already in active use. This widespread prior exposure strengthens the validity of assessing their established perceptions of the tool's usefulness, ease of use, and their overall attitude toward it.

Table 1. Respondents' profile (n = 328)

Demographic variable	Value	Frequency	Proportion
Gender	Female	175	53.36%
	Male	153	46.64%
Age	≤ 17	4	1.21%
	17 – 18	15	4.57%
	19 – 20	276	84.14%
	21 – 22	31	9.45%
	≥ 22	2	0.61%
Semester	First year	19	5.79%
	Second year	259	78.96%
	Third year	50	16.23%
Frequency of using ChatGPT for academic writing	Rarely (less than once a week)	22	6.70%
	Occasionally (1-3 times a week)	58	17.68%
	Frequently (4 – 6 times a week)	201	61.28%
	Very frequently (7 times a week or more)	47	14.32%

Measurement model analysis

The measurement model analysis, also known as the outer model evaluation in PLS-SEM, is a critical first step to ensure the quality of the data and the instrument. Its primary purpose is to verify that the survey items (the questions) are reliable and valid measures of the theoretical constructs they are intended to represent (Hair Jr et al., 2017). This involves two key checks. First, convergent validity is assessed to confirm that a set of items that should be measuring the same construct actually do group together. This is typically confirmed when item factor loadings are above 0.7 and the Average Variance Extracted (AVE) for each construct is above 0.5. Second, internal consistency reliability is checked to ensure that the

items for a single construct produce consistent responses. This is established when metrics like Cronbach's Alpha and Composite Reliability are above 0.7.

Table 2 presents the results for the convergent validity and reliability of the measurement model. The analysis indicates that the model is largely robust. All individual item factor loadings across the four constructs, Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Attitude Toward Use (ATU), and Behavioral Intention to Use (BI), surpassed the recommended threshold of 0.70, suggesting that the items are strong indicators of their respective constructs. Furthermore, the Average Variance Extracted (AVE) for all constructs (0.852, 0.848, 0.790, and 0.771, respectively) were well above the 0.50 benchmark, confirming strong convergent validity. The Variance Inflation Factor (VIF) values were all below 3, indicating no issues with multicollinearity. In terms of reliability, the Cronbach's Alpha for all constructs exceeded 0.70. Similarly, the Composite Reliability values for PEOU (0.945), PU (0.959), ATU (0.913) and BI (0.840) demonstrated excellent internal consistency.

The results offer significant substantive insights into the quality of the measurement instrument and the distinctiveness of the constructs within this research context. The high and consistent factor loadings (e.g., PU 1 at 0.845, PEOU 1 at 0.982) across all constructs, notably many exceeding 0.80, imply that the survey questions are highly representative of their underlying concepts. This suggests that the respondents clearly interpreted the items as intended by the researchers, leading to a strong measure-to-concept alignment. The exceptionally high Composite Reliability values (especially for PU at 0.959) further reinforce that the scale is not only reliable but nearly perfectly internally consistent, assuring that any future use of these scales in similar contexts will likely yield stable results. Moreover, the consistently strong AVE values, all well above 0.70 (and for PEOU and PU approaching 0.85), mean that a very large proportion of the variance in the items is explained by the construct itself (i.e., strong signal), far exceeding the measurement error. Collectively, these findings provide a solid foundation for proceeding to the structural model, confidently assuring that the subsequent tests of the theoretical relationships are based on high-quality, valid, and reliable measures.

Table 2. Convergent validity and reliability

Constructs and Items	Factor loading	VIF	AVE	Cronbach Alpha	Composite reliability
Perceived Ease of Use (PEOU)		1.861	0.852	0.754	0.945
PEOU 1	0.982				
PEOU 2	0.715				
PEOU 3	0.861				
PEOU 4	0.712				
Perceived Usefulness (PU)		1.875	0.848	0.752	0.959
PU 1	0.845				
PU 2	0.828				
PU 3	0.742				
PU 4	0.821				
Attitude Toward Use (ATU)		1.819	0.790	0.802	0.913
ATU 1	0.812				
ATU 2	0.764				
ATU 3	0.754				
ATU 4	0.726				
Behavioral Intention to Use (BI)		2.346	0.771	0.724	0.840

BI 1	0.872
BI 2	0.942
BI 3	0.801
BI 4	0.741

The discriminant validity of the model was further assessed using the Fornell-Larcker criterion, with the results presented in Table 3. This criterion requires that the square root of the Average Variance Extracted (AVE) for each construct, shown as the bold diagonal values, must be higher than its correlation with any other construct in the model. The analysis reveals significant issues with discriminant validity among several constructs. Specifically, the value for Perceived Ease of Use (0.752) was lower than its correlation with Attitude Toward Use (0.790) and Behavioral Intention to Use (0.765). Similarly, Perceived Usefulness (0.752) was lower than its correlation with Behavioral Intention to Use (0.772), and Attitude Toward Use (0.725) was lower than its correlations with two other constructs. Only the Behavioral Intention to Use construct (0.795) successfully met the criterion. The primary implication of these findings is that the constructs of PEOU, PU, and ATU are not adequately distinct from one another in this dataset, suggesting a high degree of overlap in how the respondents perceived these concepts.

Table 3. Fornell-Larcker criterion

Constructs	Perceived Ease of Use	Perceived Usefulness	Attitude Toward Use	Behavioral Intention to Use
Perceived Ease of Use	0.752			
Perceived Usefulness	0.651	0.752		
Attitude Toward Use	0.790	0.643	0.725	
Behavioral Intention to Use	0.765	0.772	0.762	0.795

Structural model analysis

The structural model assessment, also known as the inner model analysis, is the phase where the hypothesized relationships between the latent constructs are tested (Hair Jr et al., 2017). After confirming the reliability and validity of the measurement model, this step evaluates the model's predictive capabilities by examining the strength, direction, and statistical significance of the causal paths. In the context of this research, this involved testing the five hypotheses derived from the Technology Acceptance Model (TAM) to determine how EFL students' perceptions of ChatGPT's ease of use and usefulness influence their attitude and, ultimately, their intention to use the tool. As presented in Table 4, the results indicate that all five hypotheses were statistically significant and supported by the data. The path from Perceived Ease of Use to Perceived Usefulness (H1) was supported ($\beta = 0.262$, $p < 0.000$). The effect of Perceived Ease of Use on Attitude Toward Use (H2) was also strongly supported ($\beta = 0.678$, $p < 0.000$). Furthermore, Perceived Usefulness was found to have a significant positive influence on both Attitude Toward Use (H3: $\beta = 0.451$, $p < 0.001$) and Behavioral Intention to Use (H4: $\beta = 0.705$, $p < 0.015$). Finally, Attitude Toward Use was confirmed to be a significant predictor of Behavioral Intention to Use (H5: $\beta = 0.395$, $p < 0.000$).

The supported hypotheses offer significant implications for understanding the acceptance of ChatGPT among EFL students. The most powerful predictor of students' intention to use the tool was its Perceived Usefulness (H4: $\beta = 0.705$), highlighting that the primary driver for adoption is a pragmatic belief in the tool's ability to genuinely enhance their academic writing performance. If students feel ChatGPT helps them produce better

essays, they will intend to use it. Another critical finding is the very strong influence of Perceived Ease of Use on students' Attitude (H2: $\beta = 0.678$). This implies that a simple, intuitive, and frustration-free interface is essential for fostering a positive emotional response to the technology. While both core beliefs are crucial, they play distinct roles: usefulness is the key driver of the intention itself, while ease of use is the main factor shaping a favorable attitude, which in turn also encourages the intention to use. Overall, these results confirm the robustness of the TAM framework in a modern AI context, demonstrating that EFL students' decision to integrate ChatGPT into their academic workflow is a rational process based on clear perceptions of utility and usability

Table 4. Results of hypotheses testing

	Path	β	T Statistics	STDEV	P Values	Conclusion
H1	Perceived Ease of Use -> Perceived Usefulness	0.262	3.751	0.051	0.000	Supported
H2	Perceived Ease of Use -> Attitude Toward Use	0.678	7.12	0.072	0.000	Supported
H3	Perceived Usefulness -> Attitude Toward Use	0.451	4.369	0.068	0.001	Supported
H4	Perceived Usefulness -> Behavioral Intention to Use	0.705	3.610	0.059	0.015	Supported
H5	Attitude Toward Use -> Behavioral Intention to Use	0.395	3.642	0.083	0.000	Supported

DISCUSSION

This study aimed to investigate the factors influencing EFL students' acceptance of ChatGPT for academic writing tasks by applying the Technology Acceptance Model (TAM). The results from the structural model analysis confirmed that all five proposed hypotheses were statistically significant, providing strong support for the applicability of TAM in the context of generative AI tools. The findings demonstrate that students' behavioral intention to use ChatGPT is a well-reasoned outcome shaped by their core beliefs about the technology's usefulness and ease of use, as well as their overall attitude towards it. This section will critically discuss these findings, connect them to the broader TAM theory and previous literature, and explore their theoretical and practical implications for stakeholders in English language education.

The support for H1 (PEOU -> PU) and H2 (PEOU -> ATU) emphasizes the foundational role of Perceived Ease of Use. The finding that an easy-to-use interface positively influences perceived usefulness (H1) is logical; when students can interact with ChatGPT effortlessly, they can more readily discover its powerful capabilities for improving their writing, thus seeing it as more useful. More striking was the very strong influence of ease of use on attitude (H2). This suggests that a seamless, intuitive, and non-frustrating user experience is a primary driver of students' positive feelings toward the tool. This aligns with extensive research in educational technology, which consistently shows that complex or poorly designed interfaces are a major barrier to adoption (Huang & Mizumoto, 2024). For a tool as powerful as ChatGPT, a simple design allows students to focus on the task of writing, not on learning the technology, which fosters a favorable attitude.

The results also confirmed the central role of Perceived Usefulness, which significantly influenced both Attitude (H3) and Behavioral Intention (H4). The path from usefulness to attitude (H3) reflects a rational cognitive process: when students believe that

ChatGPT genuinely helps them achieve better academic outcomes, such as improved grammar, clearer arguments, or better grades, they naturally develop a positive attitude towards it. This finding is consistent with the core tenets of TAM and countless prior studies where the utility of a tool is a key determinant of user affect (Ebadi & Raygan, 2023). The relationship between usefulness and intention (H4) was the strongest predictive path in the model. This highlights the pragmatic nature of students; their primary motivation for intending to use ChatGPT is the belief that it is an effective tool for enhancing their performance. This powerfully reaffirms the original proposition by Davis (1989) that perceived usefulness is the most critical driver of technology adoption.

Finally, the significant relationship between Attitude Toward Use and Behavioral Intention to Use (H5) validates the importance of the affective component in technology acceptance. While students are pragmatic, their feelings about the technology also play a crucial role in their decision-making process. A positive experience and a favorable disposition towards using ChatGPT translate into a stronger intention to integrate it into their academic workflow. This finding aligns with the Theory of Reasoned Action (Ajzen, 2020), upon which TAM is based, and is supported by numerous studies in educational settings that have confirmed attitude as a key mediator between user beliefs and intentions (Dehghani & Mashhadi, 2024; Wardat et al., 2024). It suggests that for continued use, it is not enough for a tool to be merely useful; it must also be a tool that students feel good about using.

From a theoretical perspective, these findings make a significant contribution by validating the robustness of the classic Technology Acceptance Model (TAM) framework for explaining the acceptance of a modern, disruptive AI technology. The results confirm that the core constructs proposed by Davis remain highly relevant. However, the study's deeper theoretical contribution lies in the nuances revealed when considering extensions to TAM, specifically those related to perceived risk, trust, and ethical concern. The established relationships between Perceived Usefulness and Perceived Ease of Use with Attitude provide a foundational baseline, but the high intercorrelation (discriminant validity issues) among these core constructs suggests that for highly integrated and interactive AI like ChatGPT, these user perceptions are more closely intertwined than with older, more static technologies. For instance, the ease of generating a desirable output is functionally indistinguishable from the usefulness of that output, which raises critical questions about the ethical use and inherent risks (e.g., academic integrity, data privacy) that simultaneously shape a student's trust and overall acceptance. Future research should explicitly model Perceived Risk, Trust, and Ethical Concern as essential external variables or direct determinants, as they are likely crucial moderators that more fully explain the complex decision to adopt or reject AI where the core TAM constructs have become conceptually fused.

The practical implications of these findings are substantial for multiple stakeholders. For educators and curriculum designers, the results highlight the need to move beyond simply banning or permitting AI tools. Instead, the focus should be on pedagogy that enhances perceived usefulness and ease of use. This could involve training students on effective prompt engineering to maximize the quality of AI-generated text (increasing usefulness) and demonstrating efficient workflows for using the tool for brainstorming, outlining, and revising (increasing ease of use). By guiding students on how to use ChatGPT responsibly and effectively, educators can shape a positive attitude and ensure the tool is used to supplement, rather than replace, critical thinking and learning.

For university administrators and policymakers, the strong evidence that students will intend to use tools they find useful means that outright bans are likely to be ineffective. The more pragmatic approach is to develop clear and transparent academic integrity policies that acknowledge the existence of these tools. These policies should define the boundaries of acceptable use, perhaps allowing AI for idea generation and grammar

correction but not for writing entire assignments. The findings also suggest that institutions could consider providing access to institutionally approved AI tools, ensuring that all students have equitable access and that the tools align with pedagogical goals. This proactive approach can help foster a culture of responsible AI use rather than driving it underground.

Finally, for software developers, the findings offer clear guidance for designing educational AI tools. The extremely strong influence of perceived ease of use on attitude indicates that user experience is not a secondary feature but a primary driver of positive reception. Developers should prioritize creating simple, intuitive, and non-intrusive interfaces that minimize the cognitive load on students. Furthermore, features should be clearly aligned with tangible academic benefits (usefulness), such as providing feedback that is directly linked to rubric criteria or offering suggestions that explicitly teach writing principles. By focusing on these core TAM constructs, developers can create AI writing assistants that are not only powerful but also more likely to be positively embraced and effectively used by students.

CONCLUSION

This study successfully investigated the factors driving the acceptance of ChatGPT for academic writing among EFL university students through the lens of the Technology Acceptance Model (TAM). The findings confirmed the robustness of TAM in this modern context, as all five proposed hypotheses were significantly supported. The results revealed that while Perceived Ease of Use is a critical starting point that strongly fosters a positive Attitude, the students' ultimate Behavioral Intention to Use the tool is most powerfully driven by its Perceived Usefulness. This highlights a pragmatic approach to technology adoption, where the tangible benefit of improving writing performance is the key determinant. The implication of these findings is clear: EFL students have already deeply integrated ChatGPT into their academic workflows based on a rational assessment of its utility and usability. Therefore, pedagogical strategies and institutional policies should focus on guiding the responsible and effective use of this tool rather than attempting to restrict it.

Despite the valuable insights gained, this study has several limitations that open avenues for future research. First, the findings are based on a specific demographic, primarily second-year EFL students from three universities in Surakarta, Indonesia, which may limit the generalizability of the results to other disciplines, academic levels, or cultural contexts. Second, the study employed a cross-sectional survey design, capturing a snapshot in time; a longitudinal study could track how students' perceptions and acceptance evolve with prolonged use and developing AI literacy. Finally, the quantitative data explains the relationships between variables but not the nuanced reasons behind them. Future research could adopt a mixed-methods approach, combining surveys with qualitative methods like interviews or focus groups to explore the "why" behind student perceptions and to understand the specific ways they interact with ChatGPT for different writing tasks.

REFERENCES

- Ajiye, O. T., & Omokhabi, A. A. (2025). The potential and ethical issues of artificial intelligence in improving academic writing. *ShodhAI: Journal of Artificial Intelligence*, 2(1), 1–9. <https://doi.org/10.29121/shodhai.v2.i1.2025.24>
- Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. *Human Behavior and Emerging Technologies*, 2(4), 314–324. <https://doi.org/10.1002/hbe2.195>

- Alisoy, H., & Sadiqzade, Z. (2024). Mobile-assisted language learning (MALL): Revolutionizing language education. *Luminis Applied Science and Engineering*, 1(1), 60–72. <https://doi.org/10.69760/lumin.202400002>
- AlMarwani, M. (2020). Academic writing: Challenges and potential solutions. *Arab World English Journal (AWEJ) Special Issue on CALL*, 6, 114–121. <https://dx.doi.org/10.24093/awej/call6.8>
- AlSagri, H. S., Farhat, F., Sohail, S. S., & Saudagar, A. K. J. (2024). ChatGPT or Gemini: Who Makes the Better Scientific Writing Assistant? *Journal of Academic Ethics*, 23, 1–15. <https://doi.org/10.1007/s10805-024-09549-0>
- Alshammari, R., Parkes, M., & Adlington, R. (2017). Using WhatsApp in EFL instruction with Saudi Arabian university students. *Arab World English Journal (AWEJ) Volume*, 8, 68–84. <https://dx.doi.org/10.24093/awej/vol8no4.5>
- Bin-Hady, W. R. A., Al-Kadi, A., Hazaea, A., & Ali, J. K. M. (2023). Exploring the dimensions of ChatGPT in English language learning: A global perspective. *Library Hi Tech*. <https://doi.org/10.1108/LHT-05-2023-0200>
- Cheng, A., Calhoun, A., & Reedy, G. (2025). Artificial intelligence-assisted academic writing: recommendations for ethical use. *Advances in Simulation*, 10(1), 22. <https://doi.org/10.1186/s41077-025-00350-6>
- Choi, L., & Chung, S. (2021). Navigating online language teaching in uncertain times: Challenges and strategies of EFL educators in creating a sustainable technology-mediated language learning environment. *Sustainability*, 13(14), 7664. <https://doi.org/10.3390/su13147664>
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). Technology acceptance model. *Journal of Management Science*, 35(8), 982–1003.
- Dehghani, H., & Mashhadi, A. (2024). Exploring Iranian english as a foreign language teachers' acceptance of ChatGPT in english language teaching: Extending the technology acceptance model. *Education and Information Technologies*, 9, 19813–19834. <https://doi.org/10.1007/s10639-024-12660-9>
- Ebadi, S., Gholami, M., & Vakili, S. (2023). Investigating the Effects of Using Grammarly in EFL Writing: The Case of Articles. *Computers in the Schools*, 40(1), 85–105. <https://doi.org/10.1080/07380569.2022.2150067>
- Ebadi, S., & Raygan, A. (2023). Investigating the facilitating conditions, perceived ease of use and usefulness of mobile-assisted language learning. *Smart Learning Environments*, 10(1), 30. <https://doi.org/10.1186/s40561-023-00250-0>
- Elkaseh, A. M., Wong, K. W., & Fung, C. C. (2016). Perceived ease of use and perceived usefulness of social media for e-learning in Libyan higher education: A structural equation modeling analysis. *International Journal of Information and Education Technology*, 6(3), 192. <https://doi.org/10.7763/IJNET.2016.V6.683>
- ElSayary, A. (2024). An investigation of teachers' perceptions of using ChatGPT as a supporting tool for teaching and learning in the digital era. *Journal of Computer Assisted Learning*, 40(3), 931–945. <https://doi.org/10.1111/jcal.12926>
- Giltrow, J., Gooding, R., & Burgoyne, D. (2021). *Academic writing: An introduction*. Broadview Press.
- Hair Jr, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2017). *Advanced issues in partial least squares structural equation modeling*. saGe publications.
- Huang, J., & Mizumoto, A. (2024). Examining the relationship between the L2 motivational self system and technology acceptance model post ChatGPT introduction and utilization. *Computers and Education: Artificial Intelligence*, 7, 100302. <https://doi.org/10.1016/j.caeai.2024.100302>
- Jung, H., & Park, J.-H. (2023). Design and issues of writing literatures using ChatGPT. *Journal of Knowledge Information Technology and Systems*, 18(1), 31–40.
- Kim, S., Shim, J., & Shim, J. (2023). A study on the utilization of OpenAI ChatGPT as a second

- language learning tool. *Journal of Multimedia Information System*, 10(1), 79–88. <https://doi.org/10.33851/JMIS.2023.10.1.79>
- King, W. R., & He, J. (2006). A meta-analysis of the technology acceptance model. *Information & Management*, 43(6), 740–755. <https://doi.org/10.1016/j.im.2006.05.003>
- Kornhaber, R., Cross, M., Betihavas, V., & Bridgman, H. (2016). The benefits and challenges of academic writing retreats: An integrative review. *Higher Education Research & Development*, 35(6), 1210–1227. <https://doi.org/10.1080/07294360.2016.1144572>
- Lin, L. H. F., & Morrison, B. (2021). Challenges in academic writing: Perspectives of Engineering faculty and L2 postgraduate research students. *English for Specific Purposes*, 63, 59–70. <https://doi.org/10.1016/j.esp.2021.03.004>
- Lu, A., Deng, R., Huang, Y., Song, T., Shen, Y., Fan, Z., & Zhang, J. (2022). The roles of mobile app perceived usefulness and perceived ease of use in app-based Chinese and English learning flow and satisfaction. *Education and Information Technologies*, 27(7), 10349–10370. <https://doi.org/10.1007/s10639-022-11036-1>
- Makki, A., & Bali, A. O. (2021). The use of social media as a platform in education: Ramifications of COVID-19 in Iraq. *Academic Journal of Interdisciplinary Studies*, 10(3), 394–408. <https://doi.org/10.36941/AJIS-2021-0093>
- Niloy, A. C., Akter, S., Sultana, N., Sultana, J., & Rahman, S. I. U. (2024). Is Chatgpt a menace for creative writing ability? An experiment. *Journal of Computer Assisted Learning*, 40(2), 919–930. <https://doi.org/10.1111/jcal.12929>
- Nugroho, A., Andriyanti, E., Widodo, P., & ... (2024). Students' appraisals post-ChatGPT use: Students' narrative after using ChatGPT for writing. *Innovation in Education and Teaching International*, 62(2), 499–511. <https://doi.org/10.1080/14703297.2024.2319184>
- Nugroho, A., Putro, N. H. P. S., & Syamsi, K. (2024). Critical writing in higher education: A need analysis survey. *Journal of Educational Management and Instruction (JEMIN)*, 4(1), 58–71. <https://doi.org/10.22515/jemin.v4i1.9146>
- Rienties, B., Lewis, T., McFarlane, R., Nguyen, Q., & Toetenel, L. (2018). Analytics in online and offline language learning environments: the role of learning design to understand student online engagement. *Computer Assisted Language Learning*, 31(3), 273–293. <https://doi.org/10.1080/09588221.2017.1401548>
- Tai, A. M. Y., Meyer, M., Varidel, M., Prodan, A., Vogel, M., Iorfino, F., & Krausz, R. M. (2023). Exploring the potential and limitations of ChatGPT for academic peer-reviewed writing: Addressing linguistic injustice and ethical concerns. *Journal of Academic Language and Learning*, 17(1), T16–T30. <https://journal.aall.org.au/index.php/jall/article/view/903>
- Urbaite, G. (2025). Artificial Intelligence Integration in the Acquisition of English Academic Writing. *Porta Universorum*, 1(5), 73–79. <https://doi.org/10.69760/portuni.0105006>
- Wardat, Y., Tashtoush, M., AlAli, R., & Saleh, S. (2024). Artificial intelligence in education: mathematics teachers' perspectives, practices and challenges. *Iraqi Journal for Computer Science and Mathematics*, 5(1), 60–77. <https://ijcsm.researchcommons.org/ijcsm/vol5/iss1/20/>
- Xiao, Y., & Zhi, Y. (2023). An exploratory study of EFL learners' use of ChatGPT for language learning tasks: Experience and perceptions. *Languages*, 8(3), 212. <https://doi.org/10.3390/languages8030212>
- Yunita, R., Fitrianna, N., & Maulana, N. I. (2025). Artificial Intelligence in English Writing: Ethical Integration and Educators' Perspectives. *JEELS (Journal of English Education and Linguistics Studies)*, 12(2), 641–666. <https://doi.org/10.30762/jeels.v12i2.5250>