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# Beyond Technology Acceptance: An Interplay of Self-Efficacy, Language Proficiency, and ChatGPT Adoption from a TAM Perspective

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**Abstract: Beyond Technology Acceptance: An Interplay of Self-Efficacy, Language Proficiency, and ChatGPT Adoption from a TAM Perspective.** **Objective:** Adopting Generative AI tools for writing improvement, such as ChatGPT, among EFL students is a complex phenomenon where perceptions of technology, often explained by the Technology Acceptance Model (TAM), intersect with important psychological factors like self-efficacy as the theoretical lens. This study seeks to empirically examine the constructs of the TAM framework and scrutinize the differences in ChatGPT acceptance viewed from students' self-rated writing proficiency. **Method:** This quantitative research adopted a descriptive-correlational design, utilizing convenience sampling to recruit 76 fourth-semester English Education EFL learners at a state university in West Kalimantan. A 29-item questionnaire was administered to collect the data, which was subsequently analyzed using the Mann-Whitney U test, Spearman correlation, and multiple regression. **Findings:** The regression model predicting attitude was significant ($F(2,73) = 161.65$, $p < 0.001$), in which 81.1% of the variance (Adjusted $R^2 = 0.811$) was accounted for by PU (Perceived Usefulness) and Perceived Ease of Use (PEOU), confirming PU as the main predictor ($\hat{a} = 0.644$). At the same time, PEOU also exerted a notable influence ($\hat{a} = 0.301$), and a strong positive correlation was found between attitude and actual usage ($r = .845$, $p < 0.01$). A significant difference in attitude existed between writing proficiency groups ($p = .039$), with the intermediate group showing more positive attitudes. **Conclusion:** The results demonstrate that whereas TAM constructs strongly predict technology acceptance, they are also influenced by students' writing proficiency. Furthermore, a significant difference exists in ATU, but not in BI, in terms of writing proficiency. These findings highlight the necessity for differentiated teaching practices that recognize discrepancies in students' writing proficiency and the potential of self-efficacy level.

**Keywords:** academic writing, ChatGPT, Self-efficacy, technology acceptance model (TAM), writing proficiency.

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## INTRODUCTION

Excellent academic writing skills are crucial in higher education, particularly for learners in the English Language Education Program. Proficiency in writing indicates one's capability for critical thinking, problem solving, and intellectual statements, which are the fundamental components of professional and academic accomplishment (Hyland, 2022; Nation & Macalister, 2020). Despite its usefulness, it has been regularly observed that EFL (English as a Foreign Language) students frequently face

difficulty in presenting ideas systematically, retaining cohesiveness and coherence throughout paragraphs, and ensuring suitable grammar use in writing (Aldabbus & Almansouri, 2022; Alsaedi, 2024; Artiana & Fakhrurriana, 2024; Bui, 2022; Nghi & Nhan, 2023). These challenges could be further intensified by limited exposure to exemplary academic texts and a low receptivity to constructive feedback in writing (Mallahi, 2024; Yu, Geng, Liu, & Zheng, 2021).

Apart from linguistic challenges, writing proficiency is also linked to psychological factors, particularly self-efficacy, as one of the most important psychological factors that affect how well students write. This concept explores the extent to which someone believes they can accomplish certain tasks, such as academic writing (Bandura, 1977, 1997; Pajares, 1996, 2003; Teng & Wang, 2023). Students who believe in themselves are more likely to establish high writing objectives, come up with new ways to deal with problems, and persevere through several stages of rewriting (Zimmerman, 2000; Zou & Huang, 2023). Some studies underline that high self-efficacy could lead students to become more resilient, better at making logical arguments, and more confident in themselves when revising their work (Bouzar, El Idrissi, & Ghourdou, 2024; Nggawu, 2024). Conversely, students with poor self-efficacy typically would put off writing chores, feel more anxious about college assignments, and are more likely to disband their writing work (Mendoza, Lindblom-Ylänne, Lehtonen, & Hyytinen, 2023; Zhang & Zhang, 2022; Zhou, Wang, & Wang, 2022). More problematically, those who lack confidence in themselves as much are less likely to respond to feedback from their teachers and have a harder time making constructive changes to their work (Pajares, 2003; Tsao, 2021). These contrasting effects demonstrate that self-efficacy could be one of the crucial factors determining students' writing engagement (Zhou et al., 2022).

In this context, the emergence of artificial intelligence (AI) technologies in education becomes highly relevant as effective use of AI tools may largely hinge on students' confidence in their own abilities (Bouzar et al., 2024; Shahat, Badawy, Elballah, & Ibrahim-Shook, 2025). Among the most prevalent AI models, ChatGPT has come to the forefront, described as a generative AI-based language model capable of automatically responding to a wide range of language and academic cues (Xiong, 2024). Early studies identified that students tend to utilize this tool to help with polish parts of the writing process, such as generating with ideas, organizing paragraphs, fixing grammar, and choosing more academic words (Afiliani, Tupalessy, & Talaohu, 2023; Teng, 2024; Tran, 2025; Xiao, Zhu, & Xin, 2025; Xu, Chen, & Zhang, 2024). Other scholars also argue that this AI tool has the potential for an efficient and faster refinement of writing works (Phuoc, Nu, Trinh, & Luat, 2025). However, some concerns have also been expressed by various studies. For instance, there might be a tendency towards increasing reliance on AI tools, which could impede learners' ability to engage in critical thinking and formulate strong arguments without AI assistance (Seelro & Khan, 2024; Wang & Fan, 2025).

Consequently, to address the potential issues surrounding ChatGPT and to delve deeper into how learners adopt this AI tool, employing a solid theoretical framework is imperative. The Technology Acceptance Model (TAM), introduced by Davis (1989), is one of the theoretical approaches developed to understand how individuals adopt and utilize a new technology. This model asserts that Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) are two primary factors influencing users' attitudes and intentions to utilize a technological product (Venkatesh, Morris, Davis, & Davis, 2003). In recent decades, this model has been widely accepted as an explanation for technology

acceptance among students in higher education (Cakýr & Solak, 2015; Park, 2009; Sánchez-Prieto, Izquierdo-Álvarez, Del Moral-Marcos, & Martínez-Abad, 2024; Teo & Van Schalk, 2009). Further, in the ChatGPT use context, it is frequently advocated that PEOU and PU are strongly associated with the degree of students' acceptance of this AI tool (Alotaibi, Sonbul, & El-Dakhs, 2025; Dahri et al., 2024; Le, Do, Tran, Dang, & Nguyen, 2024).

Despite increased interest, research on the deployment of ChatGPT within Indonesian higher education remains distinguished by numerous important gaps. Methodologically, existing studies have largely employed descriptive-qualitative approaches (Artiana & Fakhrurriana, 2024; Nisa, Basya, & Nugraheni, 2025; Werdiningsih et al., 2024). Nisa et al. (2025), for instance, attempted to depict the experiences of a small number of college students using ChatGPT to develop ideas and improve their writing grammar. However, the study is particularly short on qualitative description. Werdiningsih et al. (2024) highlighted the strategies employed by master students in drafting and polishing writing utilizing an AI tool, whereas they overlooked the psychological factors underlying the tool's acceptance. Meanwhile, Artiana & Fakhrurriana (2024) reported that EFL learners demonstrate a positive attitude toward using ChatGPT for writing. However, the attempt had not examined the correlation between attitude and behavioral intention or actual use, which, while insightful, falls short in statistically testing variable relationships, which limits the generalizability of the findings.

Theoretically, models such as the Technology Acceptance Model (TAM) are frequently analyzed without taking into account the affective constructs like self-efficacy (Barakat, Salim, & Sallam, 2025; Herwanto, Setiawan, & Munir, 2024; Shaengchart, 2023; Yilmaz, Maxutov, Baitekov, & Balta, 2023), despite the significant influence of these psychological dimensions academic writing domain (Atasoy, 2021; Pajares, 2003; Sumarsono & Mbato, 2021). Furthermore, a demographic and geographical disparity exists, as research explicitly focusing on Indonesian EFL (English as a Foreign Language) students who utilize language-based AI tools in particularly intense manners is rather scarce (Alsaedi, 2024). Considering these limitations, there is a pressing necessity for a quantitative study that meticulously evaluates technological acceptance models within an appropriate student demographic, while also situating its findings within a more profound, contextualized theoretical framework.

Drawing on the debates about AI tool usage by EFL learners, the study aims to analyze the factors contributing to the acceptance of ChatGPT among students majoring in the English Education Program, where TAM serves as the primary analytical framework. Specifically, the model aims to examine the relationships among aspects such as Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and Attitude Toward Using (ATU) in relation to AI tools. Further, to gain a deeper understanding of the findings, self-efficacy theory will be employed as an additional lens or perspective to the main construct to afford more insights into the psychological dynamics that might contribute to driving learners' behaviors when interacting with AI tools.

This research is anticipated to contribute in several ways. First, it offers substantial empirical evidence that supports the Technology Acceptance Model (TAM) as a framework for examining ChatGPT usage in Indonesian higher education. Secondly, supplementing the TAM model with self-efficacy as an additional perspective to explicate affective psychological aspects could progress the literature on technology acceptance in language learning, which offers crucial insights for educators in maximizing the design of an AI-supported writing program.

Similarly, the anticipated findings can serve as a significant reference for institutional policymakers to develop strategic solutions for AI integration that emphasize digital literacy, critical thinking, and learner autonomy as essential competencies in the contemporary educational environment.

Accordingly, taking into account the context and urgency illustrated above, this study endeavors to answer the following research questions:

1. What is the profile of participants in terms of self-rated English proficiency, frequency of use, and duration of ChatGPT usage for writing improvement?
2. Are there significant differences in students' attitudes and behavioral intentions toward ChatGPT in terms of their writing proficiency levels?
3. Is there a significant correlation between the frequency and duration of ChatGPT usage and students' attitudes and actual use?
4. To what extend do perceived ease of use (PEOU) and perceived usefulness (PU) predict students' attitudes toward using ChatGPT?

## METHOD

### Participants

The population of this study consisted of all fourth-semester students enrolled in the English Language Education Study Program at a public university in West Kalimantan, totaling 101 students. Out of the population, 76 students agreed to participate voluntarily as respondents, comprising the final sample. In detail, a convenience sampling, non-probability sampling technique, was adopted in recruiting the respondents. The justification of employing this method were due to the following: (1) accessibility and obtainability of the participants who were enrolled in writing course program during the period of data collection; (2) academic significance, the participants had just completed a 16-week Writing Skill Development course, which was directly aligned to the scope of the study; and (3) support of institutional policy that encourages ethical use of AI tools for students under educators' supervision, allowing direct experience using AI tools for academic purposes, making the sample suitable for this study.

### Research Design and Procedures

This study employed a quantitative methodology with a descriptive-correlational design to investigate the interrelationships among variables that influence the adoption of ChatGPT. The research was conducted in June 2025, via an online questionnaire distributed via Google Forms to collect data. The research methodology included the following steps: (1) developing the questionnaire based on the Technology Acceptance Model (TAM); (2) modifying and validating items from prior studies; (3) distributing the online questionnaire to the intended respondents; (4) gathering the responses; and (5) employing appropriate statistical methods to evaluate the hypotheses.

### Instruments

The major instrument of the study utilized a questionnaire, which was devised to operationalize the constructs of the TAM Model (Davis, 1989). Five variables were measured via the model: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Using (ATU), Behavioral Intention (BI), and Actual Use (AU). Several adjustments to the items were necessary to align with the context of using ChatGPT for academic writing. For instance, items on PEOU were revised to assess the perceived simplicity of using ChatGPT for writing tasks; perceived usefulness was redirected to the extent to which ChatGPT assisted learners in generating ideas, polishing structures, and leveraging vocabulary repertoire.

To capture important participants' background information, three additional items were included in the primary TAM constructs in

the initial section of the questionnaire. Them items were as follows: (1) self-rated writing proficiency, (2) frequency of using ChatGPT for writing, and (3) duration of using ChatGPT in writing activities. The impetus of this addition was to provide contextual insights for a nuanced interpretation of the findings. All items were rated on a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Cronbach's Alpha was employed to examine the reliability of the construct, yielding satisfactory internal consistency for all constructs (á > 0.70).

**Table 1.** Items specification of the questionnaire

| Construct | Items | Total | Theory |
|---|---|---|---|
| Profile Respondents | 1.2.3 | 3 | Demographic Profile |
| Perceive Usefulness (PU) | 4.5.6.7.8.9 | 6 | TAM (Davis, 1989) |
| Perceive Ease of Use (PEOU) | 10.11.12.13.14 | 5 | |
| Attitude toward Using (ATU) | 15.16.17.18.19 | 5 | |
| Behavioral Intention (BI) | 20.21.22.23 | 4 | |
| Actual Use (AU) | 24.25.26.27.28.29 | 6 | |
| **Total** | | **29** | |

**Table 2.** Reliability test results (cronbach's alpha)

| Construct | Cronbach's Alpha |
|---|---|
| Perceive Usefulness (PU) | 0.84 |
| Perceive Ease of Use (PEOU) | 0.81 |
| Attitude toward Using (ATU) | 0.85 |
| Behavioral Intention (BI) | 0.83 |
| Actual Use (AU) | 0.82 |

**Data analysis**

Departing from the theoretical framework and objective of the study, this research aimed to test three main hypotheses:

H1: PEOU positively affects ATU in ChatGPT usage for writing
H2: PU positively affects ATU in ChatGPT usage for writing
H3: There is a significant different of ATU towards ChatGPT use for writing in terms of self-reported writing proficiency.

The data were analyzed using SPSS version 26 at a significance level of á = 0.05. The data analysis was conducted in two phases. The initial stage involved frequency analysis to describe demographic characteristics and categorical data through the number and percentage of respondents. The second stage involved inferential statistical analysis to test the hypotheses proposed in the study. To prove H1 and H2, a multiple linear regression analysis will be performed to ensure compliance with the classical assumptions, including linearity, normality of residuals, and absence of multicollinearity. Regarding the last hypothesis, an Independent Samples t-test was conducted to assess the mean differences between the two groups. To anticipate unsatisfactory assumption test of normality, the non-parametric Mann-Whitney U was reserved as an alternative. Furthermore, to examine the relationship between variables, the Pearson Correlation was prioritized, while the Spearman Correlation served as an alternative for ordinal data or if the parametric assumptions were not met.

Essentially, the conceptual framework driving this study adopted the TAM proposed by Davis (1989) to explicate the acceptance and use of ChatGPT, which is also supplemented by self-efficacy theory (Bandura, 1977, 1997; Pajares, 1996, 2003) to gain a more nuanced understanding. It was also hypothesized that several external factors, such as writing proficiency, frequency, and duration of using ChatGPT in writing courses, collectively shaped their initial perception of PU and PEOU of ChatGPT. In turn, this view would influence learners' attitude (BI) to engage with the tool. Subsequently, the degree of their attitude towards using ChatGPT would contribute to their actual use of this AI tool in improving writing skills.

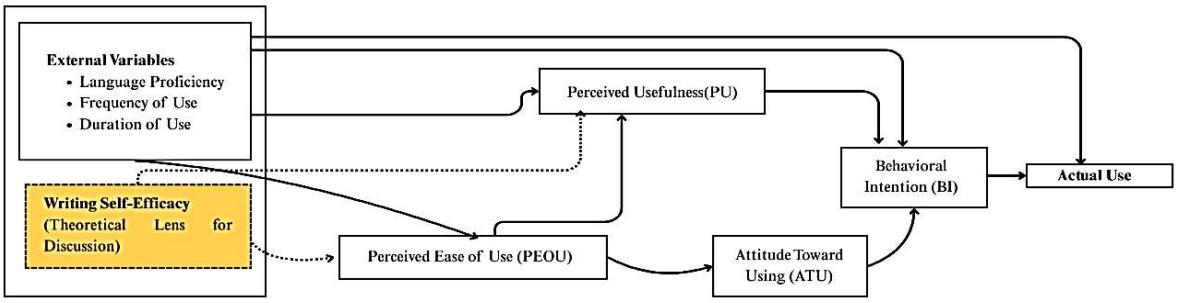


**Figure 1.** Conceptual framework of the study

## RESULT AND DISCUSSION

This section presents the main findings of the research involving 76 second-year students of the English Language Education Study Program. The participants engaged with various AI, particularly ChatGPT, in academic writing. The findings are organized in sequence, covering the respondents' profile, assumption test results, differences in terms of writing proficiency, correlation between variables, and regression analysis to determine the main predictor of attitude towards ChatGPT. Each part is discussed in relation to the current literature and empirical findings to ensure the clarity and meaning of the results.

### What is the Profile of Participants in Terms of Self-Rated English Proficiency, Frequency of Use, and Duration of ChatGPT Usage for Writing Improvement?

To address the initial research question, a frequency and percentage distribution analysis was conducted to examine participants' characteristics in terms of writing proficiency, duration, and frequency of ChatGPT utilization.

Table 3 indicates that more than half of the respondents (55.3%) categorized their writing proficiency as beginner, whereas 44.7% identified as having intermediate level. The majority of participants (65.8%) engaged with ChatGPT within a short one-year period (1–12 months), followed by 23.7% in the medium-term category (13–24 months), and just 10.5% were identified as long-term users.

Despite many respondents being somewhat inexperienced with ChatGPT, the reported usage frequency was notably high. Approximately, 42.1% of the participants regarded themselves as frequent user of ChatGPT, 31.6% acknowledged occasional use, and 11.8% disclosed highly frequent use. A mere 14.5% indicated infrequent usage. The overall frequency distribution is depicted in Figure 2.

The frequent use of ChatGPT among intermediate learners demonstrates that utilizing this AI tool in writing benefits their development of writing ability at an early stage. These findings corroborate prior studies that highlight the functional advantages of using ChatGPT for academic writing. It is frequently affirmed that AI

**Table 3.** Frequency and percentage of self-reported writing proficiency, frequency, and duration of ChatGPT utilization

| Variable | Category | Frequency (n) | Percentage (%) |
|---|---|---|---|
| Self-rated Writing Proficiency | Beginner | 42 | 55.3 |
| | Intermediate | 34 | 44.7 |
| Frequency of ChatGPT Use | Occasionally | 11 | 14.5 |
| | Sometimes | 24 | 31.6 |
| | Often | 32 | 42.1 |
| | Frequently | 9 | 11.8 |
| Duration of ChatGPT Use | Short-term (1–12 months) | 50 | 65.8 |
| | Medium-term (13–24 months) | 18 | 23.7 |
| | Long-term (>24 months) | 8 | 10.5 |

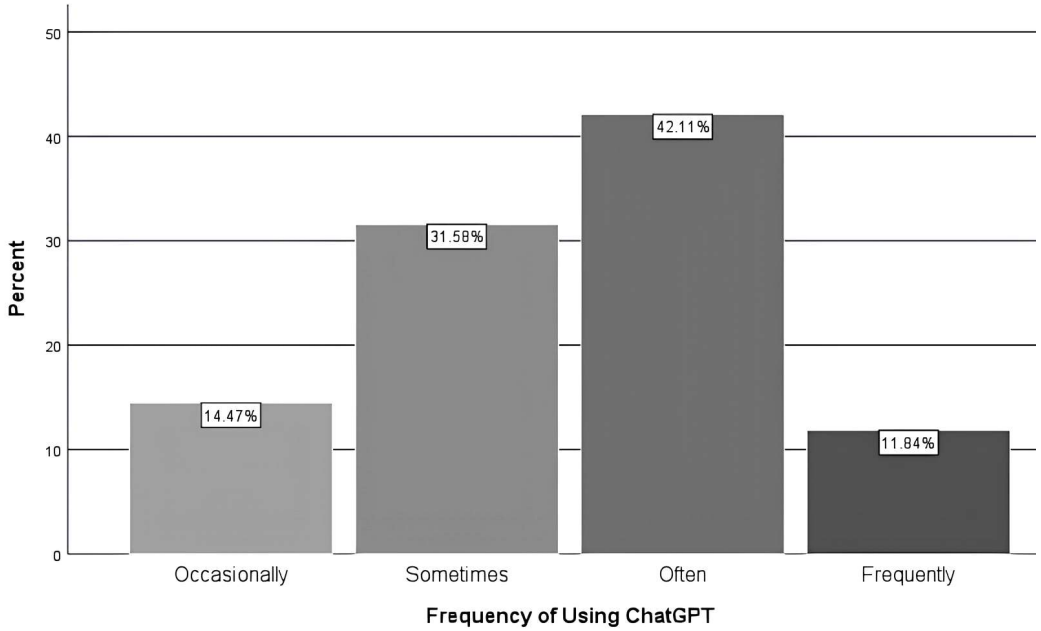


**Figure 2.** Frequency of ChatGPT usage

tools are particularly effective in the initial writing stage, such as developing ideas and reducing writer's block (Cummings, Monroe, & Watkins, 2024; Jen & Salam, 2024; Syarifah & Fakhruddin, 2024). Others pinpoint that ChatGPT could assist in polishing the structure and coherence of arguments, which results in more cohesive and coherent writing (Nguyen, Ngoc, & Dan, 2024; Yang, 2025). In the same vein, other studies also affirm that ChatGPT could enhance writing styles, such as fixing grammar, boosting vocabulary accuracy, and adjusting tone in academic writing (Dewi, 2024; Masoudi, 2024; Tseng & Lin, 2024). Collectively, these studies agree that learners appreciate ChatGPT for both its ease of use, but more so for its crucial benefits in leveraging the quality and effectiveness for writing.

**Are There Significant Differences in Students' Attitudes and Behavioral Intentions Toward ChatGPT in Terms of Their Writing Proficiency Levels?**

Prior to performing inferential analyses to examine group differences based on English proficiency, assumption checks were carried out for the two dependent variables: Attitude Toward Using (ATU) and Behavioral Intention (BI). Then, the Shapiro-Wilk test was used to assess the normality of the data, and Levene's test was used to analyze the homogeneity of variances within groups. Table 4 presents the results of both assumption tests.

**Table 4.** Results of normality (shapiro-wilk) and homogeneity (levene's) test on ATU and BI by proficiency level

| Variable | Group | Shapiro–Wilk Statistic (df) | *p*-value | Normality | Levene's F (df1, df2) | *p*-value | Homogeneity |
|---|---|---|---|---|---|---|---|
| ATU | Elementary | .932 (42) | .015 | ✗ | 1.537 (1.74) | .219 | ✓ |
| | Intermediate | .935 (34) | .043 | ✗ | | | |
| BI | Elementary | .948 (42) | .054 | ✓ | 0.462 (1.74) | .499 | ✓ |
| | Intermediate | .954 (34) | .165 | ✓ | | | |

The results presented in Table 4 reveal that the Attitude Toward Using (ATU) variable does not follow a normal distribution ($p < 0.05$) for both the elementary proficiency group ($p = 0.015$) and the intermediate group ($p = 0.043$). Levene's test for homogeneity of variance indicated that the variances among the ATU groups are homogeneous ($p = 0.219$). The Behavioral Intention (BI) variable demonstrated a normal distribution for both proficiency levels ($p > 0.05$) and satisfied the condition of homogeneity ($p = 0.499$). Consequent to these findings, the Mann–Whitney U test was implemented to analyze discrepancies in ATU, whilst the independent samples t-test was utilized for BI.

Furthermore, to assess any significant differences between participants' attitudes toward Chat GPT and their behavioral intention in terms of writing proficiency level (elementary versus intermediate), the Mann-Whitney U test for attitude and an Independent samples t-test for behavioral intention were carried out. The findings of these analyses are detailed in Table 5.

**Table 5.** Group differences in ATU and BI toward ChatGPT based on proficiency level

| Dependent Variable | Test | Group | N | Mean / Mean Rank | SD / Sum of Rank | p-value |
|---|---|---|---|---|---|---|
| ATU | Mann–Whitney U | Elementary | 42 | 33.82 (Rank) | 1420.50 | .039* |
| | | Intermediate | 34 | 44.28 (Rank) | 1505.50 | |
| BI | Independent *t*-test | Elementary | 42 | 3.62 | 0.88 | .341 |
| | | Intermediate | 34 | 3.80 | 0.75 | |

Table 5 presents a statistically significant difference in students' attitudes toward using ChatGPT (ATU) between those with basic and intermediate English writing proficiency. Regarding the comparison of mean scores, the intermediate group (44.28) was significantly higher than the basic group (33.82), with a statistically significant value of $p = .039$. This indicates that students of intermediate writing proficiency possessed more positive sentiments

toward ChatGPT compared to the basic group. In terms of behavioral international, no significant difference existed, where the intermediate group scored slightly higher (3.63) than the basic group (3.46), at a non-significant level (p = .341). The paradox of these findings might be that argue while proficiency affects attitudes, but it does not simply impact users' intention to stay on the ChatGPT platform. It could be further reasoned that attitude may be shaped by competence and confident in writing activities. In contrast, intention is more affected by external factors, such as support access in the institution where learning takes place. The results above align with the Tech nology Acceptance Model (Davis, 1989), which acknowledges that attitudes are not the single predictor of intention, and with the Unified Theory of Acceptance and Use of Technology (Venkates et al., 2003), which stresses the role of contextual conditions that shape behavioral intention.

To shed more light on ChatGPT's use of different writing proficiency levels among the participants, the lens of self-efficacy theory (Bandura, 1977; Pajares, 2003) lends a compelling psychological explanation. Although self-efficacy was not directly examined in the study, it contributes by providing crucial insights into why different outcomes occur despite experiencing relatively similar activities interacting with the same technology. More than half of the participants regarded themselves as intermediate-level proficient in writing. In other words, they expressed a more positive attitude towards the use of ChatGPT when compared to those who viewed themselves as beginner. Learners with high writing self-efficacy are more likely to engage with AI in a proactive, critical, and strategic manner, and they tend to look at technology as a method for accomplishing self-defined academic goals (Bouzar et al., 2024; Huang & Mizumoto, 2024; Wang & Fan, 2025). In contrast, students with low self-efficacy, who may already feel anxious or incompetent in writing, are more vulnerable to over-reliance on AI. These students might utilize the tool as a shortcut to eliminate challenges, which could worsen their feelings of inadequacy and impede the actual process of development in writing skills over time (Song & Song, 2023; Teng & Wang, 2023). Hence, these findings imply that there is an urgent requirement for a particular level of language proficiency to be able to work with an AI tool in an effective and productive manner. In other words, it is somewhat imperative for learners to move beyond the basic usage of the tool, refining their writing or using it as a vocabulary aid, to leverage the positive impact of using ChatGPT.

**Is There A Significant Correlation Between the Frequency and Duration of ChatGPT Use and Students' Attitudes and Actual Use?**

Prior to conducting additional inferential analyses, including correlation and regression, a normality test was performed on four continuous variables: frequency of ChatGPT usage, duration of ChatGPT usage, Attitude Toward Using (ATU), and Actual Use (AU) of ChatGPT. Evaluating normality is a crucial process, as parametric tests, such as Pearson correlation and multiple linear regression, require variables to exhibit a normal distribution.

The Shapiro–Wilk test was conducted to evaluate this assumption, as it is considered a reliable method, especially for small to medium-sized samples ($n < 100$). A p-value less than 0.05 indicates a breach of the normality assumption. Table 6 presents the complete results of the normality tests.

As displayed in Table 6, the four variables resulted in a lower score than the significant value ($p < 0,05$); the variables were not normally distributed. Therefore, Pearson Correlation Analysis was not viable, and Spearman's Rho would be the prioritized analysis test. The latter analysis would enable a valid and bias-free estimation of the correlation between variables. The results of the analysis are presented in the following table.

**Table 6.** Shapiro–Wilk test of normality on continuous variables

| Variable | Shapiro–Wilk Statistic | df | *p*-value | Normality |
|---|---|---|---|---|
| Duration of ChatGPT Use | .775 | 76 | .000 | ✗ Violated |
| Frequency of ChatGPT Use | .872 | 76 | .000 | ✗ Violated |
| Attitude Toward Using ChatGPT (ATU) | .940 | 76 | .001 | ✗ Violated |
| Actual Use of ChatGPT (AU) | .960 | 76 | .018 | ✗ Violated |

**Note:** ✗ indicates that the variable significantly violated the assumption of normality ($p < .05$).

**Table 7.** Spearman's correlations between usage patterns, attitudes, and actual use of ChatGPT

| Variables | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1. Duration of ChatGPT Use | - | r = .326*. p = .004 | r = .010. p = .928 | r = .091. p = .433 |
| 2. Frequency of ChatGPT Use | r = .326*. p = .004 | - | r = .363* p = .001 | r = .378*. p = .001 |
| 3. Attitude Toward Using (ATU) | r = .010. p = .928 | r = .363*. p = .001 | - | r = .845*. p = .000 |
| 4. Actual Use (AU) | r = .091. p = .433 | r = .378* p = .001 | r = .845* p = .000 | - |

**Note:** Values represent Spearman's rho correlation coefficients (r) and two-tailed p-values. $p < .01$ (*).

The results of the Spearman correlation analysis, reported in Table 7, reveal a significant relationship between the frequency of ChatGPT usage and both Attitude Toward Using (ATU) ($r = .363$; $p < 0.01$) and Actual Use (AU) ($r = .378$; $p < 0.01$). This result unveils that a more positive attitude and behavioral intention to use ChatGPT in writing activities might be attributed to regular exposure to this AI tool. It is also noted that a robust correlation was identified between ATU and AU ($r = .845$; $p < 0.01$). This correlation pinpoints a clear relation between a positive attitude and the actual use of this AI tool. In contrast, the duration of using ChatGPT showed no significant correlation with either ATU ($r = 0.010$; $p = 0.928$) or AU ($r = 0.091$; $p = 0.433$). The time spent on ChatGPT by the students does not necessarily shape their attitudes or behaviors towards the tool itself. These correlation findings establish a solid framework for future endeavors into the key variables of students' experiences via regression analysis.

Taken together, the results suggest that frequency or regular interactions with an AI tool may play a more critical role in fostering acceptance and reinforcing the perceived usefulness of the tool. In other words, this pattern exhibits a positive feedback loop in terms of frequency compared to duration of using ChatGPT (Phosa, 2024; Salam, 2025). This result is also parallel with the concept of scaffolding in educational settings, where structured and continuous engagement with a tool can gradually build confidence and user competence (Arora & Mehta, 2024; Soelistiyowati, Permatasari, Nugroho, & Kusmulyadi, 2024). Furthermore, these insights offer support to the argument that behavioral intention serves as a powerful predictor of actual technology use in the EFL context (Jen & Salam, 2024; Phosa, 2024), where the relationship is typically mediated by the formation of positive attitudes that occur due to regular engagement.

**To What Extend do Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) Predict Students' Attitudes Toward Using ChatGPT?**

To seek the answers to the fourth research question, a multiple linear regression analysis was performed to assess the extent of influence of Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) on Attitude Toward Using (ATU) ChatGPT. This investigation was carried out through the Framework of the Technology Acceptance Model (TAM), which points out that PU and PEOU stand as significant factors in technology acceptance. The primary results of regression analysis are reported in Table 8, with the model summary details provided in Table 8a.

**Table 8.** Summary of multiple linear regression predicting attitude toward using ChatGPT

| Predictor Variable | B | SE B | β | *t* | *p* | Tolerance | VIF |
|---|---|---|---|---|---|---|---|
| (Constant) | -0.226 | 0.226 | – | -1.002 | .320 | – | – |
| Perceived Ease of Use (PEOU) | 0.318 | 0.089 | .301 | 3.580 | .001** | .357 | 2.797 |
| Perceived Usefulness (PU) | 0.708 | 0.092 | .644 | 7.665 | .000** | .357 | 2.797 |

**Table 8a.** Model summary

| R | $R^2$ | Adj. $R^2$ | SE Estimate | F | df | *p* |
|---|---|---|---|---|---|---|
| .903 | .816 | .811 | .375 | 161.65 | (2.73) | <.001** |

Note. $p < .01$ (**). $R^2$ = Coefficient of determination. SE = Standard error of the estimate.

The results of regression analysis indicate that the model is statistically significant, $F(2, 73) = 161.65$; $p < 0.001$. The $R^2$ score of 0.816, together with the Adjusted $R^2$ of 0.811, indicates that the combination of Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) accounted for 81.1% of the variance in Attitude Toward Using (ATU) ChatGPT. Moreover, a significant relationship exists between the predictors and the dependent variables, with an R value of 0.903. In addition, the standard error of the estimate was 0.375, demonstrating a decent level of model precision. In addition, the standard error of the estimate was 0.375, demonstrating a decent level of model precision. However, it is worth noting that the remaining 18.9% of variance might derive from the presence of other factors that collectively shape students' attitudes. Arguably, possible contributors might be social influence (e.g., peer or instructors' recommendations), technological anxiety, which distorts ease of using when using AI tools, and discrepancies of learning styles that distinguish whether ChatGPT is a supportive or a disruptive tool. These factors were previously discussed in the extended versions of TAM, such as TAM2 and UTAUT (Venkatesh et al., 2003), which take into account the importance of social and contextual aspects in shaping acceptance towards technology.

Further analysis indicates that PU is the biggest predictor, with a standardized beta coefficient (â) of 0.644 ($p < 0.001$), while PEOU also contributes greatly, although it gains a lesser amount (â = 0.301; $p = 0.001$). Multicollinearity diagnostics indicate tolerance values of 0.357 and Variance Inflation Factor (VIF) scores of 2.797 for both predictors, which fall within acceptable bounds, confirming the absence of multicollinearity. Therefore, PU and PEOU can be considered separate and significant elements in modifying students' perspectives toward the use of ChatGPT.

Therefore, this study reinforces that Perceived Usefulness (PU) is a more important

predictor than Perceived Ease of Use (PEOU) in shaping students' impressions of ChatGPT, giving solid quantitative evidence that corresponds with tendencies reported in earlier research (Le & Tran, 2024; Rahman, Sabbir, Zhang, Moral, & Hossain, 2023; Ridwan, Hasibuan, & Yasir, 2024; Timilsena & Ghimire, 2024). The findings of the current study also indicate a shift in how EFL learners perceive technology, with a growing view that AI tools can offer more substantial benefits to academic activities, rather than merely demonstrating the usability of technology.

However, the optimistic report on ChatGPT's functional benefits must be balanced with a critical understanding of the problems and risks that arise from its use, as noted by several studies. One of the most commonly expressed concerns is the possibility of over-reliance, which can degrade students' critical thinking and originality (Acena, 2024; Murtiningsih, Sujito, & Khin Soe, 2024; Purwasih & Sahnan, 2023). When students begin to regard AI not as a collaborative partner but as a replacement for their own cognitive processes, they forfeit significant possibilities to build essential metacognitive abilities (Barabad & Anwar, 2024). Apart from pedagogical considerations, there exist substantial ethical challenges addressing the concerns of plagiarism and academic integrity (Cotton, Cotton, & Shipway, 2024; Nguyen, Vu, & Vu, 2024; Rahardyan, Susilo, Iswara, & Hartono, 2024). Other issues related to technical constraints of ChatGPT usage, such as risks of algorithmic bias, fabricated answers, and AI hallucinations, where the model generates convincing-sounding but misleading information, also further complicate the matter (Ahmad, Kaiser, & Rahim, 2023; Bai & Wei, 2024; Trinh, 2024). Taken together, the presented evidence underlines that the use of ChatGPT presents a double-edged sword. While technology offers convenience and vital support in the writing process, it also carries the potential to undermine skill development and ethical norms if the tool is not utilized purposefully and appropriately.

Although this study offers important findings, it is crucial to recognize various limitations to provide context to reflect on the findings. To begin with, the adoption of convenience sampling from a single educational institution limits the generalizability of the results to the broader community of EFL students in Indonesia, where several aspects, such as curriculum, academic setting, and demographic background surrounding the institution, may have a certain influence on the participants' views and behaviors. Secondly, the cross-sectional design of the study only captures data at a specific point in time. Hence, an extended and longer period of change, pertaining to participants' attitudes, views, and usage patterns of AI tools, is missing from the investigation, something which could have been achieved by future studies after the participants complete a semester of regular use of ChatGPT. The most noticeable drawback, which is closely linked to the theoretical discussion in this research, is the absence of direct inspection of the writing self-efficacy construct. Consequently, the argument on the vital function of self-efficacy in shaping perceived usefulness remains a theoretical inference rather than an empirically verified conclusion derived from data analyzed in this study. In light of these constraints, future research should seek ways to broaden the sample across multiple institutions, adopt a longitudinal design to monitor changes over time, and, perhaps most importantly, incorporate explicit measures of self-efficacy within the TAM framework to examine its role as a potential mediator or moderator using statistical analysis.

Despite the limitations of this investigation, the study has offered valuable contributions with implications for three different areas. Theoretically, this study has contributed an essential empirical measurement to the context of AI-related studies in Indonesia, which have been dominated by qualitative and exploratory

investigations. By asserting that Perceived Usefulness (PU) stands as the substantial determinant in technology acceptance, the study opens that pathway as a basis to design a more contextually relevant model of technology adoption. Pedagogically, the findings suggest the perceived usefulness has more weight than ease of use, implying that comfort or user-friendly of the tool alone is insufficient. Learners have to engage beyond the passive or hands-off approach, and start from a proactive and organized instruction that focuses on fundamental AI literacy to increase the level of engagement with AI technologies. Educators are encouraged to design projects that require students to analyze, critique, and create AI outputs, which then necessitates a transition in the educator's role from importer of knowledge to a facilitator of reflective and critical learning. At the institutional level, the findings recommend the development of clear, adaptive, and pedagogically sound regulations on AI use that are more sophisticated than simple restrictive norms, such as plagiarism. To achieve this goal, it is urgent to invest in equipping dan facilitating the development of educator competencies in integrating AI effectively into their teaching practices. Arguably, without this support, all potentials of powerful AI tools in education may be diminished by inadequate or improper use; conversely, with proper monitoring and development, AI tools could serve as a powerful instrument to further boost learning outcomes in educational settings.

## ■ CONCLUSION

Drawing from the Technology Acceptance Model (TAM) supported by the lens of self-efficacy, this study scrutinized the variables influencing ChatGPT acceptance among EFL students and uncovered that Perceived Usefulness considerably outscored Perceived Ease of Use in promoting positive attitudes. It is also logical to assume that higher self-efficacy in writing could influence the perceptions of learners, leaning toward a more positive side. Consequently, it is highly recommended for future research to explore these possibilities through empirical interventions. Also, the results point to a shift in technology adoption toward performance-based practicality, with the primary driver being the belief in educational achievement. Despite students' attitudes being influenced by their language skills, their intention to regularly use ChatGPT remained consistently high, suggesting that all learner levels perceived it as essential for elevating writing proficiency. Additionally, this study highlights the need for proactive pedagogical strategies and sound and flexible institutional regulations on AI tools as foundations to scaffold hands-off teaching methods to ensure a critical, moral, and effective AI utilization to promote a better learning outcome and learner autonomy in the digital era.

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