

Exploring the Acceptance of ChatGPT as an Assisting Tool in Academic Writing among ESL Undergraduate Students

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ABSTRACT

This study aimed to explore students' acceptance of ChatGPT as an assisting tool in academic writing among ESL undergraduate students. ChatGPT is a well-known AI tool with capabilities for language translation, writing drafts, and instant feedback and has effectively helped students improve their English language skills, particularly writing. While ChatGPT has demonstrated great acceptance in writing among EFL students, little is known about ESL students' acceptance of this tool in their academic writing. This study adopted Technology Acceptance Model (TAM) to discover students' perceived usefulness, perceived ease of use, attitudes, behavioral intention to use, and actual system usage of ChatGPT. Employing a quantitative approach and descriptive cross-sectional survey design, a structured questionnaire consisting of 24 questions was distributed online to ESL undergraduate students studying at one public university in Malaysia. This study collected 80 completed responses, and the data was analysed using descriptive and inferential statistics. The findings revealed that ESL undergraduate students highly perceived ChatGPT as useful and easy to use in academic writing. Students also expressed positive attitudes towards ChatGPT, high intention to use ChatGPT, and high actual ChatGPT usage in their academic writing. This study concluded that the ESL undergraduate students strongly accepted ChatGPT as a tool in their academic writing, and attitudes were the prominent factor predicting their acceptance of ChatGPT. These findings offer ESL students an understanding of ChatGPT's potential in writing and help them leverage it to overcome academic writing difficulties.

Keywords: Acceptance, ChatGPT, Academic writing, ESL, Undergraduate students

INTRODUCTION

Writing is one of the most important skills for learning English as a second language (ESL) because it helps students to organise their thoughts, feelings, and ideas in a way that makes sense. According to Pratama (2020), writing is not just putting words on paper; it is a complicated process with multiple stages like planning, drafting, editing, and finalising. Writing also includes cognitive exercises that not only challenge the students' mind and thinking process but also stimulates their intellectual growth (Klimova, 2013). Research found that when it comes to academic settings, writing is seen as the most challenging skill faced by many university students (Alammar & Amin, 2023; Fitria et al., 2022). To truly excel as a skilled writer, students need to master not just the basics of language but also develop strong critical thinking skills and gain ample experience in academic writing. Academic writing is a complicated skill that includes everything from language excellence to cognitive and technical adroitness. For example, the abilities to create compelling content, organise coherent content, and use of the proper English language are all required in academic writing (Chui, 2023). Students must also understand academic style as they need to describe, paraphrase, and rewrite the textual works according to the style needed. Additionally, the transition from informal to formal writing styles also presents a significant challenge, especially for those who may not have a strong foundation in English (Alammar & Amin, 2023). The requirements of academic writing are not only limited to language and critical

thinking skills but also mastery in technical skills. This includes sticking to specific formatting guidelines and citation rules while also steering clear of plagiarism (Fitria et al., 2022). Hence, many university students still struggle with academic writing as it tests their skills and knowledge in ways that extend beyond mere language mechanics. This also further stresses the importance of mastering all academic writing skills (language, cognitive, and technical) to truly thrive in academic settings. Many university students still encounter a variety of challenges in their academic writing in which the challenges range from basic grammar and punctuation to more complex concerns such as coherence and plagiarism. These challenges are aggravated with the high demand of academic writing, peculiarly in higher education. As an example, common writing mechanics that includes punctuation, capitalisation, grammar, spelling, word choice, and sentence structure are all reported as prominent challenges faced by university students in Indonesia (Amanda et al., 2023; Fitria et al., 2022). Also, according to Ho (2024), Vietnamese postgraduate students have a hard time avoiding grammatical and spelling mistakes, incoherence, paraphrasing, and wrong references and citations. Meanwhile, Pakistani undergraduates struggle with poor linguistic competency (in grammar, syntax, and vocabulary), writing anxiety, lack of ideas, dependence on L1, and poor English language structure and organisation in their academic writing (Muhammad Fareed et al., 2016). These struggles indicate that academic writing demands a high level of English language proficiency, which is not only limited to language but also includes cognitive and technical expertise.

Due to these challenges, there is growing interest in exploring how AI tools can assist students in their English academic writing. Using these kinds of tools could make academic writing a lot easier by letting students focus on content and critical thinking instead of just mechanics (word usage, grammar, punctuation, and spelling) alone. Many tools powered by artificial intelligence (AI) have assisted students in improving their writing skills and tackling the challenges of academic writing. Some popular examples include Grammarly, QuillBot, and the Automatic Paraphrasing Tool (APT). For instance, students who find paraphrasing or grammar checking difficult may think that QuillBot can be a real lifesaver. It offers features to tackle problems with paraphrasing, mechanics checking, and summarising that help students refine their writing (Amanda et al., 2023). Similarly, Grammarly supports university students by identifying technical terms, correcting language structures and rules (grammar, syntax, and punctuation), suggesting simpler phrases, and recommending synonyms to enhance the textual clarity (Barrot, 2020; Fitria, 2021). It even helps with text revision by flagging duplicate content, accentuating sentences that need to have sources, and providing the originality score of the text (Fitria, 2021; Fitria et al., 2022). Additionally, in Saudi Arabia, undergraduate students have reported that APT has significantly eased their research writing process. It helped them correct language phrases and structures, expanded their grammar and vocabulary, and gained a clearer understanding of their texts (Alammar et al., 2023). These AI tools play their main role in assisting students with writing skills through features that can suit them in both basic language mechanics and more complex abilities.

One of the AI tools known as ChatGPT has had a significant influence on students' academic writing. ChatGPT was proven beneficial in students' writing productivity and engagement through its ability to translate languages, produce writing drafts, and answer questions with immediate feedback (Adiguzel et al., 2023; Chui, 2023; Iftanti et al., 2023; Lund & Wang, 2023). Moreover, students also positively perceived ChatGPT as useful in writing as it helped them paraphrase, produce logical responses, and stay engaged (Ajab et al., 2023; Ali et al., 2023; Chui, 2023; Firat, 2023). ChatGPT usefulness, such as providing instant feedback as commanded, offering suggestions on ideas, correcting grammatical errors, and refining students' sloppy sentences, helps them overcome the complex needs of academic writing (Adiguzel et al., 2023; Iftanti et al., 2023; Maakip et al., 2023; Mohd Azman et al., 2023).

Despite the remarkable benefits of ChatGPT to students' academic writing, it is also important to discuss its limitations and potential concerns. One of the concerns is that many students turn to ChatGPT when they have difficulties in mastering academic writing due to their unfamiliarity with the language structure and making arguments from various sources. A study by Muhammad Fareed et al. (2016) showed that EFL students hardly excel in academic writing due to their unfamiliarity with the linguistic structure of the English language. Meanwhile, mastering academic writing is most challenging for ESL students as it requires a strong grasp of

the language and the ability to construct coherent arguments, synthesise information from various sources, and adhere to specific formatting and citation guidelines (Alammar & Amin, 2023; Amanda et al., 2023; Fitria, 2021). Given these complexities, ChatGPT has become a favoured tool for English students in writing their English academic assignments or tasks. However, the misuse and abuse of ChatGPT created other concerns. For example, Maakip et al. (2023) highlighted that ChatGPT should only be used to find key ideas or general information instead of detailed explanations. This is because the information provided could be inaccurate and untrue. The students become too dependent on the tool, hindering their writing creativity and ability to write better explanations, and increasing content plagiarism if copied and pasted directly. Similarly, Adiguzel et al. (2023) also highlighted that students' increased reliance on ChatGPT for writing could impact their critical thinking skills and the role of teachers in education. Students who are overly dependent on this tool will become more reluctant to write by themselves, impair their writing competency, and jeopardise their academic honesty (Bonsu & Baffour-Koduah, 2023; Liu & Ma, 2023). These challenges increase the need for further research on whether ChatGPT can be accepted as a tool in helping the students write academically. Therefore, this study aims to answer the following objectives.

RO1: To investigate the acceptance of ChatGPT as an assisting tool in academic writing among ESL undergraduate students.

RO2: To identify the factors predicting the behavioural intention to use and actual use of ChatGPT.

LITERATURE REVIEW

Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) was developed by Davis (1989) and it is widely recognised as the most scientific framework in investigating individuals' acceptance of technology. Figure 1 below outlines five factors that were studied based on TAM in which the external variables were not investigated.

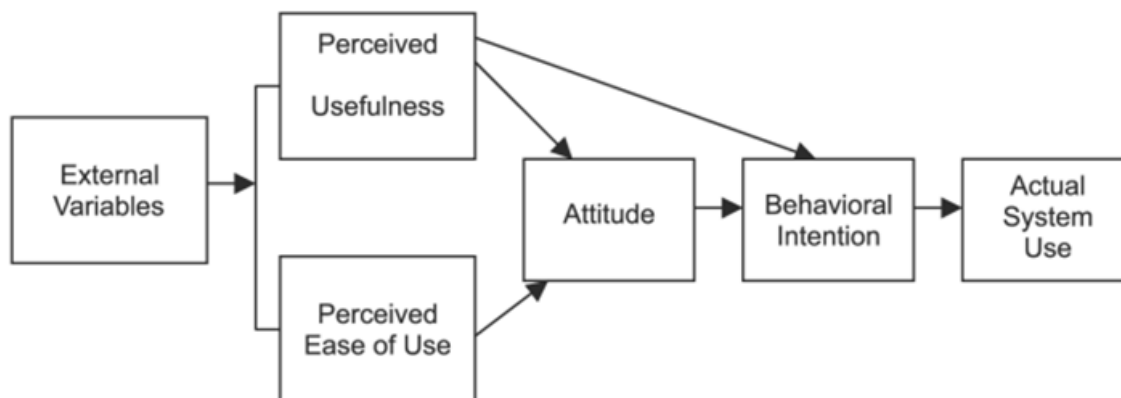


Figure 1: Technology Acceptance Model (Davis, 1989)

Perceived Usefulness (PU)

Perceived Usefulness (PU) refers to individuals' beliefs about how much a system can enhance their task performance (Davis, 1989, as cited in Mohammad Taufiq et al., 2019). Liu and Ma (2023, p. 5) further defined this concept as the extent to which students believe that ChatGPT will significantly aid and facilitate their English learning. In this study, if ESL students perceive ChatGPT as unhelpful or a waste of time for their writing tasks, they will likely perceive it as ineffective.

Perceived Ease of Use (PEOU)

Perceived Ease of Use (PEOU) refers to "the degree at which a person believes that using a particular system would be free of effort" (Davis, 1989, p.320, as cited in Mohammad Taufiq et al., 2019). Liu and Ma (2023,

p.5) defined it as the degree at which students believe minimal effort will be needed to use ChatGPT. Similarly, in this study, if ESL students believe that ChatGPT is simple to understand and effortless in writing their academic assignments, they will likely perceive it as easy to use.

Attitude Towards Use (A)

Davis (1989) argued that attitudes encompass individuals' degree of interest and positive evaluation towards using specific technologies. Liu and Ma (2023) interpreted it as students' level of interest and positive judgment towards applying ChatGPT in their English learning. This current study further refined this variable to the degree to which ESL students show interest and positively evaluate ChatGPT as an assistive tool in academic writing.

Behavioural Intention to Use (BI)

Behavioral intention (BI) to use specific technology determines the actual use of that particular technology (Bonsu & Baffour-Koduah, 2023; Liu & Ma, 2023). Liu and Ma (2023) defined BI as the extent to which students intend to use technology in their learning activities. Building on this, the present study refined the definition into the degree at which ESL students intend to use ChatGPT as an assistive tool in writing their academic assignments.

Actual System Use (AU)

Previous research has shown a correlation between this variable and BI. Students who intended to use technology were more likely to incorporate it into their learning activities (Amal Mohammad, 2023; Che Siti Lazrina et al., 2021; Nurul Qistina & Harwati, 2020). Liu and Ma (2023) defined this variable as the extent to which students engage with technology in their learning activities. Therefore, this study refined the AU term to the degree at which ESL students engage with ChatGPT as an assistive tool in writing their academic assignments.

ChatGPT as a Tool for English Academic Writing

Recently, a newly developed AI language tool, namely ChatGPT has gained immense popularity as a beneficial tool for English academic writings. On November 30, 2022, OpenAI released ChatGPT, a variation of the GPT language model that serves as an example of AI's use of natural language processing (NLP). Unlike traditional chatbots, ChatGPT makes use of sophisticated features like the Generative Pre-Trained Transformer (GPT) and Large Language Model (LLM) that allows it to invent outcomes that intuitive and similar to human thinking. GPT uses computational systems to create replies from massive volumes of text input (Shaikh et al., 2023). Meanwhile, LLM allows the tool to understand and produce text that closely resembles human writing (Almulla, 2024). These two features accentuate the significant leap in the field of AI-assisted writing. Moreover, ChatGPT can take part in conversation, offer quick feedback, and give suggestions that go beyond simple language correction. These abilities are more advantageous to students unlike most AI writing tools that only check and correct grammar and spelling mistakes.

ChatGPT in education is regarded as a “valuable resource for students and professionals” (Adiguzel et al., 2023, p. 3). According to Adiguzel et al. (2023), ChatGPT can access abundant text data, such as articles, websites and books to produce the written outcomes as commanded by its users. Since it was launched, researchers have verified some impressive capabilities of ChatGPT to students, including language translation, draft writing and question answering (Adiguzel et al., 2023; Chui, 2023; Iftanti et al., 2023; Lund & Wang, 2023). These abilities offer significant benefits to students, particularly in their academic writing. A primary result of implementing ChatGPT among students is increased engagement and motivation in academic writing. For example, ChatGPT allows students to ask questions and alter their responses according to their needs and preferences. This ability gives students a more personalised learning experience and helps them overcome barriers such as nervousness and hesitation in asking questions about their assignments (Ajab et al.,

2023; Firat, 2023). Moreover, guidance and information shared by ChatGPT also encourage students to be more motivated and engaged in their argumentative writing (Maakip et al., 2023). ChatGPT could assist students in finding topics for their writing papers, brainstorming ideas, paraphrasing sentences, finding additional sources, and checking grammatical errors. These abilities were perceived as engaging, which increases EFL students' interest and enjoyment during the writing process (Iftanti et al., 2023). Ali et al. (2023) further added that EFL students in Saudi Arabia also become more motivated to read and write in English using ChatGPT. This tool was believed to expand and enhance their grammar skills and vocabulary acquisition. They also found that ChatGPT was positively perceived in students' English learning as it increased their intrinsic, extrinsic, and autonomous motivation. Bouzar et al. (2024) also discovered that ChatGPT enhanced writing efficacy as it provided continuous feedback and encouraged self-accomplishment. They also found writing self-efficacy positively predicted ChatGPT usage which suggested that the more the students used ChatGPT, the better they felt when they did their academic writing tasks.

Notably, ChatGPT ability to provide instant feedback and suggestions for sentence construction helped students improve their writing skills and performance (Emma et al., 2023; Maakip et al., 2023; Mohd Azman et al., 2023). Emma et al. (2023) conducted an online survey among 181 ESL students in Malaysia to understand their perceptions of the use of ChatGPT as a language-learning tool. From the findings, most students reported ChatGPT as effective in improving their writing skills through its personalised feedback, vocabulary suggestions, and grammar correction. ChatGPT also provided students with examples to help them understand the information shared and provide guidance about different writing styles (Maakip et al., 2023). This, in turn, helped students to restructure their arguments better in their academic writing. ChatGPT is also demonstrated as a tool to help students improve their paraphrasing skills in academic writing. ChatGPT can provide meaningful feedback, improve ineffective paraphrases, and explain the changes made. These abilities are particularly beneficial for students who struggle with paraphrasing and understanding complex language for their writing (Chui, 2023). Thus, these findings suggest that ChatGPT has the potential to support students with writing difficulties and help them achieve better writing results.

Moreover, ChatGPT also supplies guidance to students across a wide range of language options and inspires confidence in their writing abilities (Barrot, 2024; Firat, 2023; Guo et al., 2022). Its abilities to generate human-like passages and alter written conversations according to users' preferred length, format, style, level of detail, and language are the reasons why it is a renowned AI tool since its launch (Ali et al., 2023). Taecharunroj's (2023) analysis of early reactions on Twitter demonstrated that ChatGPT has been widely applied for academic writing pursuits. His analysis using 233,914 English tweets revealed that ChatGPT was famously used by university students for academic writing like completing assignments, take-home assessments, and articles. This versatility makes it a valuable tool for those struggling with the complexities of academic writing. Recent researchers are increasingly interested in exploring the benefits and pitfalls of using ChatGPT in educational settings. The benefits of using ChatGPT are not only limited to language improvement but also fulfilling students' personal needs and motivation with academic writing. One of its most impressive features is that ChatGPT can adjust its replies based on students' proficiency level (Maakip et al., 2023). It encourages students to feel like having a personal writing tutor who can provide guidance on where their language competency lies. It also gives advice, guidance, and instant information to improve students' texts (Bonsu & Baffour-Koduah, 2023). Additionally, it can transform confusing paraphrased sentences into clear and concise sentences along with explanations on the changes made (Chui, 2023). Such features significantly make students' writing process easier, promote greater self-reliance, and cater to their unique learning needs. In the context of undergraduate education, ChatGPT exhibits considerable power as a writing assistant. It helps students become better academic writers and facilitate their language acquisition (Barrot, 2024; Bonsu & Baffour-Koduah, 2023; Iftanti et al., 2023). Moreover, Ali et al. (2023) further stated that Saudi undergraduates have become more motivated to read and write in English by using ChatGPT. This is because ChatGPT helps them to expand and improve their grammar and vocabulary acquisition, as well as increase their intrinsic, extrinsic, and autonomous motivation through one-on-one guidance. Meanwhile, ChatGPT provides postgraduate students with advanced writing assistance that goes beyond language and grammar correction, particularly in the areas of comprehensive research writing and more advanced language

support. A survey of Ghanaian university students' perceptions and intentions to use ChatGPT in higher education found that 69% of the respondents who were graduate students engaged with ChatGPT more frequently compared to undergraduates (Bonsu & Baffour-Koduah, 2023). The underlying reason is that graduate students often engage in higher effort and challenging writing skills, which necessitates their heavy interaction with ChatGPT (Shaikh et al., 2023; Zou & Huang, 2023).

According to Van Dis et al. (2023), ChatGPT also satisfies graduate and doctoral students by making it easier for them to accumulate accurate information from previous studies for research writing. Furthermore, ChatGPT is also an ingenious application that supports students with various language aspects that are useful for their writing. Some of them are pragmatics, semantics, coherence, cohesion, conventions, language style, format, and syntax (Barrot, 2024). Also, it can generate topics and drafts, revise the content of texts, proofread, and assist students in post-writing reflection (Chui, 2023). Taken together, these results showed the congruity of ChatGPT as a writing tool that can help students write better at all levels of higher education. Nevertheless, worries about ChatGPT's data security and privacy, as well as its inaccurate and untrustworthy responses, have also been raised in students' academic writing. ChatGPT often collects students' prompts in its database which may include their personal information like personal, financial, and medical information (Lund & Wang, 2023; Mohd Azman et al., 2023). This elevates the concern that the data may be sold for commercial purposes or leaked to unauthorised parties. Moreover, there is also a possibility that ChatGPT can provide false and inaccurate information (Maakip et al., 2023). This inaccuracy could seriously harm students' content and academic integrity. Even though AI tools are beneficial, relying heavily on them can restrict students' writing proficiency and honesty (Iftanti et al, 2023).

Technology Acceptance Model (TAM) and ChatGPT in Academic Writing

Technology Acceptance Model (TAM) is a robust model to investigate students' acceptance of technology. According to Mohd Shafie et al. (2022), approximately 6,500 TAM-related studies were conducted in a span of 4 years from 2019 until 2022, however, studies on different types of technology need to be expanded. The most type of technology examined was learning management systems (LMS). Only recently TAM was used in research that investigated the acceptance of ChatGPT in academic writing. For example, Bonsu and Baffour-Koduah (2023) discovered that Ghanaian students had high perceptions of perceived usefulness, ease of use, and positive attitudes towards using ChatGPT in their academic writing. Moreover, they also found that students' positive attitude was a significant predictor of their intention to use ChatGPT in their academic writing. Similarly, Zou and Huang (2023) also revealed that Chinese students perceived ChatGPT as highly useful and user-friendly. These students also expressed positive attitudes toward using ChatGPT, influencing their strong intention to use it in academic writing. These findings reflect that students with high perceptions of ChatGPT's usefulness and ease of use tend to exhibit positive attitudes towards the tool. This attitude, in turn, influenced their intention to use this tool in academic writing.

In addition, Chauke et al. (2024) used thematic analysis to show how ChatGPT was accepted in research writing among postgraduate students in South Africa. Their research showed that postgraduate students greatly valued ChatGPT as a tool to assist in rectifying their research topic—an essential skill for graduate-level coursework. Meanwhile, Herwanto et al. (2024) found that students had mixed attitudes towards the use of ChatGPT in academic writing. Those who had positive attitudes mentioned that ChatGPT could save time and ease them in writing more coherently. Meanwhile, those who had negative attitudes reported that over reliance on ChatGPT encouraged plagiarism.

METHODOLOGY

Research Approach and Sampling

This study employed a quantitative approach, using a descriptive cross-sectional survey design to gather information. According to Mohajan (2020), quantitative research involves methods that produce quantifiable or discrete values derived from empirical observations and measurements. Its main purpose is to offer factual

and empirical evidence that could aid in understanding the phenomena studied. Meanwhile, a descriptive cross-sectional survey observes and analyses data from a group of the population at a particular time, providing a snapshot of the specific results or characteristics (Asenahabi, 2019). This study utilised a random sampling technique in selecting the respondents. Simple random sampling is a sampling technique that allows individuals in a population to have an equal chance of being chosen and mitigates biases (Wang & Cheng, 2020). 80 ESL undergraduate students responded to the survey, thus, became the participants in the present study.

Instrument

An online questionnaire was used as a research instrument. It had three demographic questions on gender, semester levels, and ChatGPT's past user experience. They were followed by 24 questions which were adapted from Mohammad Taufiq et al. (2019). These questions were closed-ended and scored on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The researchers used a close-ended questionnaire to increase the likelihood of obtaining favorable results (Mohajan, 2020). The questionnaire had 5 sections which were perceived usefulness, perceived ease of use, attitude, behavioral intention, and students' actual use of ChatGPT in academic writing.

Research Procedures

The questionnaire was distributed randomly via WhatsApp and on students' UiTM official email using a Google Forms link with an open-call invitation. Respondents who accessed the questionnaire through the link would receive a notification not to respond more than once, information about the objectives of the study, and voluntary withdrawal at any time. Those who agreed to participate in this study must submit electronic informed consent by clicking an "Agree" button. Furthermore, all respondents were also guaranteed anonymity throughout the process. The link was made available for two months and 80 completed responses were successfully collected for the analysis.

Data Analysis

Zulfikar and Bhaskar (2018) described data analysis as the systematic use of statistical or logical tools to enhance comprehension and insight into the data under examination. The collected data were analysed using descriptive and inferential statistics through Statistical Package for the Social Sciences (SPSS) version 29, and the significance level was set at 0.05. Firstly, the frequency of distributions was used to describe the respondents' demographic background, whereas the descriptive statistics were used to determine the ESL students' level of acceptance of ChatGPT as an assisting tool in academic writing, focusing on its usefulness, ease of use, attitudes, behavioral intentions, and actual use of ChatGPT. The stepwise multiple regressions were utilised to analyse the most contributing variable to predict the students' behavioral intention and actual use of ChatGPT.

Validity and Reliability

Surucu and Maslakci (2020) defined validity as the extent to which a measuring instrument accurately and appropriately measures what it is supposed to measure according to the research purposes. In this study, the researchers sought expert opinions to validate the instrument to measure the intended variables. They also consulted with an advisor who specialises in research methodology and technology studies in evaluating the revised instrument in terms of its content, scale and appropriateness to the objectives of the study.

Reliability is defined as the stability and consistency of an instrument to measure the phenomenon intended over time (Surucu & Maslakci, 2020). This study employed Cronbach's alpha coefficient to determine the instrument's internal consistency. Table 1 below shows that the Cronbach's alpha coefficient value for this study's instrument was $\alpha=0.934$. The value showed that this study instrument had high internal consistency and reliability within the scale. This high consistency suggests confidence in the accuracy and stability of the data collected (Surucu & Maslakci, 2020).

Table 1: Cronbach’s Alpha Coefficient

Cronbach's Alpha	N of Items
.934	24

FINDINGS

The Demographic Profile of the Respondents

Figure 1 below presents the distribution of participants’ gender.

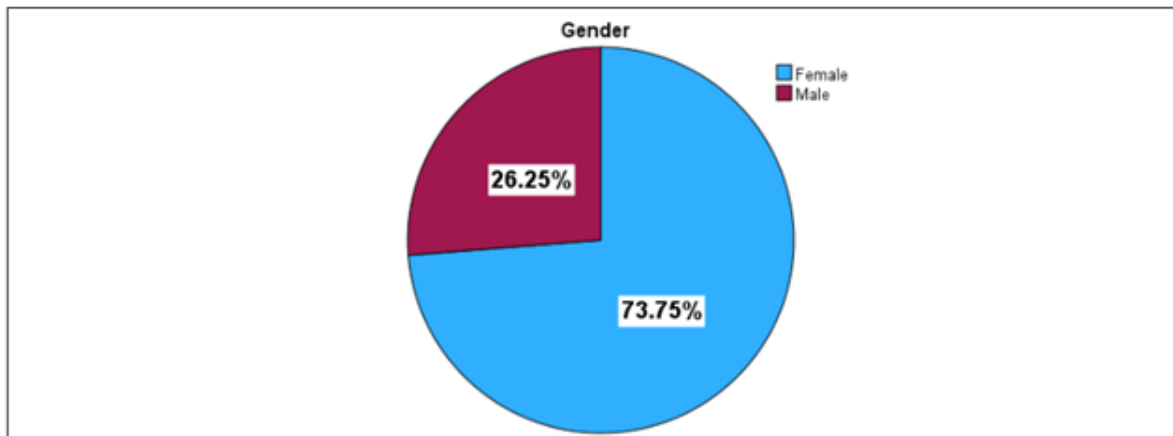


Figure 2: The Distribution based on Gender

The results showed that 73.75% of the respondents in this study were female, while 26.25% were males. This result was expected as the number of female students was usually higher than that of male students in Malaysian higher institutions.

Figure 2 below illustrates the respondents’ distribution based on semesters. The result showed that most respondents enrolled in Semester 6 at 26.25%, followed by Semester 5 at 18.75%. Semester 2 comprised 15% of the respondents, while Semesters 3 and 4 had an equal distribution at 13.75%. The lowest representation was observed in Semester 1, accounting for 12.50% of the respondents.

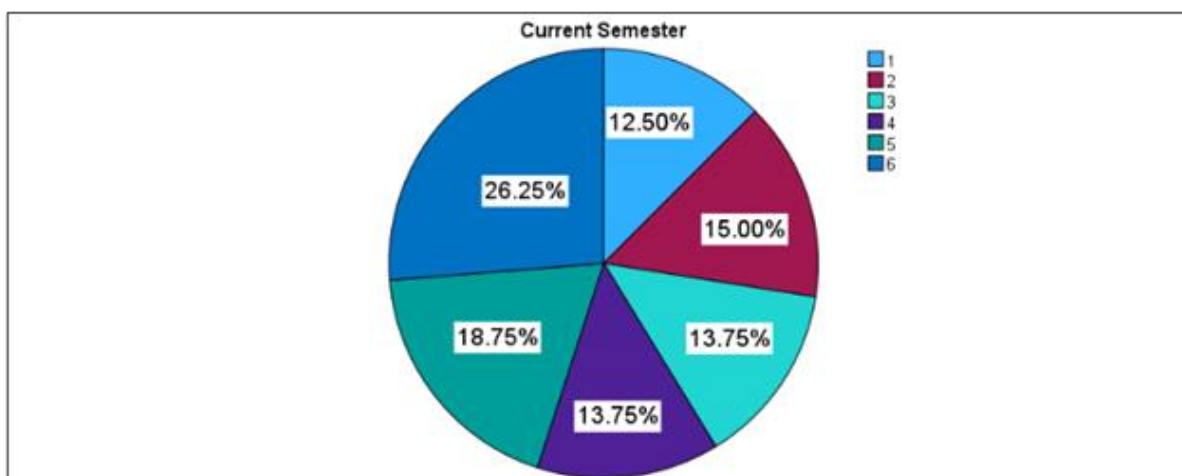


Figure 3: The Distribution based on Semesters

All respondents who participated in this study had prior knowledge and usage of ChatGPT in writing their English academic assignments. This suggested that the respondents were familiar with ChatGPT as an assisting tool in academic writing when they answered the survey.

The Acceptance of ChatGPT as an Assisting Tool in Academic Writing among ESL Undergraduate Students

In this section, the researchers conducted a descriptive statistics test on the five variables of the TAM model, namely, perceived usefulness (PU), perceived ease of use (PEU), attitudes (A), behavioral intention to use (BI), and actual ChatGPT usage (AU).

Perceived Usefulness (PU)

Table 2: Perceived Usefulness of ChatGPT

Items No	Perceived Usefulness of ChatGPT	Mean
Q5	I find ChatGPT useful in academic writing	4.7250
Q3	ChatGPT can make it easier for me to write my English assignments.	4.4625
Q4	ChatGPT will enhance the effectiveness of my English writing assignments.	4.1375
Q2	ChatGPT will increase my English writing productivity.	4.0750
Q1	ChatGPT will improve my English writing performance.	4.0500

Table 2 shows the descriptive statistics for students' perceived usefulness of ChatGPT as an assisting tool in writing English assignments. From the table, the highest mean identified was for item Q5, "*I find Chat GPT useful in academic writing,*" at 4.72 and was followed by item Q3, "*Chat GPT can make it easier for me to write my English assignments,*" at 4.46. Item Q4, "*Chat GPT will enhance the effectiveness of my English writing assignments,*" had a mean of 4.13, and the fourth highest mean was for item Q2, "*Chat GPT will increase my English writing productivity,*" at 4.07. The lowest mean count was 4.05 for item Q1, "*Chat GPT will improve my English writing performance.*" From this table, it can be concluded that ESL students have high perceptions of ChatGPT's usefulness in their academic writing.

Perceived Ease of Use (PEU)

Table 3: Perceived Ease of Use of ChatGPT

Items No	Perceived Ease of Use of ChatGPT	Mean
Q6	I find ChatGPT is easy to use when writing academically.	4.6000
Q11	It will be easy for me to find information for academic writing through ChatGPT.	4.5000
Q7	Learning how to use ChatGPT to write academic assignments is easy for me.	4.3875
Q8	I can easily become skilled at using ChatGPT	4.2125
Q10	My interaction with ChatGPT is understandable.	4.0000
Q9	My interaction with ChatGPT is clear.	3.9750

Table 3 presents the mean values of how ESL students perceived the ease of use of ChatGPT. The item with the highest mean value was Q6, "*I find Chat GPT is easy to use when writing academically,*" at 4.60. Q11 followed this, "*It will be easy for me to find information for academic writing through Chat GPT,*" with a mean value of 4.46. Item Q7, "*Learning how to use Chat GPT to write academic assignments is easy for me,*" had a mean of 4.38, and Q8, "*I can easily become skilled at using ChatGPT,*" had a mean of 4.21. Item Q10, "*My interaction with Chat GPT is understandable,*" had a mean of 4.00. The item with the lowest mean score was Q9, "*My interaction with Chat GPT is clear,*" at 3.97. Thus, it can be inferred that ESL students perceived ChatGPT as easy to use in their academic writing.

Attitude (AT)

Table 4: Students’ Attitudes towards Using ChatGPT

Items No	Students Attitudes towards Using ChatGPT	Mean
Q14	I believe that ChatGPT helps me to be more engaged in my English writing assignments.	4.0875
Q15	I generally favor the use of ChatGPT in writing my English assignments.	4.0625
Q16	I believe that it is a good idea for me to use ChatGPT for writing my English assignments in future.	4.0250
Q12	Writing English assignments using ChatGPT is a good idea.	3.9000
Q13	I feel positive towards the use of ChatGPT in writing my English assignments.	3.8500

The mean scores of students’ attitudes towards using ChatGPT to write English assignments are presented in Table 4 above. Item Q14, “*I believe that Chat GPT helps me to be more engaged in my English writing assignments,*” had the highest mean value of 4.08, followed by item Q15, “*I generally favour the use of Chat GPT in writing my English assignments,*” with a mean score of 4.06. Item Q16, “*I believe that it is a good idea for me to use Chat GPT for writing my English assignments in future,*” had a mean of 4.02, while item Q12, “*Writing English assignments using Chat GPT is a good idea,*” at 3.90. The item with the lowest mean value was Q13, “*I feel positive towards the use of Chat GPT in writing my English assignments,*” at 3.85.

Behavioural Intention to Use (BI)

Table 5: Students’ Behavioral Intention to Use ChatGPT

Items No	Students’ Behavioral Intention to Use ChatGPT	Mean
Q17	I intend to frequently use ChatGPT for writing my English assignments	4.1375
Q19	I intend to use ChatGPT in my academic writing throughout this semester and the next.	3.9125
Q20	I intend to repetitively use ChatGPT as often as possible when writing academically.	3.8250
Q18	I intend to use ChatGPT heavily in my academic writing.	3.6750

Table 5 portrays the mean score of students’ behavioral intention towards using ChatGPT when writing academic assignments. The highest mean score was Item Q17, “*I intend to frequently use Chat GPT for writing my English assignments,*” at 4.13. Item Q19, “*I intend to use Chat GPT in my academic writing throughout this semester and the next,*” had the second-highest mean score of 3.91. Item Q20, “*I intend to repetitively use Chat GPT as often as possible when writing academically,*” had a mean score of 3.82, and the lowest mean score counted was item Q18, “*I intend to use Chat GPT heavily in my academic writing,*” at 3.67.

Actual Use of ChatGPT (AU)

Table 6: Students’ Actual ChatGPT Usage

Items No	Students’ Actual ChatGPT Usage	Mean
Q21	I frequently use ChatGPT for writing my English assignments.	3.9625
Q23	I use ChatGPT in my academic writing throughout this semester.	3.9625
Q24	I repetitively use ChatGPT as often as possible when writing academically.	3.8875
Q22	I use ChatGPT heavily in my academic writing.	3.8375

Table 6 above illustrates the actual use of ChatGPT by ESL students in writing their English academic assignments. From the table, it could be seen that items Q21 and Q23, which stood for “*I frequently use Chat GPT for writing my English assignments*” and “*I use Chat GPT in my academic writing throughout this*

semester” respectively, received the highest mean score of 3.96. This was followed by item Q24, “I repetitively use Chat GPT as often as possible when writing academically,” which had a mean score of 3.88. The item with the lowest mean was Q22, “I use Chat GPT heavily in my academic writing,” with a score of 3.83.

In conclusion, the descriptive statistics tables above show the mean scores of all the variables fall between 3.67 and 4.72, indicating high levels of perceived usefulness, perceived ease of use, attitudes, behavioral intentions, and actual use of ChatGPT in their academic writing. This indicated that students strongly perceived ChatGPT as easy to use and useful and believed that ChatGPT had helped them engage with their academic writing. Moreover, students also frequently used ChatGPT in their academic writing and had high intention to use it to help them write throughout their academic sessions. Thus, it can be inferred that students strongly accepted ChatGPT as an assisting tool in their academic writing.

The Factors Predicting the ESL Students’ Behavioural Intention to Use and Actual Use of ChatGPT

This section is divided into two subsections, focusing on the prominent factor predicting students’ behavioural intention to use and actual use of ChatGPT in academic writing.

The Factors Predicting the Students’ Behavioural Intention

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.762 ^a	.581	.575	.62701

Note. Predictors: (Constant), Attitudes

A stepwise multiple regression analysis was conducted to investigate whether students’ perceived usefulness, perceived ease of use and attitudes contributed to predicting their behavioral intention to use ChatGPT in academic writing. Table 7 showed that the multiple correlation coefficient was 0.762, indicating that approximately 58.1% of the variance of intention to use ChatGPT could be accounted for by attitudes. At step 1 of the analysis, attitudes entered into the regression equation and it significantly influenced students’ intention to use ChatGPT, $F(1, 78) = 107.97, p < 0.001$ (see Table 8).

Table 8: ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	42.448	1	42.448	107.971	<.001 ^b
	Residual	30.665	78	.393		
	Total	73.113	79			

Note. Dependent Variable: Behavioral Intention to Use

Note. Predictors: (Constant), Attitudes

Perceived usefulness ($t = 0.781, p > 0.05$), and perceived ease of use ($t = -0.556, p > 0.05$) did not enter into the equation at step 2 of the analysis, as shown in Table 9.

Table 9: Excluded Variables^a

Model		Beta In	t	Sig.
1	Perceived Usefulness	.079 ^b	.781	.437
	Perceived Ease of Use	-.043 ^b	-.556	.580

Table 10: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.278	.354		.785	.435
	Average Attitude	.906	.087	.762	10.391	<.001

Note. Dependent Variable: Behavioral Intention to Use

The regression model for predicting behavioral intention to use ChatGPT using the coefficients in Table 10 was:

$$\text{Predicting behavioral intention to use ChatGPT} = 0.278 + 0.906 (\text{Attitudes})$$

Thus, it could be concluded that attitudes predicted the behavioral intention to use ChatGPT the most as the model shows that the regression coefficient related to attitudes is 0.906 unit; a unit increase in students' attitude is associated with a 0.906 unit increase in students' behavioral intention to use ChatGPT as an assisting tool for academic writing.

The Factors Predicting the Students' Actual Use of ChatGPT

Table 11: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.702 ^a	.493	.486	.73349

Note. Predictors: (Constant), Attitude

A stepwise multiple regression analysis was conducted to investigate whether students' perceived usefulness, perceived ease of use, and attitudes contributed to predicting their actual use of ChatGPT in academic writing. Table 13 showed that the multiple correlation coefficient was 0.702, indicating that approximately 49.3% of the variance of actual use of ChatGPT could be accounted for by attitudes. At step 1 of the analysis, attitudes entered into the regression equation, and it significantly influenced the actual use of ChatGPT, $F(1, 78) = 75.83, p < 0.001$ (see Table 12).

Table 12: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	40.797	1	40.797	75.830	<.001 ^b
	Residual	41.965	78	.538		
	Total	82.762	79			

Note. Dependent Variable: Actual System Use

Note. Predictors: (Constant), Attitude

Perceived usefulness ($t = 0.627, p > 0.05$), and perceived ease of use ($t = 1.170, p > 0.05$) did not enter into the equation at step 2 of the analysis as shown in Table 13.

Table 13: Excluded Variables^a

Model		Beta	In t	Sig.
1	Perceived Usefulness	.070 ^b	.627	.533
	Perceived Ease of Use	-.099 ^b	-1.170	.246

Table 14: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.374	.415		.902	.370
Average Attitude	.888	.102	.702	8.708	<.001

Note. Dependent Variable: Actual System Use

The regression model for predicting the actual use of ChatGPT using the coefficients in Table 14 was:

$$\text{Predicting actual use of ChatGPT} = 0.374 + 0.888 (\text{Attitudes})$$

Thus, it could be concluded that attitudes contribute to the actual use of ChatGPT the most as the model shows that the regression coefficient related to attitudes is 0.888; a unit increase in attitudes is associated with a 0.888 unit increase in students' actual use of ChatGPT.

In conclusion, it can be concluded that attitude is the most prominent predictor for students' behavioral intention to use and actual use of ChatGPT in their academic writing, while perceived usefulness and ease of use did not influence them.

DISCUSSION

Research objective 1 is to investigate the ESL undergraduate students' acceptance level of ChatGPT as an assisting tool in writing academic assignments. The findings revealed that all mean scores of the variables were above average from a 5-point Likert scale (ranging from 3.67-4.72). They indicated that students had high level perceived usefulness, perceived ease of use, attitudes, behavioral intentions, and actual use of ChatGPT in their academic writing. It was discovered that the ESL undergraduate students perceived positively that ChatGPT was useful in writing their academic assignments. This finding is similar to Bonsu and Baffour-Koduah's (2023), where ChatGPT was strongly perceived as useful among Ghanaian students due to its convenience and improved students' writing productivity. Moreover, students' positive perceptions towards ChatGPT usefulness might also be attributed to its capabilities in guiding students to write. As shown in previous studies by Emma et al. (2023), Chui (2023), Iftanti et al. (2023), Maakip et al. (2023), and Mohd Azman et al. (2023), ChatGPT could help students to brainstorm and produce innovative ideas, do paraphrasing, provide coherent and valuable responses and offer personalised learning through instant feedback. These capabilities make it a potential tool for ESL students to engage more in academic writing, become motivated to write fluently, and effectively improve their academic performance (Ajab et al., 2023; Ali et al., 2023).

Meanwhile, research objective 2 is to identify the factor that predicted the ESL undergraduate students' behavioral intention to use and actual ChatGPT usage in their academic writing. The researcher focused on perceived usefulness, perceived ease of use, and attitudes as key predictors. The findings discovered that attitudes seemed to be a significant predictor for students' behavioral intention to use and actual ChatGPT usage in their academic writing. This finding reflected the studies by Liu and Ma (2023) and Zou and Huang (2023) that students' attitudes strongly predicted their behavioral intention to use ChatGPT in their educational context. Liu and Ma (2023) also added that students who exhibited positive attitudes and higher intentions to use ChatGPT strongly predicted their actual use of the tool in their academic writing. This statement reflected the finding of the study that attitudes could also predict students' actual use of ChatGPT to assist them in writing. Yilmaz et al. (2023) further affirmed that students' positive attitudes are recognised as key predictors influencing their acceptance of technology. Meanwhile, Le and Tran (2024) found the perceived usefulness and perceived ease of use were the predictors of the attitudes which directly influenced students' intention to use ChatGPT as an assisting tool to do their assignments in the future. Therefore, this study suggests that the more positive students' attitudes towards using ChatGPT, the more likely they intend to use and frequently use it as a tool to assist them in academic writing.

CONCLUSION

The findings of this study demonstrated that the perceived usefulness and ease of use of ChatGPT have a substantial positive impact on students' attitudes towards using ChatGPT as an assisting tool in their academic writing. This, in turn, influences students' behavioral intentions and actual use of ChatGPT, affecting their acceptance of leveraging the tool in academic writing. Through this tool, these findings could encourage ESL students, particularly in Malaysia, to overcome their writing difficulties, such as grammar, vocabulary, coherence, and sentence structure. With the favourable findings gathered from this research, it is paramount for students to be given guidance on how to use ChatGPT appropriately in academic writing. They should be trained to use ChatGPT as a tool to assist them but not to write for them. In addition, this finding also heightened the need for technology developers to be aware of students' growing attitudes, preferences, and acceptance of using AI in education. By understanding students' needs and preferences, technology developers can improve the capabilities of ChatGPT, creating more innovative, interactive, or beneficial outcomes to attract students' motivation and engagement with their education.

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