

PAPER

Vietnamese University Students' Perceptions of ChatGPT for Homework Assistance

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ABSTRACT

Since its emergence, the novel ChatGPT has attracted lots of users. In education, the use of Chat GPT might provide both advantages and disadvantages for students. Likewise, the intention to use ChatGPT for learning is controversial in different contexts. In some contexts, students perceived ChatGPT as useful and easy to use, expressing their inclination to use this learning tool. Meanwhile, in other contexts, students were doubtful about ChatGPT's benefits, leaning toward not using the tool for their learning. Therefore, it is worth gaining insight into students' perceptions of ChatGPT in the current context. Drawing from the technology acceptance model (TAM), we explored how students perceived ChatGPT for their homework assignments. Data from mixed methods revealed that students have a moderately positive perception of using ChatGPT. Specifically, students have a positive attitude toward the use of ChatGPT and perceive it as useful and easy to use. More importantly, students have the intention of employing this tool for their future learning, despite several concerns. Data from structural equation modeling analyses demonstrated that perceived ease of use directly influences perceived usefulness. Perceived usefulness and perceived ease of use are predictors of students' attitudes, which directly affect students' intentions to use ChatGPT. The study provides empirical evidence to support the use of ChatGPT in education. Recommendations for using ChatGPT are discussed.

KEYWORDS

ChatGPT, higher education, perception, AI tool, intention

1 INTRODUCTION

Cooper [1] defined homework as the assignments that students are expected to complete outside of school hours. Doing homework enables students to enhance the habit of learning outside of the classroom, performance, and academic achievement [2]. Typically, the Internet and friends are the main sources that provide students with help with homework assignments [2]. Currently, ChatGPT is the latest tool

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that can support students' homework assignments because of its ability to respond to students' queries with natural language [3].

Since its launch, ChatGPT has had significant impacts in various fields, including education [4]. A plethora of scholars have conducted research on the role of ChatGPT in learning. Some have revealed that using this tool has positive impacts on students learning [5], [6], [7], [8], [9], [10], while others have underscored drawbacks related to academic integrity [11], [12], the accuracy of information [13], [14], [15], [16], [17], [18], [19], biased responses [18], and students' critical thinking [3], [20]. In this regard, students' intention to use the tool for learning in the future is also controversial. In some contexts, a large number of students have expressed enthusiasm for the new tool [21], [22], [23], [24], while others have been more skeptical about its value for their learning [20], [25]. Therefore, gaining insight into students' perceptions of the use of ChatGPT for learning is vital. This study delved into university students' perceptions of using ChatGPT to assist them with assignments in the Mekong Delta region of Vietnam.

To achieve our research objectives, we employed the technology acceptance model (TAM), which is widely recognized for predicting students' acceptance of new technology [26], [27]. These valuable insights gained from our study can inform educators and policymakers about how students perceive ChatGPT, allowing them to better develop strategies that benefit students' learning experiences and improve their teaching practices with ChatGPT. Additionally, our findings offer valuable feedback to AI developers by highlighting students' concerns about ChatGPT, contributing to the improvement of this learning tool.

2 LITERATURE REVIEW

2.1 Benefits of ChatGPT for students' learning

ChatGPT has brought promises for education. This tool is renowned for its ability to answer questions, summarize or explain information, create original content, provide instant feedback, and write computer code [28]. A systematic review conducted by İpek et al. [18] provided insight into the various benefits of ChatGPT in education. According to the authors, ChatGPT can summarize lengthy documents, create literature reviews, translate, paraphrase, excellently answer questions, recognize students' demands, personalize learning, assess and evaluate learning, analyze data, prevent cyber issues, optimize learning, and classify things. Regarding the quality of information generated by ChatGPT versions 3.5 and 4.0, Karakose et al. [29, p. 7] commented that both versions have the ability to create "accurate, clear, and concise information." This finding was drawn from the interview data with two versions of ChatGPT about COVID-19. With these marvelous functions, ChatGPT can serve significant roles as "interlocutor, content provider, teaching assistant, and evaluator" [30, p. 15873]. Therefore, it stands as the most current tool for students' learning and supporting students' homework assignments [3]. Particularly, this tool can develop students' various skills, including "reading, writing, information analysis, critical thinking, problem-solving, and research" [17, p. 38806].

Several empirical studies have found that ChatGPT can enhance student motivation, self-efficacy, and learning performance. Regarding motivation, Hmoud et al. [6] interviewed 15 students and found that ChatGPT has positive effects on students motivation. Participants reported that learning with ChatGPT can be enjoyable,

satisfying, and stimulating [6]. Likewise, researchers [5] [7], who examined the impact of ChatGPT on learning English, have reported similar results. Regarding self-efficacy, several studies [31], [32] have highlighted the positive effects of ChatGPT on students' self-efficacy. This tool can enhance students' self-efficacy primarily by helping them solve problems, thus increasing their confidence. Finally, ChatGPT has been shown to positively impact students' learning performance. A study by Athanassopoulos et al. [10] conducted with 8 students aged 15 in Greece found that ChatGPT 3.5 can enhance students' German writing ability in terms of vocabulary and grammar. Similarly, another study by Song and Song [33] indicated that ChatGPT can enhance 50 Chinese students' English writing aspects, namely organization, coherence, grammar, and vocabulary. These positive impacts on aspects of writing text are attributed to ChatGPT's ability to provide immediate feedback. The positive impact of ChatGPT on students' learning performance has also been supported by other scholars [34] [35].

2.2 Challenges of ChatGPT for students' learning

Some scholars have explored the potential drawbacks of ChatGPT. One of the most serious issues is the possibility of violating academic integrity [11]. There is concern that students might utilize ChatGPT as a tool for cheating [12] [18]. Additionally, the use of ChatGPT's output responses has raised concerns about originality [13], [17]. Improper use of ChatGPT has led to the continued reliance on traditional paper tests in some countries [36] or even resulted in the banning of ChatGPT usage in some universities worldwide [37]. Besides, several authors have revealed that ChatGPT might generate incorrect information [15], [16], [18], [19], biased information [18], and questionable sources [38]. Lastly, overreliance on ChatGPT can negatively impact students' critical thinking [3].

2.3 Related studies on students' perceptions of ChatGPT

Previous research indicates that the majority of students hold a favorable perception toward using ChatGPT. Elkhodr et al. [21] conducted experimental research with three case studies, including 52 undergraduate and postgraduate students majoring in ICT at a university in Australia. They found that students had a positive perception of ChatGPT in terms of usefulness and enjoyment, expressing a desire to incorporate ChatGPT into their learning journey. Similarly, other researchers employed the TAM model by Davis [39] and also revealed similar findings. For instance, Rababah et al. [23] carried out a study with 80 postgraduate students from different majors at Jadara University. The findings showed students held positive views toward ChatGPT in terms of ease of use and usefulness in doing thesis writing. Likewise, Vo and Nguyen [24] also pointed out that 63% of their participants were willing to use ChatGPT for future language learning due to its benefits in creating necessary scaffolding for writing and reading and providing guidelines for learning. Although ChatGPT was considered useful by its participants, the extent of its usefulness was seen as neutral. In the same vein, Liu and Ma [22] conducted their study on various EFL participants from under 18 years old to beyond 24 years old. Apart from similar positive findings in terms of ease of use, usefulness, attitude, and intention to use, they found that the relationship of most of the factors was consistent with the original TAM model, except perceived ease of use. This factor did not have a direct

impact on students' attitudes, which is not aligned with the original TAM model by Davis [39].

However, several studies revealed a more negative view than the above-mentioned. Kanabar [20] investigated students' perceptions of using ChatGPT for homework and found that although students perceived this tool as useful, they expressed their concern about the impact of using ChatGPT to generate essays on their critical thinking skills and their actual learning. Therefore, their acceptance of using ChatGPT varies from acceptance to rejection. More seriously, Singh et al. [25] conducted their survey with 430 undergraduate students majoring in computer science at the University of Hertfordshire, UK, to explore their opinions about ChatGPT. They found that although students were aware of this tool, they did not use it for learning and showed their skepticism towards the positive effect of ChatGPT for learning.

2.4 Technology acceptance model

To gain insight into the participants' intention to use ChatGPT, we employed the TAM by Davis [39], a widely recognized framework for predicting individuals' intention to use technology [26], [27]. More importantly, this model has been proven to be applicable in predicting the adoption of AI. For example, Alhashmi et al. [40] used the TAM model to understand the factors influencing AI adoption in the healthcare system in the United Arab Emirates. Similarly, Mohr and Kühl [41] employed the TAM model, focusing on two factors—perceived ease of use (PEU) and perceived usefulness (PU)—to examine AI acceptance among farmers in Germany. Likewise, Maheshwari [42] shed light on factors influencing students' intention and adoption of ChatGPT by incorporating the constructs, namely PEU and PU, from the TAM model.

The TAM model includes five constructs. According to Davis [39], perceived usefulness refers to users' belief that a certain technology will enhance their productivity, while perceived ease of use concerns users' views on the effort required to use a particular technology. TAM suggests that both PU and PEU contribute to shaping users' attitudes (ATT) toward using technology, which represents the third construct in the original model. Additionally, Davis [39] asserted that both PU and ATT directly influence the behavioral intention (BI) to use technology. Ultimately, BI plays a crucial role in determining the actual use of technology.

2.5 Research question and hypotheses

Since there are contradictions in the students' perceptions of ChatGPT in various contexts worldwide, there is a need to understand how the students in our context perceive ChatGPT. This study aims at addressing the question: What are students' perceptions of using ChatGPT to assist with their homework?

Based on the TAM model, this study proposed the research model, which demonstrated the following hypothesis (see Figure 1):

- H1: PEU has a positive effect on PU.
- H2: PEU has a positive effect on ATT.
- H3: PU has a positive effect on ATT.
- H4: ATT has a positive effect on BI.

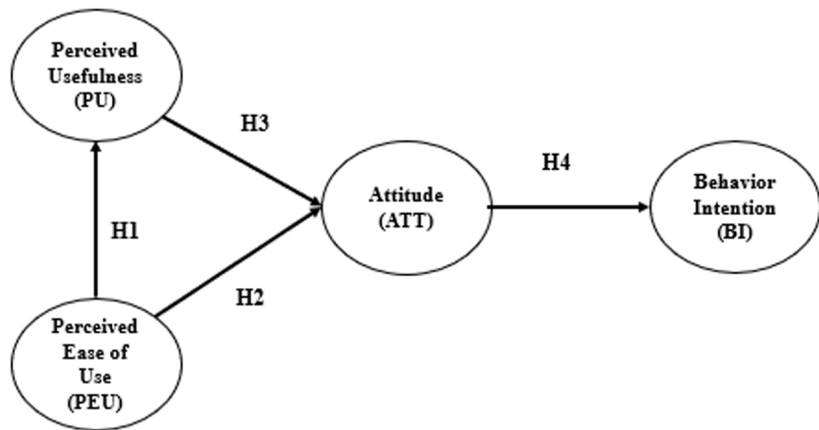


Fig. 1. Proposed research model

3 METHOD

3.1 Research design

In this study, we adopted a mixed-methods research design, combining quantitative and qualitative data to gain deeper insight into the phenomenon [43]. Accordingly, we collected quantitative data to examine participants’ perceptions of ChatGPT in assisting with their homework and factors affecting their perceptions. Subsequently, qualitative data were collected to seek their further explanation regarding their perceptions of using ChatGPT.

3.2 Participants

263 students, consisting of 135 females (51.3%) and 128 males (48.7%), participated in this study. These participants were drawn from various academic disciplines, such as languages (21.7%), digital marketing (12.9%), information technology (33.1%), multimedia communication (6.1%), graphic design (7.6%), and business administration (18.6%) at a private university in the southwest of Vietnam. Their ages ranged from 18 to 22. The majority of participants were second-year students, comprising 40.7%. This was followed by third-year and fourth-year students, with 28.9% and 19%, respectively. First-year students represented the minority of the sample, accounting for only 11.4%. To support their homework assignments, the participants mainly employed ChatGPT to explain information (96.3%), summarize information (97.7%), answer questions (92.2%), receive feedback on their assignments (92.8%), create texts (90.5%), and write code (73.7%).

Convenience sampling was employed to recruit the participants. This sampling technique allows the researchers to select participants who are voluntarily participating in the study [44]. Therefore, by employing this sampling technique, we could recruit informants who were comfortable and willing to share their perspectives regarding ChatGPT. Consequently, they provided fruitful results. We approached the participants on their campus or in classrooms. We then presented our study and invited them to partake in it. Interested individuals were invited to sign their concern forms and were subsequently offered the link to complete the questionnaires.

By the time the study was conducted, the participants had been using ChatGPT3.5 or ChatGPT4 for over three months.

3.3 Research instruments

Questionnaire. The questionnaire included 23 items, which were categorized into two sections. The first section comprised seven items for participants' demographic information. The second section involved 16 items for measuring constructs regarding the TAM model, such as PEU (4 items), PU (5 items), ATT (4 items), and BI (3 items). These items were adapted from the validated questionnaires developed by Liu and Ma [22]. The items were rated based on a 6-point Likert scale, including two negative options (e.g., strongly disagree and mostly disagree) and four positive choices (slightly agree, mostly agree, and strongly agree).

Interview. Apart from the questionnaire, we conducted semi-structured interviews with 10 participants to explore the participants' perceptions of ChatGPT. The semi-structured interviews allow the participants to develop their ideas and speak more extensively about the issues raised by the researcher [45]. Each interview took about 20 minutes via Google Meet and was recorded. The interview questions focused on the constructs of the TAM model.

3.4 Data collection and analysis

An online questionnaire was sent to the participants via Google Forms. To ensure the reliability of the questionnaire, a pilot test was conducted with 45 students. The result showed that the Cronbach's alpha of the variables was over 0.7 and the related Item-correlations were more than 0.3, suggesting that the questionnaire was valid and reliable [46]. The Cronbach's alpha of the variables is presented in Table 1.

Table 1. The Cronbach's alpha of each variable in the questionnaire

Constructs	Cronbach's Alpha	No of Items
PEU	.916	4
PU	.960	5
ATT	.922	4
BI	.943	3

An online Google Form with the link to the questionnaire was sent to the participants who were interested in participating in the study. Among the 300 responses collected, 263 were qualified for data analysis. The response rate was 87.7%.

In this study, we employed SPSS software version 25 to conduct descriptive analysis for quantitative data, aiming to examine the participants' perceptions of ChatGPT for their homework assistance. Additionally, to test our hypotheses, we utilized SmartPLS 4 to run partial least square structural equation modelling (Pls-Sem). In terms of qualitative data analysis, we followed the steps of theme analysis suggested by [47].

4 FINDINGS

4.1 Results from descriptive analysis and interviews

Regarding the descriptive analysis, Table 2 indicated that the participants had moderately positive perceptions towards using ChatGPT to assist with their homework. Particularly, they rated ChatGPT as easy to use ($M = 4.8251$; $SD = .90420$), which is considered the highest rate, followed by perceived usefulness ($M = 4.7034$; $SD = .92906$) and attitude ($M = 4.5703$; $SD = 1.01928$). These factors significantly affect the participants' behavioral intention to utilize ChatGPT. The participants provided a pretty high average rating for behavioral intention to use, with a mean score of 4.4550. This indicated that the participants were more inclined to use ChatGPT for their learning in the future.

Table 2. Descriptive Statistics of the participants responding to constructs of TAM model

Constructs	N	Min	Max	Mean	SD
PEU	263	1.00	6.00	4.8251	.90420
PU	263	1.40	6.00	4.7034	.92906
ATT	263	1.50	6.00	4.5703	1.01928
BI	263	1.67	6.00	4.4550	1.05910

In terms of the qualitative results, the interview also indicated that the participants had a favorable perception toward the use of ChatGPT for their homework assistance, besides several concerns, which confirms the results from the questionnaire. Particularly, nine out of 10 interviewees claimed that they preferred using ChatGPT because ChatGPT is user friendly and beneficial for their learning. Regarding user-friendliness, 10 out of 10 interviewees claimed that ChatGPT is easy to use. In fact, the word “easy to use” was repeated many times. For example, participant 5 commented that ChatGPT is user-friendly for new users because it functions like messaging with others through a phone. 10 out of 10 claimed that ChatGPT is useful for their learning because it helps them search for information quickly, consolidating their knowledge by asking ChatGPT to create similar exercises so that they can do further practice. Additionally, a participant majoring in IT said ChatGPT can identify errors in his codes for his assignments. Apart from the benefits, they shared their concerns about the negative effect of over reliance on ChatGPT on their critical thinking. One student said, “*When we rely too much on ChatGPT, it will harm our-critical thinking because we do not solve the problems by ourselves. This is a bad habit.*” In addition, they also understood that the information provided by ChatGPT is not up-to-date (participant 9) and were informed that the information provided by this tool could be incorrect. However, these students also added how they do it to have the best answer for themselves. For example,

“I know that sometimes ChatGPT can give the incorrect answer, I check the answer again by using the formulation provided by ChatGPT and my own calculator to calculate the answer to make sure I can have the correct answer.” (Participant 1).

In terms of behavioral intention, 10 out of 10 interviewees stated that they will continue using ChatGPT for their learning in the future because ChatGPT is beneficial for their learning. For example,

“I will continue using ChatGPT because I find it effective for brainstorming ideas and searching for information quickly and efficiently. Additionally, ChatGPT is continually updated to provide more correct answers.” (Participant 10).

To conclude, the participants hold generally favorable perspectives towards using ChatGPT to assist with their homework assignments. They find it easy to use and useful, leading to a positive attitude towards its utilization. While there are some concerns regarding potential issues, such as false information and overreliance, the participants express a willingness to mitigate these effects. Therefore, they are inclined to continue using ChatGPT to aid their learning. In the next section, we will present the results of our hypothesis testing.

4.2 Results from testing of measurement model

Instrument reliability and validity

Table 3. Measurement model parameter estimation

Constructs	Items	Factor Loading	Cronbach's Alpha	Composite Reliability	AVE
PEU	PEU1	0.846	0.873	0.913	0.724
	PEU2	0.855			
	PEU3	0.866			
	PEU4	0.835			
PU	PU1	0.898	0.934	0.950	0.791
	PU2	0.911			
	PU3	0.831			
	PU4	0.894			
	PU5	0.909			
ATT	ATT1	0.883	0.906	0.934	0.780
	ATT2	0.902			
	ATT3	0.880			
	ATT4	0.868			
BI	BI1	0.882	0.898	0.937	0.832
	BI2	0.927			
	BI3	0.926			

Table 3 indicated that the loading factors for the items, the Cronbach's alpha and composite reliability are greater than the accepted threshold of 0.7 [48], which indicated that these variables are internally reliable. Additionally, the convergent validity (AVE) is more than 0.5, suggesting that these variables are considered adequate. Furthermore, the heterotrait-monotrait ratios (HTMT) shown in Table 4 are lower than 0.9 [49], meaning that the constructs' discriminant validity is acceptable.

Table 4. Heterotrait–Monotrait ratio of correlations

Constructs	ATT	BI	PEU	PU
ATT				
BI	0.832			
PEU	0.711	0.633		
PU	0.852	0.791	0.739	

Collinearity analysis: according to Hair et al. [48], when the variance inflation factor (VIF) is lower than 3, collinearity does not happen. As indicated in Table 5, the constructs' VIFs are below 3, revealing no significant collinearity among the indicators.

Table 5. Evaluating collinearity of scale and model fit

	ATT	BI	PEU	PU
ATT		1.000		
BI				
PEU	1.829			1.000
PU	1.829			

Hypothesis testing. Table 6 and Figure 2 demonstrated that PEU ($\beta = 0.673$, $p = 0.000$) has a significant effect on both PU, supporting H1, and ATT, supporting H2. Moreover, PU ($\beta = 0.656$, $p = 0.000$) directly influences ATT, supporting H3, while ATT ($\beta = 0.752$, $p = 0.000$) has a substantial direct impact on BI, thus supporting H4.

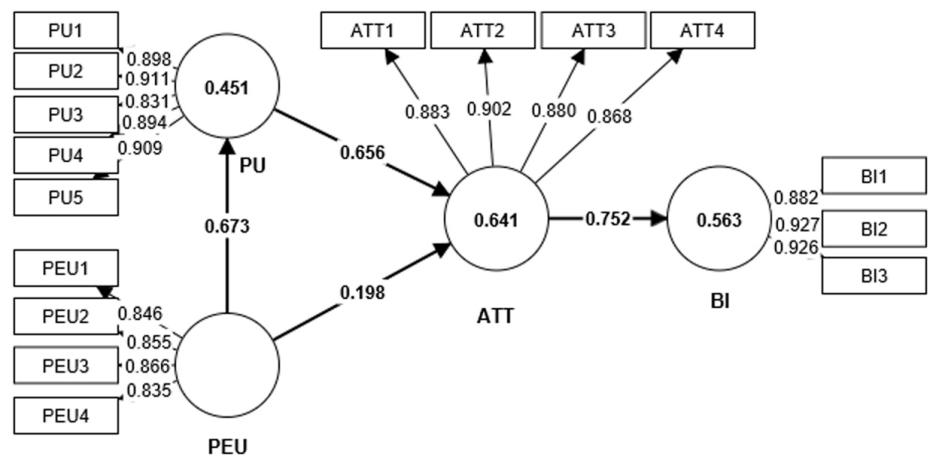


Fig. 2. The results of path coefficients

Table 6. The results of path coefficients

Hypothesis	Relationships	Path Coefficients	P-Value	Results
H1	PEU → PU	0.673	0.000	Supported
H2	PEU → ATT	0.198	0.000	Supported
H3	PU → ATT	0.656	0.000	Supported
H4	ATT → BI	0.752	0.000	Supported

Results of the mediating effects of PU and ATT. To investigate the mediating roles of PU and ATT, we ran a bootstrapping analysis. As illustrated in Table 7, the mediating impact of ATT on the relationship between PU and BI was found to be statistically significant ($\beta = 0.493$, $p = 0.000$). Additionally, statistical significance was found in the mediating effect of ATT in the relationship of PEU and BI ($\beta = 0.149$, $p = 0.000$). Similarly, the mediating effect of PU on the relationship between PEU and ATT was statistically significant ($\beta = 0.442$, $p = 0.000$). Additionally, both PU and ATT exhibited a significant mediating role in the relationship between PEU and BI ($\beta = 0.332$, $p = 0.140$), affirming their mediating influence on the impact of PEU and BI

Table 7. The mediating effects of PU and ATT

Relationships	Path Coefficients	P-Value	Results
PU → ATT → BI	0.493	0.000	Supported
PEU → ATT → BI	0.149	0.012	Supported
PEU → PU → ATT	0.442	0.000	Supported
PEU → PU → ATT → BI	0.332	0.000	Supported

5 DISCUSSION

The findings of the structural equation modeling analyses show the relationship among various factors, which confirms our four hypotheses. Specifically, perceived ease of use directly impacts perceived usefulness, which in turn affects students' attitudes towards the ChatGPT. Additionally, students' attitudes directly impact their intention to use the tool. These findings confirm the original TAM model by Davis [39]. They emphasize the significance of both the usefulness and easy operation of ChatGPT in shaping students' attitudes toward its usage, ultimately influencing their intention to use it. However, our finding contradicts those of Lui and Ma [22], who asserted that perceived ease of use did directly affect students' attitudes. The disparity in findings could potentially stem from differences in participant demographics. While our study primarily focused on students, their participants encompassed individuals from various life stages, such as gap years, undergraduates, doctoral students, and professionals. This disparity in the findings underscores the significance of considering the participant demographics in research on technology acceptance and usage. Further research is essential to conduct studies in different demographic contexts, enabling a more comprehensive understanding of how these factors influence technology use across diverse populations.

The findings from the descriptive statistics and the interviews show that the participants perceived ChatGPT as useful and easy to use, and they held a positive attitude toward its usage. Additionally, they express an intention to continue using the tools for their learning. Our findings align with previous studies by Elkhodr et al. [18], Lui and Ma [19], and Rababah [20], who found that ChatGPT is useful and easy to use and fosters a positive attitude among students. At the same time, our findings also confirm students' willingness to use ChatGPT for their learning, as indicated by Elkhodr et al. [18], Lui and Ma [19], and Vo and Nguyen [21]. However, our findings differ from those of Vo and Nguyen [24], who reported that students have neutral perceptions of ChatGPT's usefulness for learning. It is possible that the disparity between our study and theirs stems from differences in the purpose of using

the tool. While our participants used ChatGPT for tasks such as explaining information, which do not require a significant amount of time, Vo and Nguyen's participants aimed to improve language skills, which typically require more extended periods to achieve. This difference in purpose may have influenced participants' perceptions of the tool's usefulness.

Although our participants admit the benefits of ChatGPT, they are also concerned about the quality of the content generated by ChatGPT, which is similar to Kohnke et al. [14] and Ngo [15]. Additionally, these participants were also worried about the negative effects of relying too much on this technology, which can harm students' critical thinking. This concern aligns with the findings by Ibrahim [3], and Kanabar [17].

Our findings in terms of students intentions to use ChatGPT contradict those of Singh et al. [25], who found that most students did not frequently use it for learning purposes due to a lack of trust in its benefits. These students perceived the tool as new and felt they needed specific guidance to use it effectively. The discrepancy between our findings and theirs may be attributed to the timing of our studies. It is possible that our participants had a longer experience with ChatGPT compared to those in the study by Kanabar [20] and Singh et al. [25], allowing them more time to recognize the benefits of the tool.

6 IMPLICATIONS

Our findings offer insights for educators and policymakers regarding students' positive views towards using ChatGPT for learning amidst the controversies surrounding its usage. While ChatGPT might present certain drawbacks for students' learning, optimizing the benefits of this tool requires the provision of specific guidelines for its effective and proper use. Furthermore, it is also advisable that teachers encourage their students to employ ChatGPT to personalize their learning outside the classroom, as suggested by Lui and Ma [22], to maximize the benefits of this innovative learning tool. However, it is vital for teachers to receive adequate training to effectively support student learning with ChatGPT.

7 CONCLUSION

Drawing from the TAM model, the study investigated students' perceptions of using ChatGPT to aid in completing their homework assignments. Our findings indicate that students hold positive perceptions of using ChatGPT for assisting with their homework in terms of ease of use, usefulness, attitude, and behavioral intention. The factors interact in a way that is consistent with the TAM model proposed by Davis [39], providing evidence of students' acceptance of ChatGPT as a tool that can support their academic assignments.

This study has several limitations. Being a cross-sectional study, the generalizability of the findings to other contexts might be limited. It is recommended that future studies utilize longitudinal research designs to enhance the generalizability of the findings. Furthermore, despite our efforts to clarify the purpose of the study to optimize the quality of information from participants, the findings are based on self-reported data, which may be subject to biases related to students' memory and social desirability [50]. Further research employing diverse methods is needed to mitigate such biases.

8 REFERENCES

- [1] H. Cooper, "Synthesis of research on homework," *Educational Leadership*, vol. 47, no. 3, pp. 85–91, 1989.
- [2] P. Songsirisak and J. Jitpranee, "Impact of homework assignment on students' learning," *Journal of Education Naresuan University*, vol. 21, no. 2, pp. 1–19, 2019.
- [3] H. Ibrahim, R. Asim, F. Zaffar, T. Rahwan, and Y. Zaki, "Rethinking homework in the age of artificial intelligence," *IEEE Intelligent Systems*, vol. 38, no. 2, pp. 24–27, 2023. <https://doi.org/10.1109/MIS.2023.3255599>
- [4] A. Sami, I. Uddin, N. Fayyaz, M. Bilal, M. Shahid, and I. Ali, "Getting to know ChatGPT: An introduction to implementation and working," in *Proc. 1st International Conference on Computing Technologies, Tools and Applications (ICTAPP-23)*, 2023, pp. 273–277.
- [5] J. K. M. Ali, M. A. A. Shamsan, T. A. Hezam, and A. A. Mohammed, "Impact of ChatGPT on learning motivation: Teachers and students' voices," *Journal of English Studies in Arabia Felix*, vol. 2, no. 1, pp. 41–49, 2023. <https://doi.org/10.56540/jesaf.v2i1.51>
- [6] M. Hmoud, H. Swaity, N. Hamad, O. Karram, and W. Daher, "Higher education students' task motivation in the generative artificial intelligence context: The case of ChatGPT," *Information*, vol. 15, no. 1, pp. 1–18, 2024. <https://doi.org/10.3390/info15010033>
- [7] B. Liu, "Chinese university students' attitudes and perceptions in learning English using ChatGPT," *International Journal of Education and Humanities (IJEH)*, vol. 3, no. 2, pp. 132–140, 2023. <https://doi.org/10.58557/ijeh.v3i2.145>
- [8] H. Yildiz Durak, "Conversational agent-based guidance: Examining the effect of chatbot usage frequency and satisfaction on visual design self-efficacy, engagement, satisfaction, and learner autonomy," *Educ. Inf. Technol.*, vol. 28, pp. 471–488, 2023. <https://doi.org/10.1007/s10639-022-11149-7>
- [9] H. Yilmaz, S. Maxutov, A. Baitekoy, and N. Balta, "Student attitudes towards Chat GPT: A technology acceptance model survey," *International Educational Review*, vol. 1, no. 1, pp. 57–83, 2023. <https://doi.org/10.58693/ier.114>
- [10] S. Athanassopoulos, P. Manoli, M. Gouvi, K. Lavidas, and V. Komis, "The use of ChatGPT as a learning tool to improve foreign language writing in a multilingual and multicultural classroom," *Advances in Mobile Learning Educational Research*, vol. 3, no. 2, pp. 818–824, 2023. <https://doi.org/10.25082/AMLER.2023.02.009>
- [11] M. Firat, "What ChatGPT means for universities: Perceptions of scholars and students," *Journal of Applied Learning and Teaching*, vol. 6, no. 1, pp. 1–7, 2023. <https://doi.org/10.37074/jalt.2023.6.1.22>
- [12] M. R. King and ChatGPT, "A conversation on artificial intelligence, chatbots, and plagiarism in higher education," *Cellular and Molecular Bioengineering*, vol. 16, no. 1, pp. 1–2, 2023. <https://doi.org/10.1007/s12195-022-00754-8>
- [13] C. Cassidy, "Lecturers detects bot-use in one fifth of assessments as concerns mount over AI in exams," *The Guardian*, 2023.
- [14] C. K. Y. Chan and W. Hu, "Students' voices on generative AI: Perceptions, benefits, and challenges in higher education." *International Journal of Educational Technology in Higher Education*, vol. 20, 2023. <https://doi.org/10.1186/s41239-023-00411-8>
- [15] L. Kohnke, B. L. Moorhouse, and D. Zou, "ChatGPT for language teaching and learning," *RELC Journal*, vol. 54, no. 2, pp. 537–550, 2023. <https://doi.org/10.1177/00336882231162868>
- [16] T. T. A. Ngo, "The perception by university students of the use of ChatGPT in education," *International Journal of Emerging Technologies in Learning*, vol. 18, no. 17, pp. 4–19, 2023. <https://doi.org/10.3991/ijet.v18i17.39019>

- [17] A. Shoufan, "Exploring students' perceptions of ChatGPT: Thematic analysis and follow-up survey," *IEEE Access*, vol. 11, pp. 38805–38817, 2023. <https://doi.org/10.1109/ACCESS.2023.3268224>
- [18] Z. H. İpek, A. I. C. Gözüm, S. Papadakis, and M. Kallogiannakis, "Educational applications of the ChatGPT AI system: A systematic review research," *Educational Process: International Journal*, vol. 12, no. 3, pp. 26–55, 2023. <https://doi.org/10.22521/edupij.2023.123.2>
- [19] A. D. Samala, X. Zhai, K. Aoki, L. Bojić, and S. Zikic, "An in-depth review of ChatGPT's pros and cons for learning and teaching in education," *International Journal of Interactive Mobile Technologies (ijIM)*, vol. 18, no. 2, pp. 96–117, 2024. <https://doi.org/10.3991/ijim.v18i02.46509>
- [20] V. Kanabar, "An empirical study of student perceptions when using ChatGPT in academic assignments," in *Computer Science and Education in Computer Science (CSECS 2023)*, in Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, T. Zlateva and G. Tuparov, Eds., Springer, Cham, vol. 514, 2023, pp. 385–398. https://doi.org/10.1007/978-3-031-44668-9_30
- [21] M. Elkhodr, E. Gide, R. Wu, and O. Darwish, "ICT students' perceptions towards ChatGPT: An experimental reflective lab analysis," *STEM Education*, vol. 3, no. 2, pp. 70–88, 2023. <https://doi.org/10.3934/steme.2023006>
- [22] G. Liu and C. Ma, "Measuring EFL learners' use of ChatGPT in informal digital learning of English based on the technology acceptance model," *Innovation in Language Learning and Teaching*, vol. 18, no. 2, pp. 125–138, 2023. <https://doi.org/10.1080/17501229.2023.2240316>
- [23] L. M. Rababah, M. A. Rababah, and N. N. Al-Khawaldeh, "Graduate students' ChatGPT experience and perspectives during thesis writing," *International Journal of Engineering Pedagogy (ijEP)*, vol. 14, no. 3, pp. 22–35, 2024. <https://doi.org/10.3991/ijep.v14i3.48395>
- [24] T. K. A. Vo and H. Nguyen, "Generative artificial intelligence and ChatGPT in language learning: EFL students' perceptions of technology acceptance," *Journal of University Teaching and Learning Practice*, vol. 21, no. 6, 2024. <https://doi.org/10.53761/fr1rkj58>
- [25] H. Singh, M.-H. Tayarani-Najaran, and M. Yaqoob, "Exploring computer science students' perception of ChatGPT in higher education: A descriptive and correlation study," *Education Sciences*, vol. 13, no. 9, p. 924, 2023. <https://doi.org/10.3390/educsci13090924>
- [26] V. Venkatesh, M. G. Morris, G. B. Davis, and F. D. Davis, "User acceptance of information technology: Toward a unified view," *MIS Quarterly*, vol. 27, no. 3, pp. 425–478, 2003. <https://doi.org/10.2307/30036540>
- [27] D. Marikyan and S. Papagiannidis, "Technology acceptance model: A review," in *TheoryHub Book*, S. Papagiannidis, Ed., Newcastle upon Tyne, 2022, pp. 162–180. [Online]. Available: <https://open.ncl.ac.uk/theory-library/TheoryHubBook.pdf>. ISBN: 9781739604400.
- [28] B. Anders, *ChatGPT AI in Education: What it is and How to Use it in the Classroom*. Emporia, KS: Sovorel Publishing, 2023.
- [29] T. Karakose, M. Demirkol, N. Aslan, H. Köse, and R. Yirci, "A conversation with ChatGPT about the impact of the COVID-19 pandemic on education: Comparative review based on human–AI collaboration," *International Journal*, vol. 12, no. 3, pp. 7–25, 2023. <https://doi.org/10.22521/edupij.2023.123.1>
- [30] J. Jeon and S. Lee, "Large language models in education: A focus on the complementary relationship between human teachers and ChatGPT," *Educ Inf Technol*, vol. 28, pp. 15873–15892, 2023. <https://doi.org/10.1007/s10639-023-11834-1>
- [31] M. Urban *et al.*, "Can ChatGPT improve creative problem-solving performance in university students: An experimental study?" *Computer & Education*, vol. 215, p. 105031, 2023. <https://doi.org/10.1016/j.compedu.2024.105031>

- [32] R. Yilmaz and F. G. K. Yilmaz, "The effect of generative artificial intelligence (AI)-based tool use on students' computational thinking skills, programming self-efficacy and motivation," *Computers and Education: Artificial Intelligence*, vol. 4, p. 100147, 2023. <https://doi.org/10.1016/j.caeai.2023.100147>
- [33] C. Song and Y. Song, "Enhancing academic writing skills and motivation: Assessing the efficacy of ChatGPT in AI-assisted language learning for EFL students," *Front. Psychol.*, vol. 14, 2023. <https://doi.org/10.3389/fpsyg.2023.1260843>
- [34] J. S. Barrot, "Using ChatGPT for second language writing: Pitfalls and potentials," *Assessing Writing*, vol. 57, p. 100745, 2023. <https://doi.org/10.1016/j.asw.2023.100745>
- [35] F. Fauzi, L. Tuhuteru, F. Sampe, A. M. A. Ausat, and H. R. Hatta, "Analyzing the role of ChatGPT in improving student productivity in higher education," *Journal on Education*, vol. 5, no. 4, pp. 14886–14891, 2023. <https://doi.org/10.31004/joe.v5i4.2563>
- [36] J. Rudolph, S. Tan, and S. Tan, "ChatGPT: Bullshit spewer or the end of traditional assessments in higher education?" *Journal of Applied Learning and Teaching*, vol. 6, no. 1, pp. 342–363, 2023. <https://doi.org/10.37074/jalt.2023.6.1.9>
- [37] M. Sullivan, A. Kelly, and P. McLaughlan, "ChatGPT in higher education: Considerations for academic integrity and student learning," *Journal of Applied Learning and Teaching*, vol. 6, no. 1, pp. 31–40, 2023. <https://doi.org/10.37074/jalt.2023.6.1.17>
- [38] R. Baskara, "Exploring the implications of ChatGPT for language learning in higher education.," *Indonesian Journal of English Language Teaching and Applied Linguistics*, vol. 7, no. 2, pp. 343–358, 2023.
- [39] F. D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS Quarterly*, vol. 13, no. 3, pp. 319–340, 1989. <https://doi.org/10.2307/249008>
- [40] S. F. Alhashmi, S. A. Salloum, and C. Mhamdi, "Implementing artificial intelligence in the United Arab Emirates healthcare sector: An extended technology acceptance model," *International Journal of Information Technology and Language Studies*, vol. 3, no. 3, pp. 27–42, 2019.
- [41] S. Mohr and R. Kühn, "Acceptance of artificial intelligence in German agriculture: An application of the technology acceptance model and the theory of planned behavior," *Precision Agric.*, vol. 22, pp. 1816–1844, 2021. <https://doi.org/10.1007/s11119-021-09814-x>
- [42] G. Maheshwari, "Factors influencing students' intention to adopt and use ChatGPT in higher education: A study in the Vietnamese context," *Educ. Inf. Technol.*, 2023. <https://doi.org/10.1007/s10639-023-12333-z>
- [43] J. W. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Thousand Oaks, California, The US: Sage, 2009.
- [44] L. R. Gay, G. E. Mills, and P. W. Airasian, *Educational Research: Competencies for Analysis and Applications*. German: Pearson Higher Ed, 2012.
- [45] M. Denscombe, *The Good Research Guide: For Small-Scale Social Research Projects*, 4th ed. Buckingham: Open University Press, 2010.
- [46] J. D. Creswell and J. W. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Thousand Oaks: Sage Publications, 2018.
- [47] V. Braun and V. Clarke, "Using thematic analysis in psychology," *Qualitative Research in Psychology*, vol. 3, no. 2, pp. 77–101, 2006. <https://doi.org/10.1191/1478088706qp063oa>
- [48] J. F. Hair, W. C. Black, B. J. Babin, R. E. Anderson, and R. L. Tatham, *Multivariate Data Analysis*, 8th ed. The UK: Cengage, 2019.
- [49] J. Henseler, C. M. Ringle, and M. Sarstedt, "A new criterion for assessing discriminant validity in variance-based structural equation modeling," *Journal of the Academy of Marketing Science*, vol. 43, pp. 115–135, 2015. <https://doi.org/10.1007/s11747-014-0403-8>

- [50] R. Pekruna, “Commentary: Self-report is indispensable to assess students’ learning,” *Frontline Learning Research*, vol. 8, no. 3, pp. 185–193, 2020. <https://doi.org/10.14786/flr.v8i3.637>

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