

Theory of planned behavior: an analysis of ChatGPT usage behavior among students at Makassar State University

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Abstract: *This study aims to analyze students' behavioral tendencies in using ChatGPT amid its emerging benefits and challenges, through the lens of the Theory of Planned Behavior. The research employed a quantitative descriptive method, involving 729 students from the Faculty of Education Sciences. Data were collected through surveys and interviews, and analyzed using SPSS. The findings, which refer to the three core variables of attitude toward the behavior (ATB), subjective norms (SN), and perceived behavioral control (PBC), show that the majority of respondents (70,6%) had a high positive attitude toward using ChatGPT for academic purposes. Most students (66,0%) reported moderate subjective norms, while perceived behavioral control was high (70,1%). These results indicate that students recognize the benefits of ChatGPT and feel confident in regulating its use. Consequently, their intention to use the tool is more strongly influenced by personal attitudes and self-regulation than by social pressure. The findings also highlight students' ability to adapt to ChatGPT in academic contexts, although institutional guidance remains essential to ensure ethical and integrity-driven usage across the academic community.*

Keywords: TPB; Chat GPT behavior.

Abstrak: Penelitian ini bertujuan menganalisis perilaku penggunaan ChatGPT pada mahasiswa di era manfaat dan tantangan teknologi melalui Theory of Planned Behavior. Metode penelitian menggunakan pendekatan kuantitatif deskriptif dengan populasi mahasiswa Fakultas Ilmu Pendidikan dan sampel 729 responden. Data dikumpulkan melalui survei dan wawancara, kemudian dianalisis menggunakan SPSS. Hasil analisis tiga variabel utama attitude toward behavior (ATB), subjective norms (SN), dan perceived behavioral control (PBC) menunjukkan bahwa mayoritas mahasiswa memiliki sikap positif tinggi terhadap penggunaan ChatGPT (70,6%). Sebagian besar responden menilai norma sosial berada pada kategori sedang (66,0%), sementara persepsi kontrol perilaku tergolong tinggi (70,1%). Temuan ini mengindikasikan bahwa manfaat ChatGPT dan kemampuan mahasiswa mengendalikan penggunaannya lebih memengaruhi niat penggunaan dibandingkan norma sosial. Secara keseluruhan, mahasiswa mampu beradaptasi dalam penggunaan ChatGPT untuk tujuan akademik. Namun, diperlukan panduan etis yang lebih jelas agar penggunaan teknologi ini tetap selaras dengan integritas akademik perguruan tinggi.

Kata Kunci: TPB; perilaku chat GPT.

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INTRODUCTION

Artificial intelligence (AI) technology is a form of innovation in increasingly sophisticated technological development, which works in manner similar to human brain. One rapidly developing AI product is ChatGPT (generative pre-trained transformer), which was developed using deep learning methods. This technology has the ability to understand human language in various forms and respond quickly to questions or requests in text form (Ramadhan et al., 2023). With its capabilities, ChatGPT has penetrated various areas of life, including higher education, especially among students who use it to help complete various academic assignments (Putra et al., 2023)

ChatGPT can help students complete their academic assignments more quickly, making the learning process more effective and efficient. The use of ChatGPT in personalized and interactive learning has the potential for formative assessment, which can support the learning process, especially through continuous feedback (Baidoo-Anu & Ansah, 2023). However, despite these advantages, the use of ChatGPT among students also presents challenges and concerns within academic community. These include the potential for dependency, violations of academic ethics or scientific writing standards, issues related to plagiarism, and a decline in critical and creative thinking skills (Luthfiah et al., 2024; Supriyadi, 2024; Valova et al., 2024).

Moreover, ChatGPT also has the potential to affect students' emotional intelligence (Jammeli et al., 2024). For example, its usage can lead to risks of misuse and various related problems, even though its integration offers various conveniences and benefits in education. Although many students are aware of these issues, there remains a noticeable gap in its actual use. A study conducted across major American universities (Hou et al., 2025) showed that 34,1 % of students had never used ChatGPT in 2023, but by 2024, this number had decreased sharply to 6,3%, indicating that ChatGPT had rapidly become a common source of academic assistance. Similarly, findings from Rizki et al., (2024) reveal that most students are aware of and actively use ChatGPT in their academic activities. Therefore, it is undeniable that ChatGPT has become one of the most widely adopted AI products among students. Its popularity is further reflected in the fact that it

reached one million users within just five working days of its launch, surpassing the early growth of major social media platforms (Biswas in Firat, 2023).

In general, students have been using ChatGPT, including those at Makassar State University, where many are prospective educators who play a strategic role in integrating technology into future learning environments. As future teachers, they are expected to adapt to technological advancements, including AI-based tools such as ChatGPT, to better support upcoming generations. The widespread use of ChatGPT is not only observed nationally but also aligns with global trends in higher education.

However, this phenomenon is closely linked to various psychological and social factors that motivate or influence such behavior. The theory that provides a strong conceptual framework for explaining factors underlying technology integration among students is the Theory of Planned Behavior (TPB). Ajzen (1991) emphasizes that the intention to perform an action is the primary predictor of actual behavior, which is shaped by three components: attitude toward the behavior, subjective norms, and perceived behavioral control (Ahadzadeh et al., 2024; Duong, 2024). These three components explain how students form their decisions regarding the use of ChatGPT.

In studies on technology integration in education, several theoretical frameworks have been used to explain the factors that influence the acceptance and use of technology among educators and students. One of the most widely applied is the Technology Acceptance Model (TAM), which emphasizes perceived usefulness and perceived ease of use as the primary predictors of an individual's intention to use a technology (Alzahrani, 2023). However, because the educational context is also influenced by social norms, perceived behavioral control, and subjective attitudes, the Theory of Planned Behavior (TPB), which includes the variables of attitude, subjective norms, and perceived behavioral control, is often considered a more comprehensive framework (Ma et al., 2025).

Research by M. Hou et al., (2022) and Yusop et al., (2021) showed that TPB has been proven to be a valid model for explaining technology integration in education, which became the basis for selecting it in this study as the main framework for examining technology-integration behavior in the educational context.

Therefore, this study chose TPB as the main model because various recent empirical studies show that it not only considers individual perceptions, as in TAM, but also takes into account social factors and internal control that are relevant in education. Previous studies have confirmed this theory, including Latifah (2023) and Yusop et al., (2021), who stated that the TPB model is valid in explaining factors related to technology integration in education.

Therefore, the researchers analyzed the factors that cause the phenomenon of ChatGPT use among FIP UNM students using TPB, which is applied to examine the factors that influence students, especially those in the Faculty of Education, in using ChatGPT in academic process. This is because students are not only users of technology but also agents of change in education, introducing artificial intelligence (AI) practices that will support the future of education.

METHODS

This study employed a quantitative approach using surveys and interviews, aiming to examine ChatGPT utilization behavior among students based on the Theory of Planned Behavior (TPB). This framework focuses on the three main variables: attitude toward the behavior, subjective norm, and perceived behavioral control, which are assumed to influence students' intentions and actual behavior. The research subjects were active students in the 2024-2025 academic year at the Faculty of Education (FIP) of Makassar State

University who used ChatGPT in their academic activities. The sample consisted of 729 students obtained through purposive sampling.

The research instrument was a questionnaire based on the Theory of Planned Behavior adapted from Intan Nurmaisya (2024), consisting of 21 items that had undergone validation. The questionnaire used a 1–4 Likert scale. Data were collected by distributing a Google Form link after providing an in-person explanation of the completion instructions. In addition to the survey, data were also collected through direct interviews with students. The data analysis technique used quantitative descriptive analysis to describe the trends of the three TPB component variables. ChatGPT usage among students was analyzed based on the average, frequency distribution, and percentage for each variable indicator.

RESULTS AND DISCUSSION

The results of this study describe the tendency of ChatGPT usage behavior among students based on the Theory of Planned Behavior, which includes three main components: attitude toward the behavior, subjective norms, and perceived behavioral control. The study involved 729 respondents. Each variable was measured using a predetermined scale, and the score calculation for determining the categories followed the categorization guidelines proposed by Azwar, which divide the categories into five levels (Saparudin & Effendi, 2020), as shown in the table below.

Table 1.1 Categorization Guideline

No.	Score Interval	Category
1	$X < M - 1SD$	Low
2	$M - 1SD \leq X < M + 1SD$	Medium
3	$M + 1SD \leq X$	High

Based on the table above, a descriptive analysis was then conducted to explain or provide an overview of each variable category obtained from the collected data. However, this study limited the interpretation to three categories, i.e., low, medium, and high, so that differences in the data could be more easily understood in general terms.

1. Attitude Toward the Behavior Results

The analysis results using SPSS are presented in the following table, which shows the frequency distribution of students' ChatGPT usage based on the Attitude Toward the Behavior variable

Table 1.2 Results of Descriptive Analysis

ATT Category		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	6	8	8	8
	Medium	208	28,5	28,5	29,4
	High	515	70,6	70,6	100,0
	Total	729	100,0	100,0	

Based on the results of the analysis of ChatGPT usage behavior using the Theory of Planned Behavior, particularly regarding Attitudes Toward the Behavior or students' positive attitudes toward using ChatGPT, the findings show that the majority of students in the Faculty of Education at Makassar State University fall into the high category (70,6%). Meanwhile, 28,5% fall into the medium category, and only 0,8% fall into the low

category. These results indicate that students generally have a positive attitude toward using ChatGPT and are inclined to utilize it in academic activities because they perceive it as beneficial.

2. Subjective Norm Results

The results of the subjective norm analysis are as follows.

Table 1.3 Results of Descriptive Analysis of Subjective Norm

SN Category		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	14	1,9	1,9	1,9
	Medium	481	66,0	66,0	67,9
	High	234	32,1	32,1	100,0
	Total	729	100,0	100,0	

The table above presents students' ChatGPT usage behavior in terms of Subjective Norm, which refers to the social influences surrounding their use of ChatGPT. The results show that most students (66%) fall into the moderate category, 32,1% are in the high

category, and only 1,9% fall into the low category. These findings indicate that social views, such as those of peers, lecturers, and institutions, do not exert a strong influence on students' decisions to use ChatGPT.

3. Perceived Control Behavior Results

Table 1.4 Results of Descriptive Analysis of Perceived Control Behavior

PCB Category		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	4	5	5	5
	Medium	214	29,4	29,4	29,9
	High	511	70,1	70,1	100,0
	Total	729	100,0	100,0	

Perceived Behavioral Control (PBC) based on the analysis results in the table above shows that 70,1% of students feel they have high control, 29,4% fall into the moderate category, and only 0,5% are in the low category. This indicates that students believe they are able to use ChatGPT within appropriate limits without becoming overly dependent on it.

The discussion of the research analysis results is as follows.

1. Students' Attitude Toward the Behavior in the Use of ChatGPT

The results show that the majority of FIP UNM students have a highly positive attitude toward the use of ChatGPT. These findings indicate that students hold positive beliefs about the outcomes of using ChatGPT (behavioral beliefs), such as helping them complete academic assignments and assisting in solving other academic challenges.

The results of this study are in line with Kasneci et al., (2023), who state that experience and understanding of technology influence users' perspectives on ChatGPT. Another study by Yi & Choi, (2023) also emphasizes that prior experience with technology is a direct factor that drives the intention to accept AI.

Theoretically, Ajzen's TPB (1991) explains that attitudes are formed from behavioral beliefs and the evaluation of those beliefs. The predominantly positive attitudes among students likely reflect their belief that ChatGPT provides desirable outcomes, such as speed, practicality, and improved writing quality. Therefore, the high percentage of positive attitudes indicates that perceived usefulness or benefits, along with affective aspects, such as emotional comfort when using ChatGPT, shape their assessments and strengthen their tendency to integrate ChatGPT into their academic practices (Ajzen, 1991).

Further research indicates that general attitudes significantly influence the intention to use AI continuously. Findings by Tran et al., (2024) show that a positive attitude has a significant effect on students' intention to use ChatGPT in foreign language learning. In other words, since most students believe in the benefits of ChatGPT, this tendency strengthens their intention to utilize ChatGPT in the learning process.

Therefore, experience, understanding, and attitude become key factors shaping students' interest in using ChatGPT in the academic

process at FIP UNM. Positive experiences make them more confident in using it for academic purposes, as described in the Technology Acceptance Model (TAM), which aligns with components of TPB. Through direct experience, students develop perceived ease of use and perceived usefulness (Nagy & Hajdú, 2021),

2. Students' Subjective Norms in the Use of ChatGPT

The analysis shows that most students fall into the moderate category for the subjective norm variable, which reflects the influence of peers, lecturers, and institutions on the use of ChatGPT. These findings indicate that external social influences do not strongly and consistently encourage the use of ChatGPT among students in the Faculty of Education. In the Theory of Planned Behavior (TPB), the subjective norm variable represents an individual's perception of whether "important others" support or do not support a particular behavior (Ajzen, 1991).

Therefore, the predominance of the moderate category suggests that social pressures related to ChatGPT use are present but not dominant. These results align with Ursavaş et al., (2025) who found that subjective norms have limited influence on ChatGPT usage behavior, and with Abdalla (2024), who stated that social influence has only a small effect on the use of ChatGPT.

Interviews with several UNM FIP students revealed that some lecturers allow the use of ChatGPT for assignments, while others warn students to be careful because its use can be considered plagiarism. Similarly, some students use ChatGPT for various types of assignments, whereas others are afraid of violating academic rules. As a result, there is uncertainty and confusion about when and how to use it appropriately.

This situation confirms the presence of differing social influences within the FIP UNM student community regarding ChatGPT usage. The findings of Fathony et al. (2024) also indicate that students generally recognize the convenience and efficiency provided by ChatGPT in academic activities, but at the same time, they face a dilemma due to the risk of dependency that may weaken their motivation and critical thinking skills.

Thus, it can be concluded that the subjective norm among FIP students in the use of ChatGPT is moderate. This occurs because

the social influences surrounding its use are inconsistent, leading students' behavioral intentions to be shaped more by personal attitudes and perceptions of self-control than by external social pressure.

3. Perceived Behavioral Control in the Use of ChatGPT

The results indicate that perceived behavioral control (PBC) is high among the majority of students, suggesting that they feel capable of managing their use of ChatGPT within reasonable limits. Students are confident that they can integrate the tool into their academic activities without becoming overly dependent on it. Within the framework of the Theory of Planned Behavior (TPB) proposed by Ajzen (1991), PBC reflects the extent to which individuals believe they can perform a behavior and overcome any obstacles that may arise. In this context, FIP UNM students demonstrate a strong sense of control over how and to what extent they use ChatGPT to support their academic needs.

This high level of perceived control also suggests that students not only feel capable of using ChatGPT to assist with their academic writing tasks, but are also able to limit its use to avoid excessive dependence on the system. In line with the findings of Prayoga and Wakhid (2024), strong self-control plays an important role in reducing the risk of developing addictive behavior toward ChatGPT usage that can interfere with academic performance.

However, a high level of PBC does not automatically ensure ethical behavior in the use of ChatGPT. As explained by Curtis et al., (2018), having personal control alone does not guarantee ethical actions, as behavior can still be influenced by other factors. Within the TPB framework, PBC must be understood alongside the other two components, which are attitudes toward the behavior and subjective norms. Additionally, the presence of students who fall into moderate and low PBC categories indicates variations in their ability to self-regulate ChatGPT usage.

Therefore, it is important for educational institutions to establish clear guidelines and policies regarding the use of AI to ensure that students' perceived control is balanced with ethical responsibility. Interview results indicate that students feel confident in using ChatGPT because it is easily accessible and user-friendly. However, they also expressed caution due to the

absence of explicit regulations, requiring them to investigate thoroughly.

This finding reinforces that while students perceive themselves as having strong control over their use of ChatGPT, they also recognize the potential for misuse if such control is not supported by ethical awareness. High Perceived Behavioral Control may reflect two key aspects: students' technical confidence in utilizing ChatGPT effectively and their belief that they can regulate its use, such as assessing the validity of results, modifying answers, and maintaining the originality of their work. These beliefs encourage the intention to use the tool in a positive and responsible manner. Nonetheless, high PBC alone does not guarantee ethical behavior, particularly if social norms and academic policies remain unclear or weak.

CONCLUSION AND SUGGESTIONS

Based on the results and discussion, it can be concluded that: 1) Attitude Toward the Behavior shows a positive attitude toward the use of ChatGPT, with the majority falling into the high category. This indicates that FIP UNM students use ChatGPT because of their positive experiences with its benefits in supporting academic tasks. 2) Subjective Norms are mostly in the moderate category, suggesting that others' support for the use of ChatGPT is still limited. These forms of support from peers, lecturers, and the institution are still inadequate, particularly due to the lack of clear and comprehensive guidelines on responsible and effective use. 3) Perceived Behavioral Control among FIP UNM students in using ChatGPT generally falls into the high category. This implies that students feel confident in their ability to manage their use of ChatGPT appropriately. However, a high level of perceived control alone does not necessarily ensure ethical usage.

The recommendation from this study is that there is a need to develop effective guidelines for the use of AI technology, including ChatGPT. In addition, there is a need to strengthen academic ethical awareness in technology use in order to increase confidence in utilizing AI as a medium to support academic quality improvement and adaptation to continuously evolving technological advancements.

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