

Anxiety and Intensity of ChatGPT Usage among University Students

Lia Ayu Ningrum^{1*}, Joko Kuncoro²

Universitas Islam Sultan Agung, Semarang, Indonesia^{1,2}

liyaayula14@gmail.com^{1*}, jokokuncoro@unissula.ac.id²



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Abstract

Purpose: This study aimed to examine whether anxiety levels are significantly related to the intensity of ChatGPT usage among university students.

Research Methodology: This quantitative correlational study surveyed 100 active students from various universities in Indonesia, selected through non-probability accidental sampling using online questionnaires. Anxiety was measured using the Depression Anxiety Stress Scales-42 (DASS-42), and ChatGPT usage intensity was measured using the ChatGPT Usage Scale (CGUS). Data were analyzed using Pearson's correlation test.

Results: Descriptive results showed high anxiety (58%) and high ChatGPT usage intensity (84%). However, Pearson correlation and regression tests indicated no significant relationship between anxiety, depression, stress, and ChatGPT usage intensity ($p > 0.05$).

Limitations: This study examined anxiety as a single psychological variable without mapping other potential driving factors.

Conclusions: Within the limits of a small, non-probability sample, no statistically significant relationship was found between anxiety and ChatGPT usage intensity; this should be read as an absence of evidence rather than proof of no relationship between the two.

Contributions: This study strengthens the Technology Acceptance Model (TAM) literature by suggesting that perceived usefulness and ease of use remain the primary determinants of ChatGPT adoption in higher education, regardless of users' psychological vulnerabilities.

Keywords: Anxiety, ChatGPT, Psychological Disorders, University Students

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1. Introduction

Modern society is increasingly open to mental health issues, marking a public paradigm shift that recognizes psychological well-being as being of equal importance to physical health (Brosschot, Verkuil, & Thayer, 2016; Nochaiwong, Ruengorn, Thavorn, Hutton, Awiphan, Phosuya, Ruanta, Wongpakaran, & Wongpakaran, 2021). In the context of higher education, this issue becomes highly important because individuals are in a vulnerable phase. According to Cheng and McCarthy (2018), anxiety is closely related to an individual's psychological condition, characterized by symptoms such as inner tension, intense worry, and anticipatory responses to situations perceived as a threat. Furthermore, anxiety can occur and be experienced by any individual in various situations when they

face certain conditions or events within the dynamics of their lives ([Bandelow, Michaelis, & Wedekind, 2022](#)). This psychological condition is commonly marked by the emergence of excessive and disproportionate worry about something considered bad or threatening to self-stability ([Thibaut, 2017](#)).

Individuals, especially university students, often show various clinical and somatic symptoms when experiencing anxiety ([Aggarwal, Wright, Morgan, Patton, & Reavley, 2023](#)). These symptoms include a faster heartbeat, sweating, difficulty concentrating, persistent feelings of restlessness, feeling afraid without a clear cause, being easily angered or irritable, difficulty sleeping (insomnia), and a tendency to easily feel physically or mentally fatigued ([Bandelow et al., 2022](#); [Cheng and McCarthy, 2018](#)). Demographically, university students are highly vulnerable and tend to experience anxiety easily due to the accumulation of various external stressors ([Barbayannis, Bandari, Zheng, Baquerizo, Pecor, & Ming, 2022](#)). They continuously face the reality of high academic demands in higher education, pressure from assignment deadlines, the burden of working on a thesis, and a competitive academic climate ([Ganesan, Talwar, Fauzan, & Oon, 2018](#)). In addition, students are often burdened by worries about an uncertain future, family or personal economic conditions, and various problem dynamics in the family or social environment ([Liu, Ping, & Gao, 2019](#)). These multidimensional demands can cumulatively become a source of pressure (stressors) closely related to the emergence of anxiety among students ([Morales-Rodríguez, Espigares-López, Brown, & Pérez-Mármol, 2020](#)). Therefore, student anxiety is a crucial psychological condition that needs attention, especially in institutional efforts to help students face various demands during the higher education process.

Students begin to form coping mechanisms to face these pressures to adapt and utilize rapid technological developments. One of the most significant technological disruptions today is the presence of Artificial Intelligence (AI), which is a cutting-edge innovation in the field of artificial intelligence penetrating the education sector ([Shahzad, Xu, Lim, Yang, & Khan, 2024](#)). Among the many current AI products, ChatGPT has emerged as a highly popular phenomenon used massively by students ([Abdaljaleel, Barakat, Alsanafi, Salim, Abazid, Malaeb, Mohammed, Hassan, Wayyes, Farhan, Khatib, Rahal, Sahban, Abdelaziz, Mansour, AlZayer, Khalil, Fekih-Romdhane, Hallit, & Sallam, 2024](#); [Strzelecki, 2023](#)). ChatGPT is a large language model-based artificial intelligence system designed to provide fast, comprehensive responses resembling natural interactions for users who require a variety of information ([Zhu, Jiang, Yang, & Ren, 2023](#)). This linguistic system was developed by an artificial intelligence research company named OpenAI in 2015 and subsequently launched to the public for the first time on November 30, 2022, by its founders: Sam Altman, Elon Musk, Greg Brockman, Ilya Sutskever, John Schulman, and Wojciech Zaremba ([Nazir & Wang, 2023](#)).

Tracing the trajectory of OpenAI's development in the educational world, ChatGPT provides a range of functional benefits that can be used by students as a virtual support system while they undergo burdensome academic activities ([Albayati, 2024](#)). ChatGPT is proven to be able to provide detailed information, help students get fresh ideas, explain academic concepts that are difficult to understand independently, find relevant study material references, and sometimes its interactive features are also able to respond, listen, and understand user complaints ([Urban, Děchtěrenko, Lukavský, Hrabalová, Svacha, Brom, & Urban, 2024](#)). This is in line with the research conducted by [Almogren, Al-Rahmi, and Dahri \(2024\)](#) regarding the use of ChatGPT in higher education. The study confirmed that the presence of this artificial intelligence technology is well received and used by students, with the perception that the system can provide tangible benefits, operational ease of use, and satisfactory feedback quality.

However, behind all this convenience and efficiency, excessive and uncontrolled use of ChatGPT will actually cause a dependency effect on students ([Acosta-Enriquez, Ballesteros, Jordan, Roca, & Tirado, 2024b](#); [Essel, Vlachopoulos, Essuman, & Amankwa, 2024](#)). In a previous study, [Abbas, Jam, and Khan \(2024\)](#) examined the causes and consequences of generative AI usage among university students and found concerning academic implications. The results empirically showed that excessive use of

ChatGPT among students can lead to a decline in learning quality ([Abbas et al., 2024](#)). The main findings of the research highlight an irony: although this cutting-edge technology is very helpful in facilitating information access and accelerating the task completion process, excessive reliance on it can erode and reduce critical thinking skills, analytical writing skills, and deep cognitive understanding of learning materials.

Observing the intersection between the adoption of cutting-edge technology and psychological conditions, previous researchers have begun to examine the determinants behind its use. [Budhathoki, Zirar, Njoya, and Timsina \(2024\)](#) included anxiety as one of the constructs in the Unified Theory of Acceptance and Use of Technology (UTAUT) model to precisely determine the adoption goals of ChatGPT for the student demographic in the UK and Nepal. In a comparative study report, the researchers emphasized the high urgency of considering emotional aspects in every modern technology acceptance model and suggested that institutions add anxiety management modules to their curricula ([Budhathoki et al., 2024](#)). Meanwhile, a cross-country study conducted by [Abdaljaleel et al. \(2024\)](#) also found that anxiety is one of the key factors that has a direct connection to the formation of positive attitudes and the intensity of ChatGPT usage among students in several Arab countries.

The rapid diffusion of generative artificial intelligence has reshaped the way university students study, write, and solve problems in a remarkably short period. Since its public release, ChatGPT has moved from novelty to routine academic infrastructure for many students, who use it to search for information, draft and refine texts, generate ideas, and clarify difficult material ([Abdaljaleel et al., 2024](#)). This shift is especially consequential in higher education, where the boundary between legitimate assistance and over-reliance is contested, and where the same tool can either strengthen or weaken the development of independent academic skills of students. Understanding what drives the intensity of ChatGPT use is therefore not merely a technological question but also a psychological and educational one, with implications for learning quality, academic integrity, and student well-being.

Alongside these developments, concern for the mental health of university students has grown, with anxiety being one of the most commonly reported difficulties in this population ([Rani, 2025](#)). Final-year and postgraduate students, in particular, face intense evaluative pressure, uncertainty about the future, and heavy workloads, all of which can elevate anxiety. Because anxiety influences motivation, attention, and coping behavior, it is plausible that emotional states shape how students engage with accessible digital tools; however, the direction of any such influence is not obvious. Some students may withdraw from unfamiliar technologies when anxious, while others may lean on them more heavily to manage academic demands. This tension between anxiety as a barrier and anxiety as a driver is precisely what makes the relationship worth examining empirically rather than assuming, and it situates the present study at the intersection of educational technology and psychology.

Both international research references show similarities in incorporating anxiety into technology acceptance and adoption models. Considering the demographic and academic uniqueness of Indonesia, it is necessary to conduct a new study that specifically examines the relationship between anxiety levels and the intensity of ChatGPT usage among Indonesian students. Ultimately, this study aims to describe and explain the intensity of ChatGPT usage from a psychological perspective. The explanation focuses on fully considering anxiety as the main determining factor, rather than just treating it as a complementary construct model in technology adoption theory.

2. Literature Review and Hypothesis Development

2.1 The Technology Acceptance Model

The Technology Acceptance Model (TAM) provides the principal theoretical framework for this study. TAM proposes that an individual's decision to adopt a technology is driven primarily by two beliefs, namely perceived usefulness and perceived ease of use, which together shape attitudes, behavioral intention, and ultimately actual use ([Al-Adwan, Li, Al-Adwan, Abbasi, Albelbisi, & Habibi, 2023](#)). In the context of generative artificial intelligence, recent studies have extended TAM to explain the acceptance of ChatGPT among university students, showing that usefulness and ease of use remain

strong predictors of adoption, while additional psychological and contextual variables further condition usage ([Almogren, Al-Rahmi, & Dahri, 2024](#); [Acosta-Enriquez, & López, 2024a](#)). [Albayati \(2024\)](#) similarly demonstrates that user acceptance of ChatGPT as a routine study aid is shaped not only by functional beliefs but also by users' affective states, suggesting that emotional factors deserve explicit theoretical attention within technology adoption research. Related work likewise links learners' technology attitudes and engagement to learning motivation ([Almagro & Edig, 2024](#)).

Originally formulated by [Davis \(1989\)](#), TAM emerged from the theory of reasoned action to explain why users accept or reject information systems, positing that external stimuli influence two core beliefs, perceived usefulness and perceived ease of use, which in turn shape behavioral intention and usage behavior. Its parsimony and predictive strength have made it one of the most widely applied models in information systems and educational technology research, and successive extensions have incorporated social influence, facilitating conditions, trust, and enjoyment to capture the richer determinants of contemporary technology use ([Al-Adwan et al., 2023](#)). These extensions are directly relevant to generative artificial intelligence, whose conversational and open-ended nature differs from the transactional systems for which the TAM was first devised.

In the specific case of ChatGPT, empirical applications of TAM consistently report that usefulness and ease of use predict adoption; however, they also reveal that acceptance is not driven by functional beliefs alone. Studies among university students have found that trust, perceived intelligence, prior experience, and affective reactions meaningfully condition how intensively the tool is used ([Almogren et al., 2024](#); [Acosta-Enriquez, Ballesteros, Jordan, Roca, & Tirado, 2024b](#); [Albayati, 2024](#)). This pattern suggests that a purely cognitive reading of TAM is incomplete for generative AI and that psychological states, including negative affect such as anxiety, warrant explicit incorporation into models of ChatGPT adoption. The present study is positioned within this extended understanding of TAM, treating anxiety as a candidate psychological correlate whose empirical association with usage intensity remains to be established in the literature.

2.2 Anxiety and Technology Use

Anxiety is a negative emotional state characterized by apprehension, heightened physiological arousal, and anticipatory worry regarding uncertain outcomes ([Brosschot et al., 2016](#)). Within technology adoption research, anxiety has been theorized as both a barrier that discourages engagement with unfamiliar systems and, conversely, as a driver that motivates compensatory use of digital tools. Higher anxiety may inhibit adoption by amplifying perceived risk and reducing perceived ease of use. Alternatively, students experiencing academic pressure may turn to accessible tools such as ChatGPT to relieve their workload and uncertainty, resulting in anxiety becoming associated with more intensive use. Among students, anxiety has been studied as an academic phenomenon shaped by evaluative pressure and coping resources ([Hafezi & Etemadi, 2022](#)), whereas academic motivation is associated with broader psychological and cultural conditions ([Khaneghahi et al., 2022](#)). These competing mechanisms imply that the direction and strength of any relationship between anxiety and technology use are theoretically ambiguous and must be established empirically rather than assumed ([Bandelow et al., 2022](#)).

Psychological theory distinguishes anxiety as a transient state from anxiety as a stable trait, and both forms can influence behavior in evaluative or demanding situations. In academic settings, anxiety frequently arises from performance pressure, deadlines, uncertainty about outcomes, and competition, and it can either impair functioning by consuming cognitive resources or mobilize coping behaviors that reduce the source of the threat ([Brosschot et al., 2016](#); [Bandelow et al., 2022](#)). This dual character is central to the present study because it implies that anxiety need not relate to technology use in a single, fixed direction.

Two mechanisms are plausible for the application of generative AI. On the one hand, technology-related anxiety may raise perceived risk and lower perceived ease of use, thereby discouraging engagement, a pathway consistent with TAM's emphasis on ease of use. On the other hand, students under academic strain may adopt ChatGPT precisely as a coping resource that offloads effort and

reduces uncertainty, in which case higher anxiety would accompany more intensive use of ChatGPT. Prior work on student anxiety documents both avoidance and compensatory engagement depending on context and coping style ([Hafezi & Etemadi, 2022](#); [Khaneghahi et al., 2022](#)) thus, the net association observed in any given population is an empirical matter rather than a foregone conclusion.

2.3 ChatGPT Usage among University Students

Since its public release, ChatGPT has been rapidly adopted in higher education, where students use it for information retrieval, writing support, and study assistance ([Abdaljaleel et al., 2024](#)). Cross-national evidence indicates that attitudes toward ChatGPT and its use intensity vary according to individual, institutional, and cultural factors ([Acosta-Enriquez, Ballesteros, Jordan, Roca, & Tirado, 2024b](#)). Beyond adoption, ChatGPT has been shown to function as an academic support tool whose effect on performance is mediated by learning motivation ([Caratiquit and Caratiquit, 2023](#)). Simultaneously, scholars have raised concerns about the psychological correlates of intensive use, including its potential relationship with stress and emotional well-being, although the evidence remains mixed and context-dependent ([Alanezi, 2024](#)). This uneven evidence base motivates a focused examination of whether and how strongly anxiety relates to the intensity of ChatGPT usage in a specific national and academic context.

The scale and speed of ChatGPT adoption in higher education have few precedents, and research has quickly moved from documenting usage to examining its consequences. Reported benefits include support for information retrieval, drafting, idea generation, and comprehension, while reported risks include overreliance, erosion of independent writing and critical thinking skills, and concerns about academic integrity ([Abdaljaleel et al., 2024](#); [Acosta-Enriquez et al., 2024b](#)). The balance between these outcomes appears to depend on how and how intensively the tool is used, which makes the intensity of usage a meaningful construct to measure in its own right.

Evidence on the psychological dimensions of ChatGPT use is still emerging and mixed. Some studies frame the tool as a potential source of emotional or motivational support, whereas others caution that intensive reliance may be associated with stress and diminished well-being ([Alanezi, 2024](#); [Caratiquit & Caratiquit, 2023](#)). In the Indonesian higher-education context, where digital adoption is rapid and student populations are large and diverse, these questions are of particular practical importance. However, context-specific evidence on how emotional states, such as anxiety, relate to the intensity of ChatGPT use in Indonesia remains limited, which is the gap this study addresses.

2.4 Hypothesis Development

Drawing these strands together, the TAM situates ChatGPT usage as the outcome of belief and affect, while the anxiety literature identifies two plausible but opposing pathways linking negative affect to technology use. Because a theoretical case can be made for either a positive association (anxiety motivating compensatory use) or a negative association (anxiety inhibiting adoption), this study treats the relationship as an open empirical question and derives a non-directional hypothesis a priori, rather than rationalizing a direction after observing the data. Accordingly, the alternative hypothesis (H_a) states that there is a statistically significant relationship between anxiety and the intensity of ChatGPT usage among university students, whereas the null hypothesis (H_0) states that no such statistically significant relationship exists between them.

3. Research Methodology

3.1 Research Design

This research is a quantitative study using a correlational approach to test the research hypothesis, which states, "There is a significant relationship between anxiety and the intensity of ChatGPT usage among university students." This study aimed to determine the relationship between these two variables. In this study, there are two variables: variable X, which is the independent variable, anxiety, and variable Y, which is the dependent variable, the intensity of ChatGPT usage among university students.

A correlational design was selected because the objective of the study was to describe and quantify the degree of association between two naturally occurring variables, anxiety and the intensity of ChatGPT usage, without manipulating either of them. This non-experimental approach is appropriate when the aim is to establish whether and how strongly variables covary in a real-world setting rather than to infer causation. Consistent with the hypothesis-testing logic outlined in the preceding chapter, this study specifies a non-directional alternative hypothesis and its corresponding null hypothesis in advance and evaluates them using inferential statistics at a conventional significance level of 0.05. Anxiety was treated as the predictor variable and the intensity of ChatGPT usage as the outcome variable, although the correlational framework does not assume a causal ordering between them.

3.2 Participants

The population consisted of active students from various universities in Indonesia who used ChatGPT. The sampling technique in this study used Non-Probability Sampling with the Accidental Sampling method. Accidental Sampling is a sampling technique based on chance; anyone who coincidentally meets or is available to the researcher can be used as a respondent if considered suitable as a data source ([Etikan et al., 2016](#)). The determination of participants in this study was carried out by distributing online questionnaire links via social media to reach many students from various universities in Indonesia who met the criteria and were willing to respond to the questionnaire.

A total of 100 active university students from various institutions across Indonesia participated in the study. The inclusion criteria required that respondents be currently enrolled students who had used ChatGPT so that questions about usage intensity would be meaningful. Because recruitment relied on the voluntary completion of questionnaire links shared through social media, the design was a non-probability, self-selected sample rather than a random draw from the student population. This procedure is efficient for reaching geographically dispersed respondents quickly, but it also carries a risk of self-selection bias, since students who frequently use ChatGPT may be more inclined to respond to a survey about it. This limitation is acknowledged here and revisited when interpreting descriptive figures and generalizing findings.

Participation was voluntary and anonymous in nature. Respondents were informed of the purpose of the study before completing the questionnaire, and no personally identifying information was required, consistent with the standard ethical expectations for anonymous online survey research ([Etikan et al., 2016](#)). The resulting sample was diverse in terms of region, educational level, and age. However, as reported in the results, it was concentrated among students in Java and among those in their final undergraduate years through postgraduate study. These compositional features are treated as boundary conditions for interpreting the findings rather than as a representative cross-section of all Indonesian students.

3.3 Instrument

The instrument used to measure students' anxiety levels was the Depression Anxiety Stress Scale-42 (DASS-42), which was adapted for the Indonesian population by [Muttaqin and Ripa \(2021\)](#). This instrument consists of 42 statements arranged using a frequency scale. The intensity of ChatGPT usage was measured using the ChatGPT Usage Scale (CGUS) developed by [Nemt-allah et al. \(2024\)](#). This instrument consists of 15 statements arranged on a Likert scale.

The DASS-42 is a widely used self-report screening instrument that assesses three related but distinct dimensions of negative emotional states, namely depression, anxiety, and stress, through forty-two items rated on a frequency scale. For the present study, the Indonesian adaptation validated by [Muttaqin and Ripa \(2021\)](#) was employed to ensure linguistic and cultural appropriateness for local respondents. Although the instrument yields all three subscales, the study's hypothesis concerns anxiety, and the anxiety subscale serves as the operational measure of the predictor variable. The depression and stress subscales were reported descriptively for completeness. It should be emphasized that the DASS-42 is a screening tool for emotional states rather than a clinical diagnostic instrument, and its scores should be interpreted accordingly.

The intensity of ChatGPT usage was measured using the ChatGPT Usage Scale (CGUS) developed by [Nemt-allah et al. \(2024\)](#), comprising 15 items rated on a Likert scale. Responses were summed to yield a total usage intensity score, which was then categorized into ordinal bands (from very low to very high) to facilitate descriptive interpretation. The use of an established, purpose-built scale supports the content relevance of the measure, while the reporting of its psychometric properties on the present sample, including internal consistency reliability, is identified as a matter for further verification given the constraints of the current dataset.

3.4 Data Analysis

The quantitative data obtained will be processed using IBM SPSS Version 25.0 statistical software. The analysis stages began with a descriptive analysis, which involved categorizing the level of group cohesiveness and resilience (low, moderate, and high categories) based on hypothetical mean and hypothetical standard deviation values ([Schober et al., 2018](#)). Next, a basic assumption test analysis was performed, namely a normality test using the Kolmogorov-Smirnov method to ensure that the data were normally distributed, and a linearity test to ensure that the relationship between X and Y formed a straight line ([Franzese & Iuliano, 2018](#)). The final stage was to conduct a correlational hypothesis test analysis, namely the Pearson Product-Moment Correlation test, to determine the direction and significance of the relationship between variables ([Franzese & Iuliano, 2018](#)).

Each analytical stage was chosen to match the measurement level of the variables and the requirements of the hypothesis tests. Descriptive statistics summarized the respondents' demographic profile and the distribution of anxiety and usage intensity scores, providing the categorization presented in the results. Assumption tests were then conducted to establish whether the conditions for parametric correlation were met. The Kolmogorov-Smirnov test assessed the normality of the distributions, and a linearity test examined whether the relationship between the predictor and outcome could be adequately described by a straight line ([Franzese & Iuliano, 2018](#)). Verifying these assumptions is a precondition for the valid use of Pearson correlation coefficient.

The hypothesis was then evaluated using the Pearson product-moment correlation, which quantifies both the direction and strength of the linear association between anxiety and usage intensity, with statistical significance judged against the 0.05 threshold ([Franzese & Iuliano, 2018](#)). Because the design involves a single predictor and outcome, this correlation constitutes the primary test of the hypothesis. A simple regression is also reported, as it conveys the same underlying information and is presented only to express shared variance. Given the sample size, the interpretation of any non-significant result explicitly considers the statistical power and the possibility of a Type II error so that conclusions are drawn cautiously and in proportion to the evidence.

4. Results and Discussions

Based on the results of data collection, this study involved 100 student respondents from various regions in Indonesia with diverse demographic characteristics. The majority of participants were female, accounting for 80% (80 individuals), while male participants accounted for 20% (20 individuals), as summarized in Table 1.

Table 1. Participant Gender Demographics

Gender	Frequency	Percentage (%)
Male	20	20
Female	80	80
Total	100	100

Geographically, the domicile of the respondents was concentrated on the island of Java with a percentage of 72%, followed by Sumatra (13%), Bali and Nusa Tenggara (7%), Sulawesi (4%), Kalimantan (3%), and Papua (1%). This indicates that the online data collection method conducted by the researchers was able to reach respondents with varied academic characteristics from various universities, as detailed in Table 2.

Table 2. Demographics of Region Participants' Universities

No	Region	Frequency	Frequency	Total	Percentage (%)
		PTN	PTS		
1	Sumatera	8	5	13	13
2	Jawa	22	50	72	72
3	Bali & Nusa Tenggara	3	4	7	7
4	Kalimantan	0	3	3	3
5	Sulawesi	3	1	4	4
6	Papua	0	1	1	1
Total	Total	36	64	100	100

Furthermore, the academic profile of the respondents was dominated by final-year undergraduate to postgraduate students (S1-S3) at 91%, with the largest portion currently studying in the 8th semester (59%). These academic characteristics align with the age range of the participants, which was dominated by the 22–23 years age group (54%). The distribution of participants across educational levels and semesters is presented in Table 3, and their age distribution is shown in Table 4.

Table 3. Categorization of Participants' Academic

Educational Level	Semester								Total
	I	II	III	IV	V	VI	VII	VIII	
D1 – D4	1	1	0	0	0	1	0	6	9
S1 - S3	3	4	4	8	2	10	7	53	91
Total	4	5	4	8	2	11	7	59	100

Table 4. Categorization of Participants' Age

Age Group	Frequency	Percentage (%)
≤19 years	5	5
20-21 years	20	20
22-23 years	54	54
24-25 years	13	13
≥26 years	8	8
Total	100	100

Regarding the intensity of technology usage, the measurement results using the ChatGPT Usage Scale (CGUS) showed a high adoption rate among the sampled students. Statistical data revealed that the intensity of ChatGPT usage was dominated by the "High" category at 44% (44 individuals) and "Very High" at 40% (40 individuals). Meanwhile, only a small fraction of respondents were in the "Moderate" category (10%) and "Low" (6%), with no participants in the "Very Low" category, as shown in Table 5. This high intensity indicates that students position ChatGPT as a crucial supporting tool that is highly beneficial for lecture activities such as information searching, exploring relevant ideas, and increasing understanding of materials. However, this high adoption rate warrants caution. As explained by [Abbas, Jam, and Khan \(2024\)](#), excessive use of ChatGPT has the potential to trigger a dependency effect that ultimately impacts the decline in students' independent writing skills and critical thinking abilities.

Table 5. Categorization of ChatGPT Usage Intensity

Intensity	Criteria	Frequency	Percentage (%)
Very High	64-75	40	40
High	52-63	44	44
Moderate	40-51	10	10
Low	28-39	6	6
Very Low	15-27	0	0
Total		100	100

Based on the evaluation results of the participants' psychological conditions using the Depression Anxiety Stress Scales-42 (DASS-42) instrument, contrasting findings emerged between the anxiety variable and the depression and stress variables. The majority of respondents reported depression levels in the "Normal" category (41%) and stress levels that were also classified as "Normal" (33%) to "Mild" (26%). However, the opposite was observed for anxiety. Most of the respondents were recorded as having anxiety levels classified as concerning, centrally concentrated in the "Very Severe" (31%) and "Severe" (27%) categories. Only 16% of the respondents were in the normal anxiety range. This high rate of anxiety is considered normal because it is triggered by various stressors generally faced by students, especially in their final year, such as intense academic competition, the burden of completing assignments and exams, economic conditions, and future worries. This condition is highly relevant to the literature from [Cheng and McCarthy \(2018\)](#), who assert that persistent feelings of worry, fear, and restlessness trigger a state of anxiety that can disrupt an individual's activities. The full categorization of the participants' depression, anxiety, and stress levels is presented in Table 6.

Table 6. Categorization of Participants' Psychological Conditions Based on DASS-42

Variables	Category	Score Criteria	Frequency	Percentage (%)
Depression	Normal	0–9	41	41
Depression	Mild	10–13	19	19
Depression	Moderate	14–20	12	12
Depression	Severe	21–27	13	13
Depression	Very Severe	≥ 28	15	15
Anxiety	Normal	0–7	16	16
Anxiety	Mild	8–9	2	2
Anxiety	Moderate	10–14	24	24
Anxiety	Severe	15–19	27	27
Anxiety	Very Severe	≥ 20	31	31
Stress	Normal	0–14	33	33
Stress	Mild	15–18	26	26
Stress	Moderate	19–25	21	21
Stress	Severe	26–33	16	16
Stress	Very Severe	≥ 34	4	4

Although the descriptive data showed high anxiety levels and high ChatGPT usage intensity in this sample, the inferential hypothesis testing did not find a statistically significant relationship between the two. Based on the Pearson correlation test analysis, a correlation coefficient (r) of 0.079 was obtained with a significance value (p) of 0.218 ($p > 0.05$). Because this probability exceeded the conventional 0.05 threshold, the analysis did not detect a statistically significant relationship between anxiety level and ChatGPT usage intensity in this sample. The finding of this lack of correlation was also consistent with the testing of other psychological variables, where depression ($p = 0.440$) and stress ($p = 0.218$) showed no significant relationship, as shown in Table 7. Furthermore, multiple regression test analysis that simultaneously included the three predictors (depression, anxiety, and stress) only yielded an F-value of 1.226 with a significance of 0.305, as summarized in Table 8 ($p > 0.05$). Based on this series of statistical evidence, the research alternative hypothesis is not supported by the present data. Rather than proving that anxiety has no bearing on usage, this pattern indicates that no statistically significant association was detected in a small non-probability sample ($N = 100$). Because the observed effect sizes were small, the non-significant result likely reflects limited statistical power and an elevated risk of a Type II error; therefore, it should be read as an absence of evidence rather than evidence of the absence of any relationship.

Table 7. Pearson Correlation Test Results

Description	Depression	Anxiety	Stress
Pearson Correlation (r)	-0,015	0,079	0,079
Sig. (1-tailed) (p)	0,440	0,218	0,218

Table 8. Regression and Coefficient Tests

Regression Test	Regression Test	Regression Test	Coefficient Test	Coefficient Test
R	F	Sig.	R Square	Adjusted R Square
0.192	1.226	0.305	0.037	0.007

a. Predictors: (Constant), Stress, Depression, Anxiety

b. Dependent Variable: ChatGPT

The absence of a significant relationship between anxiety and ChatGPT usage behavior in this study can be theoretically reflected through the Technology Acceptance Model (TAM), originally proposed by [Davis \(1989\)](#) and extended by [Al-Adwan, Li, Al-Adwan, Abbasi, Albelbisi, and Habibi \(2023\)](#). According to this theory, an individual's decision to adopt and use a technology is strongly driven by its perceived usefulness and ease of use. The empirical findings of this study confirm this model, where ChatGPT usage among students is not solely influenced by the dynamics of psychological factors ([Al-Adwan et al., 2023](#); [Riswari, 2026](#)). Students, both those with low anxiety levels and those experiencing severe anxiety, actively utilize ChatGPT as an accessibility instrument to facilitate the completion of their various academic demands and needs ([Strzelecki, 2023](#); [Wulandari, Ohorella, & Nurhaipah, 2024](#)).

Although the statistical findings in this study reject the hypothesis regarding the direct connection between technology adoption and anxiety as its trigger, previous literature shows that the presence of ChatGPT essentially still has functional relevance to the user's mental health domain, a domain of growing concern among university students ([Rani, 2025](#)). For instance, [Alanezi \(2024\)](#) found that ChatGPT has the capacity to provide mental support that is divided into eight positive factors. These factors include psychological education, emotional support, motivational setting, and crisis intervention, although they are still overshadowed by four negative factors related to ethics, reliability, and cultural considerations ([Alanezi, 2024](#); [Salloum, Alhamad, Al-Emran, Monem, & Shaalan, 2019](#)). This relevance is reinforced by the findings of [Sullivan, Nyawa, and Fosso \(2023\)](#), who revealed ChatGPT's capability to help users cope with feelings of sadness and loss, simulate interactions with deceased loved ones, manage ADHD symptoms, and function as a psychological support resource readily available at any time. [Diaz and Huguet \(2026\)](#) highlight that this artificial intelligence platform can serve as a complementary resource to address everyday mental health issues, particularly for adolescent and young adult user demographics.

The synthesis of theoretical rationalization and literature comparison found no significant association between anxiety and the use of ChatGPT. However, the results of this study do not necessarily negate the role of psychological conditions. This finding specifically underscores that anxiety is not the primary determinant motivating ChatGPT adoption behavior among students within the scope of this study ([Haqqu, & Rohmah, 2024](#); [Nazir, & Wang, 2023](#)). Nevertheless, the results of this study must be interpreted by considering several operational limitations. The use of accidental sampling means that the sample characteristics are not yet fully capable of comprehensively representing the condition of the student population in Indonesia ([Acosta-Enriquez & López, 2024a](#)). In addition, the focus of the investigation, which only highlights anxiety as a single psychological variable, has not been able to extract the complexity of other factors that might influence the adoption of this technology ([Sakib, Islam, Fahlevi, Rahman, Younus, & Rahman, 2025](#)). Therefore, further research is recommended to apply more representative sampling techniques and involve more multidimensional psychological variables so that an understanding of the determinants driving ChatGPT usage in the higher education environment can be depicted more completely and holistically.

These findings should be interpreted in dialogue with prior studies that reported associations between psychological states and technology use. Several studies within the extended TAM tradition have found that affective and psychological variables meaningfully shape the adoption and intensity of ChatGPT use ([Almogren, Al-Rahmi, & Dahri, 2024](#); [Acosta-Enriquez, Ballesteros, Jordan, Roca, & Tirado, 2024b](#)), and studies on academic anxiety have linked heightened worry to changes in students' learning behavior ([Hafezi & Etemadi, 2022](#)). The divergence between these results and the non-significant association observed here is instructive rather than contradictory. Three explanations are plausible for this. First, measurement differences matter: the present study operationalized general emotional states through the DASS-42 rather than a technology-specific anxiety measure, so a domain-general instrument may be insensitive to the narrower construct of technology-related apprehension. Second, contextual differences are relevant because the sampled population was dominated by final-year and postgraduate students who may have already integrated ChatGPT into routine academic work regardless of their anxiety level, compressing the variance in usage. Third, and most importantly, statistical power differs across studies; with a modest, non-probability sample, the present design had limited sensitivity to detect the small effect sizes that characterize this body of literature.

In this light, the null result contributes a cautious but useful data point rather than a refutation of the existing theory. This suggests that, at least in this population and with these instruments, anxiety is unlikely to be a large or dominant driver of ChatGPT usage, while leaving open the possibility of small or conditional effects that a better-powered, technology-specific design could detect. This interpretation is consistent with the TAM premise that usefulness and ease of use, rather than transient emotional states, remain the primary determinants of adoption ([Al-Adwan et al., 2023](#)) and with evidence that ChatGPT usage is embedded in broader motivational and institutional conditions ([Caratiquit, & Caratiquit, 2023](#); [Almagro, & Edig, 2024](#)).

From a theoretical standpoint, the present findings invite a more differentiated understanding of how affect operates within technology acceptance frameworks. Classic TAM privileges cognitive appraisals of usefulness and ease of use, and the absence of a significant anxiety-usage association in this sample is consistent with that emphasis: once a tool becomes embedded in routine academic work, its use may be governed more by habit and perceived utility than by fluctuating emotional states. However, the theoretical ambiguity outlined earlier cautions against overgeneralizing this reading. A domain-general measure of negative affect may simply be too distal from the specific appraisals that drive technology behavior, and constructs such as technology-specific anxiety, computer self-efficacy, or perceived control might show associations that a broad screening instrument cannot capture. Therefore, the contribution of this study to theory is twofold: it provides a cautious empirical data point suggesting that general anxiety is not a dominant determinant of ChatGPT usage in this context, and it highlights the methodological importance of aligning the specificity of psychological measures with the specificity of the behavior being explained.

The findings also have practical implications for higher-education institutions and educators, provided they are read in light of the study's limitations. If, as the data tentatively suggest, students adopt ChatGPT intensively regardless of their anxiety levels, then policies aimed at guiding responsible use should not assume that emotionally vulnerable students are the primary or only heavy users. Instead, institutions may benefit from broad-based digital-literacy and academic-integrity initiatives that address the entire student population while separately providing mental health support that does not presuppose a direct link between anxiety and technology use. Educators can frame ChatGPT as a supplementary tool whose value depends on how it is integrated into learning, encouraging the verification of AI outputs and the preservation of independent writing and critical thinking skills. Simultaneously, because the descriptive data indicate a substantial proportion of students reporting elevated anxiety, institutions should continue to monitor student well-being as a matter of general concern, independent of its relationship to any particular technology.

Finally, this study contributes methodologically by illustrating how a non-significant result can be reported responsibly. Rather than treating the absence of a significant correlation as proof that no

relationship exists, the analysis situates the result within the constraints of sample size, sampling method, and measurement and articulates the specific conditions under which a genuine but small effect could have gone undetected. This transparent treatment of a null finding is itself a contribution to a literature in which associations are sometimes over-interpreted and provides a clear agenda for better-powered, more precisely measured replications.

5. Conclusions

5.1 Conclusion

Based on the series of data collection and analysis processes that have been conducted, this study concludes that there is no significant relationship between the level of anxiety and ChatGPT usage behavior among university students. This conclusion is based on the results of the correlation statistical test, which showed a correlation coefficient value of $r = 0.079$ with a probability or significance value of $p = 0.218$ ($p > 0.05$). Thus, the alternative hypothesis predicting an association between the two variables was not supported by the present data, a null result that, for the reasons discussed above (limited statistical power, a non-probability sample), should be read as an absence of evidence, rather than evidence of no relationship. Within these limits, the level of anxiety experienced by a student does not appear to be a primary factor pushing them to use ChatGPT technology. The ChatGPT platform, which is now increasingly familiar and attached to students' daily lives, is essentially positioned as an accessibility instrument that provides pragmatic convenience in fulfilling various academic demands and needs, such as completing lecture assignments and seeking a deep understanding of effective learning methods.

Taken together, this study makes a modest but honest contribution to the growing literature on generative artificial intelligence in higher education. This shows that, in this Indonesian sample and with these instruments, general anxiety was not a statistically significant correlate of ChatGPT usage intensity, and it demonstrates how such a null finding can be interpreted responsibly by attending to statistical power, sampling, and measurement rather than overstating the result. In doing so, this study reinforces the view, consistent with the Technology Acceptance Model, that the adoption of ChatGPT is shaped primarily by perceptions of usefulness and ease of use, while leaving open the possibility that more specific psychological constructs, measured with greater precision and in better-powered designs, may yet reveal meaningful associations. Therefore, the value of this work lies not in a definitive causal claim but in clarifying what can and cannot be concluded from the available evidence and in charting a clear path for future research.

5.2 Research Limitations

Although this study was conducted in a structured manner, several operational and methodological limitations must be objectively acknowledged to avoid excessive generalization. The primary limitation of this study is the application of the accidental sampling technique. The use of this non-probability technique means that the captured sample characteristics are not yet fully representative of the conditions of the student population in Indonesia. Moreover, the scope of this research has limitations because it only focuses on measuring anxiety as a single psychological factor. This methodological design centered on a single predictor, which means that the study does not yet have sufficient capacity to explain the potential involvement of other psychological or demographic factors that might have a close relationship with ChatGPT usage behavior in the higher education environment.

A further set of limitations concerns the statistical power and measurement. Beyond the power constraints noted above, a larger probability-based sample would provide a more robust test of the hypothesis. In addition, because a single predictor and a single outcome were examined, the correlation and simple regression procedures reported here convey essentially the same information, and future studies should pre-specify one primary test to avoid redundancy.

Measurement choices also constrained the findings. Anxiety was captured using the DASS-42, a domain-general screening instrument for negative emotional states rather than a technology-specific anxiety measure and not a clinical diagnostic tool, which may reduce its sensitivity to apprehension

arising specifically in the context of ChatGPT use. Likewise, although the DASS-42 also yields depression and stress subscales and the ChatGPT Usage Scale was adopted from a published source, a full reporting of the instruments' psychometric properties on this particular sample, including internal-consistency reliability, was beyond the scope of the present study. Future research should report these properties in full, analyze all relevant subscales, and employ technology-specific measures to assess the relationship between emotional states and generative AI use more precisely.

5.3 Suggestions and Directions for Future Research

Based on the limitations outlined, several strategic recommendations can be used as a basis for future research. In terms of methodological aspects, future research is expected to apply more advanced and representative sampling techniques, such as stratified random sampling or cluster sampling, so that the findings have strong external validity and can be generalized to a wider population. Furthermore, in terms of model development, future researchers should expand the theoretical framework by considering and incorporating more diverse research variables. Exploration of other determinants, whether from the cognitive domain, social environment, or other psychological factors, is crucial for obtaining a more comprehensive, complete, and holistic understanding of the dynamics of factors related to artificial intelligence (ChatGPT) adoption behavior in the student demographic.

Future studies would benefit from complementing or replacing domain-general instruments with technology-specific measures. Because the DASS-42 captures general negative affect rather than apprehension tied to artificial intelligence, subsequent work could employ scales designed to assess AI-related- or technology-related anxiety, alongside constructs such as computer self-efficacy, perceived control, and trust in AI. Pairing these with a validated usage-intensity measure and reporting full psychometric evidence, including internal-consistency reliability on the study sample, would allow for a more sensitive and interpretable test of the relationship. In addition, adopting an adequately powered design informed by a priori power analysis would reduce the risk of Type II errors and enable researchers to distinguish a genuinely negligible association from one that is small but real.

Beyond refining the present design, future research could extend this question in several directions. Longitudinal studies could examine whether anxiety and ChatGPT usage influence each other over time, which a cross-sectional correlation cannot reveal. Mixed-methods designs could combine survey data with interviews to understand the meanings students attach to their use of generative AI, clarifying why anxious students may avoid or rely on such tools. Comparative studies across disciplines, institutions, and countries could establish the boundary conditions of any relationship, while experimental or quasi-experimental designs could test whether interventions that address anxiety or digital literacy change usage patterns. Pursuing these directions would move the field from documenting isolated associations toward a more integrated account of how emotional states, cognitive appraisals, and contextual factors jointly shape the adoption of artificial intelligence in higher education.

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Author Contributions

LAN contributed to the conceptualization, study design, data collection and analysis, and drafting of the manuscript. JK contributed to the study design, supervision, interpretation of the results, critical revision, and final approval. Both authors have read and approved the final version.

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