Adaptation and Validation of the ChatGPT Usage Scale in Indonesia: Exploring Challenges of High Usage Among Students

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Abstract: This study aims to adapt and validate the ChatGPT Usage Scale among Indonesian university students. Using a quantitative psychometric approach, data were collected from 542 active university students across Indonesia selected through convenience sampling. The adaptation followed the International Test Commission (2017) guidelines. Content validity using Aiken's V showed a high value (0.894). The initial Confirmatory Factor Analysis (CFA) indicated poor fit (CFI = 0.741; TLI = 0.698), but after removing eight items with factor loadings below 0.40, the seven-item model achieved good fit (CFI = 0.949; TLI = 0.924; RMSEA = 0.056; SRMR = 0.034). The Cronbach's Alpha coefficient (0.703) indicated acceptable reliability. Findings revealed that the original three-dimensions structure (Academic Writing Aid, Academic Task Support, and Reliance and Trust) was not fully supported in the Indonesian student context. The Reliance and Trust dimension could not be retained due to insufficient valid indicators. Despite achieving a statistically fit model, the adapted version remains conceptually limited and requires further refinement to comprehensively capture ChatGPT usage behavior among Indonesian students. Indonesian students primarily use ChatGPT instrumentally with limited trust, highlighting the need for higher education institutions to integrate AI literacy, ethical usage guidelines, and reflective learning practices. Furthermore, the adapted scale provides a foundation for future research to better understand AI utilization in academic contexts.

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Introduction

In the contemporary era, rapid technological advancements have significantly shaped human life (Akhyar et al., 2023), with Artificial Intelligence (AI) emerging as one of the most transformative developments of the past decade (Romlah et al., 2024). As a subfield of computer science, AI enables systems to simulate human intelligence for problem-solving, pattern recognition, and data-driven decision-making. These innovations have also influenced education by expanding access to learning resources and supporting more flexible, resource-oriented learning processes (Luthfiyyah et al., 2024). One notable AI tool in this context is ChatGPT, an OpenAI-developed chatbot that interprets user input and generates contextually appropriate responses (Merentek et al., 2023). Since its first release as GPT-1 in 2018, the model has advanced through GPT-4 in 2023, each iteration improving its ability to understand and generate complex text (Ray, 2023; Yenduri et al., 2024). The latest version, GPT-5 in 2025, offers enhanced accuracy, responsibility, and contextual relevance, further solidifying its value for educational and academic use.

The significant surge in ChatGPT adoption, driven by its utility in academic and professional contexts, is evidenced by widespread use among Indonesian students (57.5%) and lecturers (84.2%) (Niyu et al., 2024), as well as its status as the leading productivity tool (Nashir et al., 2024). However, this widespread utilization presents a challenge to academic integrity; while 92.86% of students use the platform for inspiration, a concerning 71.43% engage in passive replication without modification (Boers et al., 2025). Furthermore, given that 62.2% of respondents fear a potential decline in critical thinking abilities due to AI reliance (Auna et al., 2025), it is imperative to position ChatGPT not as a primary knowledge source, but rather as a supplementary tool designed to facilitate the learning process (Kharis & Zili, 2024).

The psychological implications of utilizing ChatGPT are significant, particularly in the context of cognitive science and learning motivation. While the integration of AI has the potential to facilitate knowledge acquisition by reducing the cognitive load associated with information seeking, thereby freeing resources for complex (Schnotz & Kürschner, 2007), excessive reliance may impede critical thinking, as users tend to passively accept information without deep engagement (Ododo et al., 2024; Supriyadi, 2024). Concurrently, within the paradigm of Self-Determination Theory, while artificial intelligence (AI) has the capacity to augment motivation through adaptive materials and immediate feedback that foster autonomy and competence (Babu & Wening, 2025; Hanson et al., 2024), its present incapacity to replicate human interaction (Jeon, 2024) and the propensity for rigid, contextually inappropriate responses frequently culminate in user dissatisfaction and frustration (Li et al., 2025).

The ongoing discourse regarding the pervasiveness of ChatGPT in academic settings necessitates the development of comprehensive metrics that go beyond quantitative counts to evaluate qualitative usage patterns and intensity. Consequently, there is an imperative need for a robust instrument capable of assessing both the extent and manner of ChatGPT integration into learning activities. However, extant research frequently exhibits methodological limitations, particularly a paucity of rigorous psychometric validation. For instance, studies that utilize frameworks such as Technology Acceptance Model (TAM) (M. K. Ali et al., 2024) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Wulandari et al., 2024) frequently did not provide exhaustive item explanations or conduct the necessary validity and reliability checks, such as Confirmatory Factor Analysis (CFA). Moreover, other recent studies have been hindered by unclear theoretical foundations, undefined items, and the absence of standardized measurement tools (Palayukan et al., 2024; Pangestu et al., 2024).

Despite the insights provided by technology acceptance studies, a more systematic comparison is necessary to clarify measurement gaps in generative AI research. These approaches prioritize factors such as usefulness, ease of use, and behavioral intention. However, they do not evaluate specific behaviors related to ChatGPT, such as academic writing assistance, task-oriented support, and reliance or trust, which are crucial for comprehending actual usage patterns. Consequently, previous findings emphasize acceptance while neglecting usage intensity, purpose, and ethical aspects. This issue aligns with the absence of standardized, psychometrically validated instruments for comprehensively measuring ChatGPT usage in higher education (D. Ali et al., 2024). Although adoption rates are high, students' usage remains largely instrumental with low trust and limited ethical awareness (Toma & Yánez-Pérez, 2025).

The ChatGPT Usage Scale (Nemt-allah et al., 2024) addresses the existing measurement gaps through a domain-specific, psychometrically validated structure

comprising three dimensions that reflect students' actual engagement with the tool. The Academic Writing Aid (AWA) dimension encompasses ChatGPT's capacity to facilitate academic writing processes, including idea generation, draft assistance, paraphrasing, and enhancing argument coherence. The Academic Task Support (ATS) dimension reflects its broader academic utility, including the overcoming of writer's block, the organization of thoughts, the development of study materials, and the location of relevant information. The Reliance and Trust (RT) dimension of the study assesses students' trust in ChatGPT's outputs, its use for feedback, and awareness of its limitations. Collectively, these dimensions furnish a comprehensive framework for comprehending students' utilization of ChatGPT in academic settings. The objective of this study is to adapt and validate the ChatGPT Usage Scale for the Indonesian academic context.

Research Method

The present study employs a quantitative design with a purely validation-focused psychometric design. The data were collected through the administration of structured questions to participants who met the specified criteria (Iskandar et al., 2023). The responses thus obtained were subsequently documented, processed, and analyzed through the implementation of statistical methodologies by the researchers (Bloomfield & Fisher, 2019). This study employed a convenience sampling technique to select 542 active Indonesian university students aged 21 to 48 years. The sample selection was executed through the implementation of convenience sampling, a non-probability sampling technique entailing the selection of individuals from the population who were readily accessible to the researchers (Wardhani et al., 2022). The sample was predominantly female (66.8%) compared to males (33.2%), with a mean age of 22.8 years; the majority of respondents were concentrated at 21 (40.8%) and 22 years old (26.0%). The remaining subjects were 23 years of age (8.9%), 24 years (5.7%), 25 years (5.9%), 26 years (4.1%) while those above age 26 constituted a minority. In terms of educational background, the cohort was primarily comprised of undergraduate students (70.5%), followed by those in master's programs (18.5%), with smaller representations from professional/specialist (6.3%) and diploma programs (4.8%).

The measurement instrument adapted into Indonesian was originally developed by Mohamed Nemt-allah, Waleed Khalifa, Mahmoud Badawy, Yasser Elbably, and Ashraf Ibrahim in 2024, known as the ChatGPT Usage Scale. Designed specifically for graduate students, the scale aims to assess usage patterns, perceptions, and academic experiences with ChatGPT across three core dimensions: Academic Writing Aid, Academic Task Support, and Reliance and Trust. Comprising 15 items, the instrument demonstrates strong internal consistency (Cronbach's α = 0.848; McDonald's ω = 0.849) and satisfactory psychometric properties, with substantial factor loadings 0.909 for Academic Writing Aid, 0.787 for Academic Task Support, and 0.739 for Reliance and Trust, supported by CFA model fit indices (CFI = 0.917; TLI = 0.900; RMSEA = 0.060). All items are rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The adaptation of the ChatGPT Usage Scale was carried out in accordance with the test translation and adaptation guidelines from the International Test Commission (2017). The process was comprised of eight distinct stages.
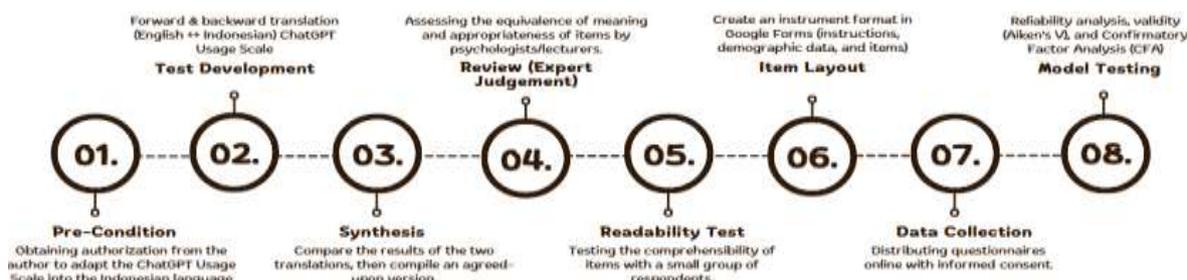
Figure 1. ChatGPT Usage Scale Adaptation Procedure

Data Analysis

The data collection aimed to assess the reliability and validity of the ChatGPT Usage Scale. Reliability was tested using internal consistency through Cronbach's Alpha, where values above 0.9 are considered excellent, 0.8 good, 0.7 acceptable, 0.6 questionable, and below 0.6 weak (George & Mallery, 2003), using JASP 0.19.1.0. Validity testing included content validity and construct validity. Content validity was evaluated using Aiken's V with a 1–5 rating scale, which is appropriate for ordinal expert ratings, allowing for a detailed assessment of item relevance. V values were categorized as high (> 0.80), moderate ($0.40 < V \leq 0.80$), and low (≤ 0.40), based on expert judgment to assess item relevance (Hendryadi, 2017). Construct validity was assessed using Confirmatory Factor Analysis (CFA) with maximum likelihood (ML) estimation in JASP 0.19.1.0. to test model fit, following (Hair et al., 2010), with CFI and TLI > 0.90 and RMSEA and SRMR < 0.08 as acceptable criteria. Item inclusion was based on factor loadings ≥ 0.40 (Azwar, 2012), indicating alignment between theory and empirical data.

Results and Discussion

Three experts in psychology and education tested content validity through expert judgment based on their knowledge and competence in assessing the instrument's relevance. The Aiken's V analysis produced a coefficient of 0.894, indicating high content validity. The experts recommended adjusting several words to reduce ambiguity and improve clarity. Then, a readability test was conducted on 11 lay students representing the target population. While some terms were suggested to be simplified, the instrument was generally well understood, allowing it to be used in the research.

Table 1. Goodness of fit values

Index	Criteria	Value	Conclusions
Chi-square Test	p > 0.05	< .001	Misfit
Comparative Fit Index (CFI)	p > 0.90	0.741	Misfit
Tucker-Lewis Index (TLI)	p > 0.90	0.698	Misfit
Root Mean Square Error of Approximation (RMSEA)	p < 0.08	0.073	Fit
Standardized Root Mean Square Residual (SRMR)	p < 0.08	0.065	Fit

Following the CFA, the chi-square test produced a p-value below 0.001, which does not meet the > 0.05 criterion for good fit (Hu & Bentler, 1999). However, this test is highly sensitive to sample size (Stone, 2021). The incremental fit indices were also below the recommended cutoff (CFI = 0.741; TLI = 0.698). Despite this, the RMSEA (0.073) and SRMR (0.065) values were within the acceptable < 0.08 range, indicating a satisfactory fit based on these indices.

Table 2. *Factor loadings ChatGPT Usage Scale*

Factor	Indicator	Std. Est. (all)
Academic Writing Aid	AWA1	0.373
	AWA2	0.493
	AWA3	0.541
	AWA4	0.309
	AWA5	0.365
	AWA6	0.509
	AWA7	0.316
Academic Task Support	ATS8	0.452
	ATS9	0.506
	ATS10	0.483
	ATS11	0.335
Reliance and Trust	RAT12	0.182
	RAT13	0.280
	RAT14	0.519
	RAT15	0.295

The standardized factor loadings in Table 3 range from 0.182 to 0.541. Items exceeding the 0.40 criterion, namely AWA2, AWA3, AWA6, ATS8, ATS9, ATS10, and RAT14, are to be retained, while items below 0.40 from the Academic Writing Aid, Academic Task Support, and Reliance and Trust dimensions are to be removed because they do not adequately represent the construct. Subsequent to the elimination of items with low loading, a reanalysis will be conducted to enhance the overall model fit. The final instrument will comprise exclusively items with loading values greater than 0.40, thereby ensuring feasibility.

Table 3. Goodness of fit values after elimination

Index	Criteria	Value	Conclusions
Chi-square Test	$p > 0.05$	$< .001$	Misfit
Comparative Fit Index (CFI)	$p > 0.90$	0.949	Fit
Tucker-Lewis Index (TLI)	$p > 0.90$	0.924	Fit
Root Mean Square Error of Approximation (RMSEA)	$p < 0.08$	0.056	Fit
Standardized Root Mean Square Residual (SRMR)	$p < 0.08$	0.034	Fit

Following the elimination of eight items that failed to meet the established validity criteria, with factor loadings below 0.40, the results of the chi-square test yielded a value less than 0.001, with CFI = 0.949, TLI = 0.924, RMSEA = 0.056, and SRMR = 0.034. The findings suggest that, with the exception of the chi-square test, all indices demonstrate that the model in the measurement instrument provides fit results and meets the feasibility standards, thereby supporting its acceptance.

Table 4. Factor loadings of the ChatGPT Usage Scale after elimination

Factor	Indicator	Std. Est. (all)
Academic Writing Aid	AWA2	0.515
	AWA3	0.543
	AWA6	0.542
Academic Task Support	ATS8	0.451
	ATS9	0.520
	ATS10	0.471
Reliance and Trust	RAT14	0.485

The elimination process resulted in seven of the fifteen items meeting the ≥ 0.40 factor loading criterion and being retained in the model. A total of eight items were excluded due to their low loadings, including AWA1, AWA4, AWA5, and AWA7 from the Academic Writing Aid dimension; ATS11 from Academic Task Support; and RAT12, RAT13, and RAT15 from the Reliance and Trust dimension. Subsequent to the application of these exclusions, the measurement instrument attained a fit that satisfied the validity criteria, as evidenced by factor loadings.

Table 5. Reliability of ChatGPT Usage Scale after elimination

	Coefficient α
ChatGPT Usage Scale	0.703

The reliability calculation of the ChatGPT Usage Scale adaptation measurement tool was also carried out after the elimination of several items using the Cronbach's Alpha formula. This calculation produced a reliability of 0.703 on the 7 items used. This finding aligns with the established criteria for the reliability coefficient, as outlined in the seminal work by (George & Mallery, 2003). Specifically, the study asserts that a reliability result exceeding 0.70 is deemed to be within the acceptable range.

The initial Confirmatory Factor Analysis (CFA) of the Indonesian adaptation of the ChatGPT Usage Scale revealed inadequate model fit for Indonesian students. The three-dimensional, 15-item model demonstrated inadequate goodness-of-fit indices, despite RMSEA and SRMR falling within acceptable ranges. Following the removal of eight items due to factor loadings below 0.40, the remaining items were subjected to further analysis. A subsequent CFA employing the remaining seven items, with loadings ranging from 0.451 to 0.543, yielded a satisfactory model fit, as evidenced by CFI, TLI, RMSEA, and SRMR values that met the established criteria.

However, while the elimination of items resulted in a satisfactory model fit, it also had significant ramifications. The original three-dimensional structure (Academic Writing Aid, Academic Task Support, and Reliance and Trust) received inadequate support from the Indonesian student sample. The Reliance and Trust dimension could not be retained due to the fact that only one item had a factor loading above 0.40. As (Hair et al., 2019) have noted, a factor requires at least three indicators to validly represent a construct; a single-indicator factor is under-identified and vulnerable to validity and reliability issues. Therefore, despite achieving statistical compatibility, the adapted instrument is conceptually weakened due to the loss of this essential dimension.

Research findings indicate that although Indonesian students widely use ChatGPT to expedite academic tasks (Ikhlas et al., 2025; Lusiani, 2025; Nugroho et al., 2025), the

frequency of use does not correspond with a strong level of trust in the system. ChatGPT is regarded as a supplementary instrument rather than an academic thinking partner, consistent with findings that this chatbot generates inconsistent outputs (Shen et al., 2023). In contrast to the findings of (Nemt-allah et al., 2024) on Egyptian students, which demonstrated the presence of functional trust, the usage patterns exhibited by Indonesian students are characterized by an instrumental nature and instability.

From an academic culture perspective, the integration of AI has become increasingly prevalent in higher education settings, particularly among younger students who depend on immediate solutions and perceive AI as a means to expedite their academic tasks. However, as noted by (Fatmayanti, 2025), awareness that AI is not entirely accurate, especially for complex tasks, makes their trust partial and selective. From a technological perspective, the presence of low digital literacy, infrastructure gaps, and the absence of ethical and privacy regulations engender ambivalence (Rahmawati et al., 2025). Students utilize AI because it is practical, but simultaneously harbor doubts regarding its reliability and information security. Conversely, from a pedagogical perspective, there has been a paucity of explicit guidelines from universities regarding the integration of AI in academic pursuits. Consequently, students face challenges in assessing the quality of AI outputs and comprehending its role in academic tasks. This condition aligns with the perspective articulated by (Qian, 2025), which posits that the efficacy of GenAI integration is predominantly influenced by pedagogical design. In the absence of AI literacy, prompt literacy, and clear instructional guidance, students' reliance on AI develops in a practical and short-term manner, without forming a strong trust in the credibility of the output produced.

The present study is based on responses from 542 participants, most of whom (80.8%) are Indonesian students using the free version of ChatGPT. Although the free version can perform basic tasks such as summarizing and answering general questions, it remains limited in handling high message volumes, data analysis, and complex tasks (Maarif, 2025). As students rely heavily on this limited version, the outputs they receive are often general, inaccurate, and occasionally include erroneous references. Many advanced features are underutilized due to their perceived irrelevance to basic academic needs, which contributes to the failure of several items, particularly within the Reliance and Trust dimension. These patterns indicate doubts about ChatGPT's accuracy, quality, and collaborative potential, suggesting that students primarily use the tool instrumentally to speed up task completion and academic writing, resulting in low cognitive engagement and limited trust in AI.

In the context of academic practice, the utilization of AI by students has not yet evolved into a form of collaboration that fosters deeper reasoning or intellectual engagement. Consequently, academic institutions must incorporate artificial intelligence in ways that encourage introspection and more meaningful academic interaction. This finding is consistent with the conclusions of (Ma et al., 2025), who underscored the importance of cultivating metacognitive and critical analysis skills, facilitated by role-based learning methodologies that employ AI as a mentor or collaborative partner (Jha et al., 2025). From a digital literacy perspective, students' difficulties in evaluating the accuracy and credibility of AI outputs underscore the necessity to fortify digital and prompt literacy. Research has demonstrated that such competencies can lead to a reduction in instrumental reliance and the cultivation of evaluative understanding of technology (Lai, 2024; Qian, 2025). Conversely, concerns regarding information security and reliability underscore the significance of explicit institutional policies that delineate ethical boundaries and academic integrity. These policies have been demonstrated to foster trust and support responsible AI utilization (McDonald et al., 2025).

It is imperative to acknowledge the limitations inherent in the interpretation of these findings. Initially, an identification issue in the CFA precluded the estimation of the original three-dimensional model, necessitating the utilization of a single-factor model. This limitation-imposed constraints on reliability and validity assessments, confining them to the overall construct. Secondly, the removal of multiple items occurred due to factor loadings falling below 0.40. This resulted in an adapted scale that is not fully comparable to the original and may reflect differences in academic cultural interpretation. Thirdly, the data are based on student self-reports, which may not accurately represent actual ChatGPT use due to perceptual and social desirability biases.

Conclusion

On the basis of the results of the analysis, it can be concluded that the adaptation of the ChatGPT Usage Scale to the Indonesian student context has not yet achieved full validity for widespread use. The Indonesian version of the ChatGPT Usage Scale possesses the capacity to assess ChatGPT utilization within an academic milieu. Nevertheless, the incongruity between the data and the three-dimensional model of the original version suggests that the Indonesian version of the scale does not entirely mirror the original construct, thereby rendering it conceptually unstable. The viability of the new model is contingent upon the elimination of several items.

Recommendation

Consequently, further research is recommended to review the items that were discarded by redeveloping the instrument on a large and diverse sample to obtain stronger validity that reflects actual conditions. The language adaptation process should be refined to align with the Indonesian academic context. This refinement should include the following linguistic aspects: semantic clarity to minimize ambiguity, cultural resonance to reflect students' real academic experiences, and alignment with commonly used academic terminology to ensure comprehensibility in higher education settings. Furthermore, subsequent studies may benefit from incorporating interviews or focus group discussions to more thoroughly examine the decision-making processes of students when utilizing ChatGPT in academic settings.

Additionally, the findings of this study have implications for curriculum developers in higher education, suggesting the need to integrate AI literacy, ethical and responsible AI use, and critical evaluation of AI-generated content into curricula. Learning modules or workshops can be designed to train students in assessing accuracy, credibility, and limitations of ChatGPT outputs while fostering reflective thinking, thereby strengthening students' readiness to use AI responsibly and maintaining the integrity of AI-assisted academic work.

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