Analyzing the Impact of Effort Expectancy and Cognitive Attitudes on The Willingness to Accept ChatGPT

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Article Info	Abstract
	This study aims to analyze the impact of Effort Expectancy (EE), adapted from the Unified Theory of Acceptance and Use of Technology (UTAUT) and Cognitive Attitude (CA) from the Theory of Reasoned Action (TRA) model, on Willingness to Accept (WA), adapted from TAM on ChatGPT. By understanding the relationship between these factors, we can identify effective strategies to increase user acceptance of ChatGPT technology. The research method used is quantitative with multiple linear regression calculations in SPSS. This study obtained 50 respondents with a total of 10 variables, but there were 3 main variables. With the final result, Effort Expectancy has no significant effect on Willingness to Accept, while Cognitive Attitude has a significant effect on Willingness to Accept. This suggests that users' perceptions of how easy or difficult it is to use ChatGPT do not influence their decision to accept and use the technology. In this context, users may feel that ease of use is not a major factor influencing their acceptance of ChatGPT. This means that users' cognitive attitudes—including their beliefs, perceptions, and understanding of the technology—play an important role in their decision to accept and use ChatGPT.

1. Introduction

Artificial Intelligence (AI) has become an integral part of the development of modern information and communication technology [1]. One prominent application of AI is in the form of chatbots, with ChatGPT as one of the most advanced examples. The ChatGPT (Generative Pre-trained Transformer) deep learning model was developed by OpenAI in 2018. ChatGPT is a generative model that can be used to generate text that is appropriate to the context of a discussion. ChatGPT uses a transformer

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architecture, also known as a self-attention model, to enable highly complex discussions while maintaining previous context [2].

ChatGPT allows users to communicate with the system using natural language, ask for information, run commands, or even chat like other humans [3]. Despite its potential and advantages, the adoption and acceptance of users of ChatGPT is not always in line with the development of the technology itself. Psychological factors and user perceptions of this technology play an important role in determining how well this technology is accepted and used by the wider community. Some factors studied broadly in the context of technology adoption are Effort Expetancy (EE) and Cognitive Attitudes (CA).

Effort Expectancy refers to user perceptions about how easy or difficult to use a technology. The use that is considered easy will increase the possibility of acceptance of the technology. On the other hand, Cognitive Attitudes (CA) include the attitudes, beliefs, and cognitive evaluation of users towards the technology. A positive attitude towards technology tends to increase the intention and Willingness to accept (WA) the technology.

Previous studies have investigated the factors influencing user acceptance of ChatGPT using various theoretical frameworks. For instance, research applying the Unified Theory of Acceptance and Use of Technology (UTAUT) has explored students' use of ChatGPT in academic settings [4]. The findings revealed that acceptance is determined by Behavioral Intention, which is significantly influenced by both Performance Expectancy and Effort Expectancy. Similarly, another study employed the Technology Acceptance Model (TAM), conceptually validating the relationships between Perceived Usefulness, Perceived Ease of Use, and the intentions of university students to adopt ChatGPT [5].

While these studies provide valuable insight using established models, a research gap remains in understanding the specific interplay between constructs from different foundational theories. This research distinguishes itself by proposing and testing a hybrid model that specifically integrates Effort Expectancy (EE) from UTAUT with Cognitive Attitude (CA), a construct derived from the Theory of Reasoned Action (TRA). By examining how these two factors jointly influence Willingness to Accept (WA), this study offers a more focused and nuanced perspective on the cognitive and perceptual drivers of ChatGPT adoption.

In the context of ChatGPT, understanding how users perceive business needs to use this technology, or Effort Expectancy, and how their Cognitive Attitudes towards this technology affect their willingness to accept and use ChatGPT to be very important. In-depth analysis of these factors will provide valuable insight for technology developers and marketers to increase adoption and use ChatGPT more broadly and effectively.

2. Literature Review

ChatGPT

ChatGPT is a natural language processing technology that uses AI to respond to queries. This technology can perform various activities. As a result, it creates more conversational information, takes knowledge from the conversation, and can then provide more specific and tailored responses [6]. ChatGPT has experienced remarkable growth since its launch, as evidenced by the following graph in Figure 1.

Figure 1. Traffic and Engagement ChatGPT.
(Source: SimilarWeb, 2024)

Figure 1, based on the results of traffic & engagement analysis in 2024 through the SimilarWeb website, the ChatGPT application experienced a significant increase from the previous April, which was 14.39%. Likewise, the number of visitors to the ChatGPT page increased to 2.9B [7]. ChatGPT can also influence several aspects, one of which is the educational aspect. The main advantages of using ChatGPT in education are to provide various information accurately and quickly, translate languages, create original texts, help programmers solve code problems and etc.

Effort Expectancy

Effort Expectancy is a variable of the Unified Theory of Acceptance and Use of Technology (UTAUT) model that plays an important role in influencing technology adoption decisions. UTAUT formulation is based on eight research models, namely, the technology acceptance model, innovation diffusion theory, hybrid model TAM–TPB, motivational model, theory of planned behavior, theory of reasoned action, social cognitive JRIM theory, and model of PC utilization [8]. The UTAUT model has been proven to have an accuracy of up to 70% in predicting the adoption of information technology innovations by users, much higher than previous models, making UTAUT an excellent indicator [9]. The research variable of Effort Expectancy (EE) can be defined in terms of ease of use. That is, how easy people feel in using technology, and the strength of ease in using technology.

Consumers decide whether ChatGPT is feasible to be implemented in real life based on their technology usage behavior (easy or difficult) [10]. Effort Expectancy, which is part of perceived ease of use. In UTAUT theory, Effort Expectancy is considered an important determinant that influences the intention to use new technology. Users tend to be more accepting of technology that is perceived as easy to use. Based on research, Effort Expectancy has a positive impact on students' Willingness to Accept towards technology application [11]. By following the above arguments, Effort Expectancy is hypothesized as:

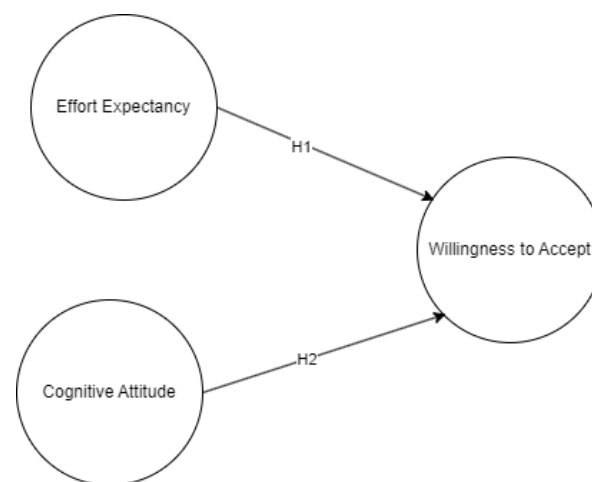**H1**: Effort Expectancy will be positively related to Willingness to Accept

Figure 2. Research Model

Cognitive Attitude

Cognitive Attitude is a variable of the Theory of Reasoned Action. The Theory of Reasoned Action (TRA) is considered the most influential and most commonly applied theory to explain the likelihood of individuals performing certain behaviors. The model has been validated in various behavioral contexts that most researchers find useful for predicting and explaining individuals' intentions to engage in behavior at a given time [12]. Therefore, in this study, TRA was applied to test students' willingness to accept ChatGPT. The Cognitive Attitudes variable reflects a person's logical and rational evaluation of technology based on their understanding and experience. This includes positive or negative perceptions of technology based on its performance and benefits. The Scientific Reason is the Attitude and Behavior Model: Cognitive attitudes are a major component in the attitude-behavior model, which states that attitudes toward an object (in this case, technology) influence the intention to use and adopt behavior. Positive Cognitive Attitudes toward technology will increase the intention to adopt the technology [13]. Reliability is hypothesized as:

H2: Cognitive Attitude will be positively related to Willingness to Accept

Willingness to Accept

A valid approach to measuring user willingness to accept (WA) is essential in technology acceptance decision-making. Willingness to Accept (WA) is often considered a variable related to technology acceptance models such as the Technology Acceptance Model. In the context of TAM, WA can be considered as part of a larger variable, namely, Behavioral Intention to Use. The scientific reason is the Innovation Adoption Model, this model shows that readiness to accept innovations is influenced by user perceptions of the relative benefits and ease of use of technology. Willingness to accept is a direct indicator of the success of technology adoption. Understanding the factors that influence willingness to accept technology is key to developing strategies that increase adoption rates.

3. Method

The research design and methods used in this study are quantitative. The primary data used were obtained through a survey distributed to all ChatGPT users who have experience interacting with this application, especially students. In this study, there are two types of variables, namely independent variables and dependent variables. The use of the variables Effort Expectancy and Cognitive Attitude are independent variables, and the dependent variable is Willingness to Accept.
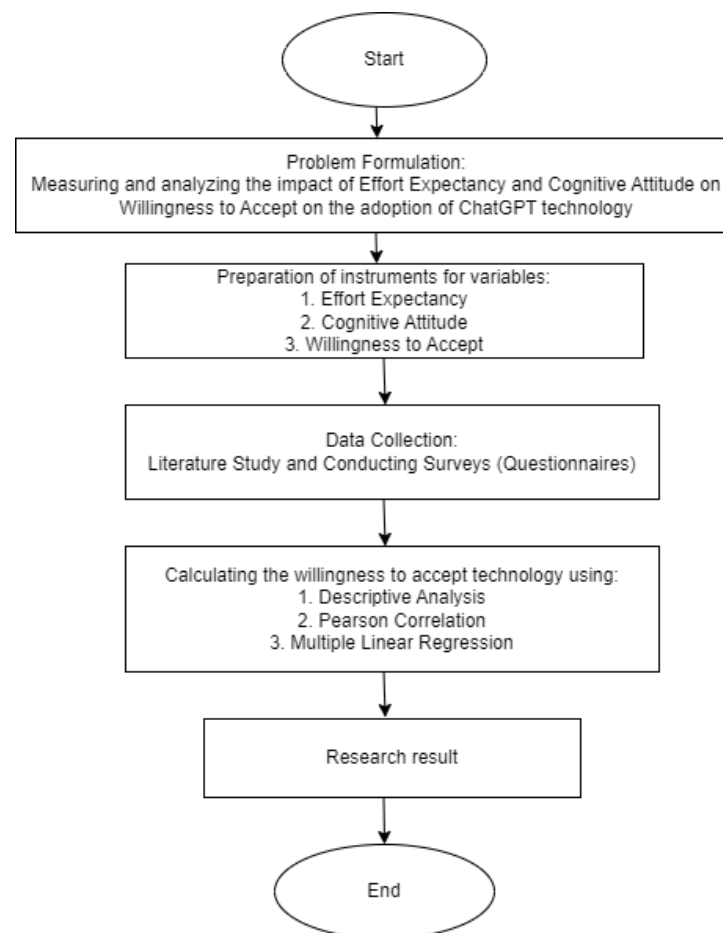

Figure 3. Stage of Research Process

Survey instrument

The survey used in this study aims to analyze the impact of Effort Expectancy and Cognitive Attitude on Willingness to Accept ChatGPT. By understanding the relationship between these factors, we can identify effective strategies to increase user acceptance of ChatGPT technology. To ensure ease of response, the first page of the questionnaire contains very clear instructions, clarifies the purpose of the study, and asks to answer questions about: age, gender, province of origin, education currently being pursued, and ChatGPT is often used. The main instrument in the questionnaire is a five-point

Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire distributed contains 10 variables with 37 statement items. However, in this report, the author uses 3 variables, namely Effort Expectancy, Cognitive Attitudes, and Willingness to Accept, with 11 indicators.

Data Analysis Method
Descriptive Analysis

In this descriptive research analysis, the researcher will intentionally display data including: number of respondents, lowest score, highest score, average (mean), and standard deviation for each statement item in the questionnaire.

Pearson Correlation

Statistical techniques that are often used to find relationships between variables for numerical data are correlation techniques, with Pearson Correlation, or known as Correlation Product Moment. The Pearson Product-Moment Correlation Coefficient is a parametric measure used to assess the strength of a linear relationship between two variables. However, in cases where the relationship between the variables is not linear, this coefficient will not accurately describe the strength of the relationship [14].

Pearson correlation will be used to identify the relationship between the variables Effort Expectancy, Cognitive Attitudes, and Willingness to Accept. The Pearson correlation coefficient is a range between values -1, 0, and 1. Where a value of 1 is a perfect positive correlation, -1 is a perfect negative correlation value, and 0 is a statement that there is no relationship or correlation between the two variables being tested. Also, if the significance value < 0.05, then it is correlated. Conversely, if the significance value > 0.05, then it is not correlated [15].

Multiple Linear Regression

Multiple Linear Regression is a linear regression model involving more than one independent variable or predictor [16]. In the multiple regression analysis method, there are three tests performed, namely:

1) Coefficient of Determination (R^2)

Simply put, the Coefficient of Determination is used to measure how well the model is able to predict variations in dependent variables. If the R Square value is 0.75, then the variability in the strong category is high; while the R Square value is 0.50, then the variability in the sufficient category is high [17].

2) Anova Test

ANOVA, or Analysis of Variance, is a statistical method used to assess differences in means between groups in a sample. The ANOVA test is usually used to check whether the means of several groups are the same by comparing the variance between groups with the variance within groups [18]. Statistically significant results are when the probability $p < 0.05$.

3) T Statistical Test

The t-test is used to evaluate whether the independent variable has an individual or partial effect on the dependent variable. If the significance value is less than 0.05 and the t-count value is higher than the t-table, then if the significance value is smaller than the confidence level and the t-test value is greater, the alternative hypothesis is accepted, which indicates that the independent variable has a partial effect on the dependent variable [19].

4. Results and Discussion

Sample Characteristics

Respondents reported their demographic details, including age, gender, province of origin, and education currently being pursued. ChatGPT is often used for what from a total of 52 respondents. 48.1% are male, 51.9% are female. Of the respondents, 98.1% are aged 17-22 years, while 1.9% are aged 29-34 years. Respondents mostly come from Central Java Province, with 86.5% while those from East Java, Papua, Southwest Papua, South Kalimantan, Banten, DKI Jakarta, and West Java are both 1.9%. Participants are mostly undergraduate students, with a total of 96.2% and around 1.9% are postgraduate students, then high school / vocational school / MA students, as much as 1.9%. Regarding

the most frequent use of ChatGPT for what, it covers around 71.2% of respondents to search for information, and helps in conducting research and references. While for the preparation of academic assignments, as many as 23.1% and the least respondents use it to improve language skills, around 5.8%.

Descriptive Statistics

The results of each statement item in the questionnaire after descriptive analysis in SPSS are as follows:

Table 1. Descriptive statistic

	N	Minimum	Maximum	Mean	Std. Deviation
SI1	52	1	5	3.31	.961
SI2	52	1	5	3.42	.915
SI3	52	1	5	3.42	.871
SI4	52	1	5	3.02	1.038
HM1	52	1	5	3.58	.825
HM2	52	1	5	3.73	.866
HM3	52	1	5	3.63	.929
NV1	52	1	5	3.35	1.101
NV2	52	2	5	3.65	.814
NV3	52	2	5	3.69	.729
PH1	52	1	5	3.25	.926
PH2	52	1	5	3.00	.950
PH3	52	1	5	3.13	1.048
PH4	52	1	5	3.02	1.000
PE1	52	1	5	4.10	.799
PE2	52	1	5	4.15	.777
PE3	52	1	5	3.79	1.016
PE4	52	2	5	3.92	.837
EE1	52	1	5	4.12	.832
EE2	52	1	5	3.83	.810
EE3	52	2	5	4.08	.710
EE4	52	1	5	3.85	.894
CA1	52	1	5	3.88	.922
CA2	52	1	5	4.04	.791
CA3	52	1	5	4.06	.873
CA4	52	1	5	4.08	.813
AA1	52	1	5	3.60	.799
AA2	52	1	5	3.42	.893
AA3	52	1	5	3.37	.950
AA4	52	1	5	3.62	.889
WA1	52	1	5	3.69	.829
WA2	52	1	5	3.67	.810
WA3	52	1	5	3.77	.877
OU1	52	1	5	3.04	.949
OU2	52	1	5	2.87	1.030
OU3	52	1	5	3.12	1.022
OU4	52	1	5	2.71	1.289
AA1	52	1	5	3.60	.799
Valid N (listwise)	52				

Correlation Analysis

After analyzing the descriptions that display the average and standard deviation, the next step is to look at the correlation matrix of the variables Effort Expectancy (EE), Cognitive Attitudes (CA), and Willingness to Accept (WA). Using the 'Pearson' correlation method to see the strength and direction of the relationship between these variables. Positive correlation: if one variable increases, the other variable also tends to increase.

Table 2. Analyze Correlation

		CA	WA	EE
EE	Pearson Correlation	1	.645**	.618**
	Sig. (2-tailed)		.000	.000
	N	52	52	52
CA	Pearson Correlation	.645**	1	.767**
	Sig. (2-tailed)	.000		.000
	N	52	52	52
WA	Pearson Correlation	.618**	.767**	1
	Sig. (2-tailed)	.000	.000	
	N	52	52	52

**. Correlation is significant at the 0.01 level (2-tailed).

The results of the correlation analysis from Table 2 show a strong positive relationship between Effort Expectancy and Willingness to Accept, with a correlation value of 0.618. This means that users who consider ChatGPT easy to use tend to be more willing to accept and use ChatGPT. Meanwhile, a significant value has been shown ($p < 0.05$), then the two variables are correlated.

The significance value between Cognitive Attitude and Willingness to Accept has met the requirements, namely ($p < 0.05$). In addition, the Pearson Correlation value of 0.767 indicates a very strong correlation relationship. This means that a more positive cognitive attitude toward ChatGPT is strongly correlated with a greater willingness to accept and use ChatGPT.

Multiple Linear Regression
Coefficient of Determination (R^2)

The results of the regression analysis provide information on how well the regression model is able to explain the variability in the dependent variable (Willingness to Accept). Then there is an ANOVA analysis in the context of linear regression used to test the significance of the overall regression model. There are regression coefficients providing information on the contribution of each independent variable (Effort Expectancy and Cognitive Attitudes) in predicting the dependent variable (Willingness to Accept). The results of the coefficient of determination are presented in Table 3.

Table 3. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.784a	.615	.599	1.425

a. Predictors: (Constant), CA, EE

From Table 3, it can be concluded that the R Square value meets the requirements and is in the sufficient category with a value of 0.615, and 61.5% of the variability in the dependent variable (Willingness to Accept) can be explained by the independent variables (Effort Expectancy and Cognitive Attitudes).

Anova Test and T-Test
The next test is the ANOVA test. The results of the t-test are in Table 4.

Table 4. ANOVA[a]

Sum of Squares	df	Mean Square	F	Sig.
158.579	2	79.290	39.055	.000[b]
99.479	49	2.030		
258.058	51			

a. Dependent Variable: WA

b. Predictors: (Constant), CA, EE

After that, the next text is the t-test. The results of the t-test are in Table 5.

Table 5. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.553	1.270		.435	.665
	EE	.176	.097	.211	1.813	.076
	CA	.485	.089	.631	5.439	.000

a. Dependent Variable: WA

In Table 5, the t value of 1.813 and the significance of 0.076 indicate that the effect of EE is not significant on WA because $p > 0.05$). Then the value of $1.81 < 2.22$, then EE does not have a significant effect on WA because the t count should be > t table.

In the CA Model, the t count value of 5.439 and the significance of 0.000 indicate that the effect of CA is very statistically significant because ($p < 0.05$), so we reject H0. Then the t count value > t table is $5.439 > 2.22$. This means that Cognitive Attitudes have a very significant relationship with Willingness to Accept.

Discussion

Effort Expectancy does not have a significant effect on Willingness to Accept, so that H1 is rejected because at the time of the hypothesis test, the significant value is > 0.05, while the requirement must be <0.05; then the calculated t value (1.813) < t table (2.22) means that the variable has no effect. The calculation results are relevant to previous research, which states that EE has no positive effect on WA [20]. Based on the results of the data processing obtained, if Effort Expectancy does not affect Willingness to Accept in using ChatGPT technology, it means that users' perceptions of how easy or difficult it is to use ChatGPT do not affect their decision to accept and use the technology. In other words, ease of use is not the main factor that determines whether someone is willing to adopt ChatGPT. This may be due to the dominance of other factors, such as perceived benefits, trust in technology, or cognitive attitudes of users that are more influential in their decision to accept this technology. In this context, users may focus more on the results or benefits they get than on the effort required to use the technology. This is what happens in other AI technologies, where users continue to use them even though the technology is made complicated or vice versa.

Cognitive Attitude has a significant effect on Willingness to Accept, so that H1 is accepted because at the time of the hypothesis test, the significant value is <0.05, where the requirement must be <0.05, then the calculated t value (5.439)> t table (2.22) indicates that the variable has a large influence. The results of this calculation are relevant to previous research, which states that Cognitive Attitude has a significant effect on Willingness to Accept [10]. Cognitive Attitudes reflect a person's logical and rational evaluation of technology based on their understanding and experience. This includes positive or negative perceptions of technology based on its performance and benefits. Cognitive attitudes are a major component in the attitude-behavior model, which states that attitudes toward objects (in this case, technology) influence the intention to use and adopt behavior. Theory of Reasoned Action: According to this theory, a person's attitude toward a particular behavior influences their intention to perform that behavior. Positive Cognitive Attitudes toward technology will increase the intention to adopt the technology.

5. Conclusion

Effort Expectancy (EE) tends not to affect Willingness to Accept (WA), because its influence is not significant, as the value is more than 0.05. This shows that the perception of ease of use does not play an important role in shaping the willingness to accept ChatGPT. It means can be concluded that in the use of ChatGPT technology, it means that user perceptions of how easy or difficult it is to use ChatGPT do not affect their decision to accept and use the technology. In this context, users may feel that ease of use is not the main factor influencing their acceptance of ChatGPT. Cognitive Attitudes (CA) is very significant, which shows a strong and positive relationship with Willingness to Accept. This means that changes in Cognitive Attitudes significantly affect the user's willingness to accept ChatGPT. Cognitive Attitudes have a very strong correlation with Willingness to Accept, which emphasizes that a positive cognitive attitude greatly affects the user's willingness to accept and use ChatGPT. These results support the theory that the perception of ease of use of Effort Expectancy and Cognitive Attitudes are important factors influencing the adoption of new technologies such as ChatGPT. With this understanding, developers and marketers can focus more on efforts to improve the perception of ease of use and positive user attitudes in order to increase the rate of technology adoption. Overall, the regression model shows that Cognitive Attitude (CA) has a greater and more significant influence than Effort Expectancy (EE) in predicting users' willingness to accept and use ChatGPT.

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