



Teacher Competence in the Digital Era: A Technology Acceptance Model (TAM) Analysis of the Ruang GTK Application in South Lampung Public High Schools Regency

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Abstract

This study aims to analyze the influence of using the “Ruang GTK” application on improving teacher competence at South Lampung Public High Schools Regency. The Ruang GTK application is a digital platform from the Indonesian Ministry of Education and Culture designed to support teachers' professional development. The research employs a quantitative approach, utilizing the Technology Acceptance Model (TAM) framework and analyzed with Smart-PLS. Data were collected through questionnaires from 211 teachers, measuring key constructs: Perceived Ease of Use, Perceived Usefulness, Attitude Toward Using, and Behavioral Intention to Use the application, and their relation to teacher competence indicators. The results indicate that the use of the Ruang GTK application has a positive and significant influence on the improvement of teachers' pedagogical, professional, and technological competencies. The implication of this research emphasizes the importance of utilizing digital platforms to support teachers' continuous professional development.

INTRODUCTION

The Ruang Guru dan Tenaga Kependidikan (Ruang GTK) is a digital platform created by the government to provide services for teachers and education personnel in Indonesia. Ruang GTK offers a wide range of services that every educator can utilize to support their competencies and career. Ruang GTK represents a new digital breakthrough, transformed from the Merdeka Belajar platform, designed to serve as a space for learning, inspiration, and self-development for educators to enhance their competencies, manage performance, and foster collaboration.

Ruang GTK services are divided into four main categories. First, Continuous Learning, which includes In-service Training (Diklat), Educator Certification, Self-directed Training, and Community. The second category is Career and Performance, comprising Performance Management, Principal Selection, and Competency Reflection. The third category is Learning Inspiration, which includes features supporting the teaching-learning process, such as Teaching Resources, Learning Outcomes (CP), Learning Objective Pathways (ATP), Practical Ideas, Work Evidence, Inspirational Videos, and Student Assessments. The fourth category is Reference Documents, covering Learning Management, Performance Management, Competency Improvement, and Educational Institution Management.

Ruang GTK was developed to support the curriculum and collaborative learning processes in the classroom, enabling more creative, meaningful, and student-centered teaching. Educators can access Ruang GTK through its official website at rumah.pendidikan.go.id or by downloading the Ruang GTK mobile application via the Play Store. The GTK application embodies digital transformation in education, encouraging teachers to adapt to technology to enhance their competencies, thus requiring continuous development of pedagogical, professional, and technological skills. Ruang GTK serves as an integrated solution platform, providing learning resources, training, and collaboration opportunities for educators. However, the effectiveness of this application in improving teacher competencies at the school level requires further in-depth investigation. Although introduced in 2023, a gap remains between expectations and on-the-ground realities. In practice, many teachers have not yet downloaded the application, linked their accounts, or utilized it optimally.

A previous study by Septyawan et al. (2023) found that the Ministry of Education's digital platforms can increase teacher motivation, yet few studies have empirically measured their impact on competency aspects. Other research by Fahmi & Sari (2022); Milla et al. (2024); Sugari & Hilalludin (2025) reveals that the adoption of educational technology is still hindered by factors such as readiness and infrastructure in regional areas. Based on these conditions, the urgency of this research is to provide empirical evidence regarding the contribution of the Ruang GTK Application in improving teacher competence, especially in secondary schools in regions undergoing curriculum transition. The findings are expected to serve as a reference for schools and education offices in supporting digital-based teacher development programs.

Preliminary data from the South Lampung Regency Education Office as of August 2025 shows that there are 657 public high school teachers in South Lampung Regency, of which only 344 have used the Ruang GTK application. This indicates that 313 teachers, or approximately 52.4% of the total public high school teachers in South Lampung Regency, have not yet utilized the Ruang GTK application. Referring this preliminary data, the research problem is formulated as follows:

1. Does perceived ease of use have a positive and significant effect on perceived usefulness of the Ruang GTK application among public high school teachers in South Lampung Regency?
2. Does perceived usefulness have a positive and significant effect on attitude toward using the Ruang GTK application among public high school teachers in South Lampung Regency?
3. Does perceived ease of use have a positive and significant effect on attitude toward using the Ruang GTK application among public high school teachers in South Lampung Regency?
4. Does perceived usefulness have a positive and significant effect on behavioral intention to use the Ruang GTK application among public high school teachers in South Lampung Regency?
5. Does attitude toward using have a positive and significant effect on behavioral intention to use the Ruang GTK application among public high school teachers in South Lampung Regency?

METHODS

A. Research Design

This study employs the Technology Acceptance Model (TAM) framework based on the theory proposed by Venkatesh and Davis (2002) as cited in Budiyanto (2023). TAM is considered the most suitable concept for explaining user behavior toward new information technology systems and is regarded as the most appropriate model for understanding user acceptance of a system. The research stages are illustrated in Figure 1.

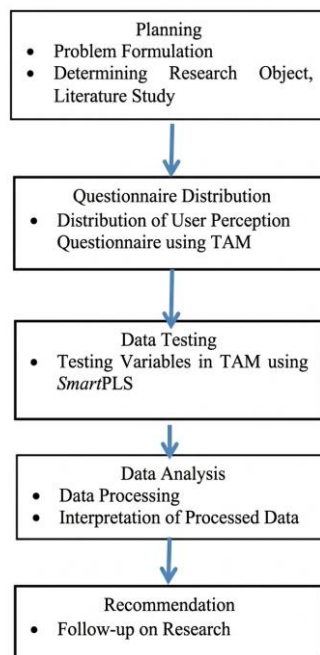


Figure 1. Research Stage

B. Research Data

Data collection was carried out by distributing questionnaires and conducting field surveys at the research location. The data used in this study were obtained through questionnaires administered through Google Form, focusing on the benefits and usability of the application. The questionnaires were distributed to respondents using a 5-point Likert scale (Strongly Disagree to Strongly Agree) (Sugiyono, 2021). The questionnaire was also developed based on established constructs from previous TAM studies and was tested for content validity by experts and construct reliability.

The questionnaire consists of two parts:

1. Part One contains questions regarding respondents' personal data, which will be kept confidential for research purposes.
2. Part Two includes indicators used to measure the research variables.

At this stage, an assessment was conducted on the perceived usefulness and ease of use of the Ruang GTK Application in relation to IT acceptance, based on respondents' interpretations across criteria such as age and gender. This aimed to determine the extent of the application's benefits and usability. Data analysis was performed using Smart PLS software with the PLS-based Structural Equation Modeling (SEM) method (Yarsasi et al. (2025), to obtain the research results.

C. Research Variables and Indicators

The following TAM variables are used in this study:

1. Perceived Ease of Use
 Perceived ease of use is defined as the degree to which an individual believes that using a particular technology would be free of physical and mental effort (Hutomo, 2023).
2. Perceived Usefulness
 Perceived usefulness describes the degree to which an individual believes that using a specific technology would enhance their job performance (Hutomo, 2023).
3. Attitude Toward Using
 Attitude represents an individual's feelings of favorableness or unfavorableness towards using a system (Dedy et al., 2025).
4. Behavioral Intention to Use
 Behavioral intention to use describes an individual's willingness to reuse the same thing when the need arises again (Fadhli et al., 2021).

The questionnaire in this study consists of 13 indicator questions representing the TAM variables, as presented in Table 1.

Table 1. Indicator Questionnaire

Variable	Indicator	Code
Perceived Ease of Use	Easy to use	PEOU1
	Does not require much effort	PEOU2
	Easy to understand	PEOU3
Perceived Usefulness	Can improve effectiveness in teaching/learning	PU1
	Helps in completing work tasks	PU2
	Helps in professional development	PU3
Attitude Toward Using	Like using it	ATU1
	Feels very needed	ATU2
	Feel satisfied using it	ATU3
Behavior Intention to Use	Intend to use it	BIU1
	Will continue using it in the long term	BIU2
	Will recommend it to colleagues	BIU3
	Will increase the frequency/intensity of use	BIU4

D. Population and Sample

A purposive sampling technique was used to select respondents who were active public high school

teachers in South Lampung Regency and had been introduced to the Ruang GTK application, totaling 657 teachers. The sample size was determined using the Slovin formula with a 95% confidence level and a 5% margin of error, resulting in a minimum required sample of 211 respondents.

E. Model Evaluation

Model evaluation in PLS-SEM is the process of assessing whether the estimated PLS-SEM model adequately explains the data. The evaluation of the PLS-SEM model is conducted through the outer model including convergent reliability, discriminant validity, and composite reliability, and the inner model including coefficient determination (R^2) and hypotheses (T-test) (Nusrang et al., 2023).

F. Hypothesis Testing

In this PLS-SEM analysis, hypothesis testing was performed using the bootstrapping procedure with 5,000 subsamples to generate stable estimates of the path coefficients' significance. The decision to accept or reject a hypothesis was based on the p-values obtained from this procedure. The standard significance level (α) of 0.05 was applied. Consequently, a hypothesis is considered statistically supported if its associated p-value is less than 0.05 ($p < 0.05$).

The hypotheses in this study are:

1. Perceived Ease of Use has a positive effect on Perceived Usefulness.
2. Perceived Usefulness has a positive effect on Attitude Toward Using.
3. Perceived Ease of Use has a positive effect on Attitude Toward Using.
4. Perceived Usefulness has a positive effect on Behavioral Intention to Use.
5. Attitude Toward Using has a positive effect on Behavioral Intention to Use.

RESULTS AND DISCUSSION

A. Result

Questionnaire Calculation Using the TAM Method

This section reports the descriptive analysis of the questionnaire data collected from the respondents. The objective is to provide a general overview of the data collected during the research. Regarding the main respondent characteristics, the results indicate that 75% of the total respondents fall within the productive age range (30-50 years old), and 68% have more than 10 years of work experience (seniority).

This data shows that the research sample is predominantly composed of educators in mature adulthood with substantial teaching experience (senior level). This indicates that the research findings represent the perceptions and experiences of well-established teachers in their field. Meanwhile, the results of the mean measurements from the respondents' answers are presented in Table 2 which displays the mean scores and standard deviations for each measurement item (indicator). Prior to the main analysis, the collected data were screened for completeness and outliers. All 211 questionnaires were fully completed and deemed usable for further analysis.

Table 2 indicates that most measurements for each indicator demonstrate high mean values. Indicators ATU2, ATU3, BI1, BI3, BI4, PU1, PU2, and PU3 show high mean scores, while indicators ATU1, BI2, PEOU1, PEOU2, and PEOU3 exhibit moderate mean scores. As shown in Table 2, no indicator recorded a low mean score. Therefore, it can be inferred that each measurement indicator has a substantial to very substantial influence on its respective latent variable. Based on the questionnaire results, the overall level of acceptance for using the Ruang GTK application, calculated as the average score across all four TAM variables, is 75.18%, which is classified as high.

Table 2. Questionnaire Calculation Results

Indicator	Mean	% Mean	Median	Observed min	Observed max	Standard deviation
ATU1	3.611	72.220	4.000	1.000	5.000	0.748
ATU2	3.924	78.480	4.000	1.000	5.000	0.744
ATU3	3.739	74.780	4.000	1.000	5.000	0.731
BIU1	3.858	77.160	4.000	1.000	5.000	0.747

Indicator	Mean	% Mean	Median	Observed min	Observed max	Standard deviation
BIU2	3.607	72.140	4.000	1.000	5.000	0.827
BIU3	3.839	76.780	4.000	1.000	5.000	0.730
BIU4	4.033	80.660	4.000	1.000	5.000	0.691
PEOU1	3.597	71.940	4.000	1.000	5.000	0.873
PEOU2	3.360	67.200	4.000	1.000	5.000	1.023
PEOU3	3.602	72.040	4.000	1.000	5.000	0.781
PU1	3.900	78.000	4.000	1.000	5.000	0.738
PU2	3.967	79.340	4.000	1.000	5.000	0.769
PU3	3.829	76.580	4.000	1.000	5.000	0.808

Model Evaluation

1. Convergent Validity

Convergent validity is considered satisfactory when the outer loadings are greater than 0.7 (Nisa et al., 2021). The test results can be seen in Table 3. Data analysis in Table 3 shows that all outer loading values exceed 0.7. This indicates that all indicators (correlations between indicators and their latent variables) analyzed are valid, meeting the criterion for convergent validity.

Table 3. Outer Loading Test Results

	ATU	BIU	PEOU	PU
ATU1	0.800			
ATU2	0.872			
ATU3	0.898			
BIU1		0.916		
BIU2		0.896		
BIU3		0.881		
BIU4		0.870		
PEOU1			0.884	
PEOU2			0.759	
PEOU3			0.863	
PU1				0.898
PU2				0.887
PU3				0.897

2. Discriminant Validity

Discriminant validity was tested by comparing the square root of the Average Variance Extracted (AVE) for each latent variable with the correlations between that latent variable and all other latent variables in the model. The discriminant validity test results based on the Fornell-Larcker criterion are presented in Table 4.

Table 4. Fornell-Larcker Criterion Test Results

Variable	AVE	R-Square	Description
ATU	0.735	0.648	Valid
BIU	0.794	0.790	Valid
PEOU	0.701	-	Valid
PU	0.800	0.312	Valid

The comparison shows that the square root of the AVE for each latent variable (values on the diagonal) is higher than its correlations with other latent variables (off-diagonal values in the corresponding rows and columns). Therefore, it can be concluded that all latent variables in this research model possess good discriminant validity.

3. Composite Reliability

A variable is considered reliable if its composite reliability value exceeds 0.7. In this study, all variables have composite reliability values greater than 0.7, as shown in Table 5. Thus, it can be concluded that the research instrument yields consistent results.

Table 5. Composite Reliability Test Results

Variabel	Composite Reliability	Description
Attitude Toward Using	0.833	Reliabel
Behavior Intention to Use	0.914	Reliabel
Perceived Ease Of Use	0.859	Reliabel
Perceived Usefulness	0.875	Reliabel

4. Structural Model (Inner Model) Evaluation

The estimated R-square (R^2) values obtained using SmartPLS are shown in Table 6. The interpretation of these R^2 values is described as follows:

1. The R^2 value for the Attitude Toward Using (ATU) variable in this model is 0.648. This means that the variables Perceived Ease of Use (PEOU) and Perceived Usefulness (PU), along with their indicators, collectively explain 64.8% of the variance in ATU. The remaining 35.2% is explained by other variables not included in the model.
2. The R^2 value for the Behavioral Intention to Use (BI) variable is 0.790. This indicates that Perceived Usefulness (PU) and Attitude Toward Using (ATU), along with their indicators, together explain 79.0% of the variance in BI. The remaining 21.0% is explained by other variables.
3. The R^2 value for the Perceived Usefulness (PU) variable is 0.312. This signifies that Perceived Ease of Use (PEOU) and its indicators explain only 31.2% of the variance in PU. The remaining 68.8% is attributed to other factors outside the model.

Table 6. R-Square Values

Variable	R-square (R2)	Description
ATU	0.648	Moderate
BIU	0.790	Strong
PU	0.312	Weak

The complete measurement model (outer model) results from SmartPLS are presented in Figure 2.

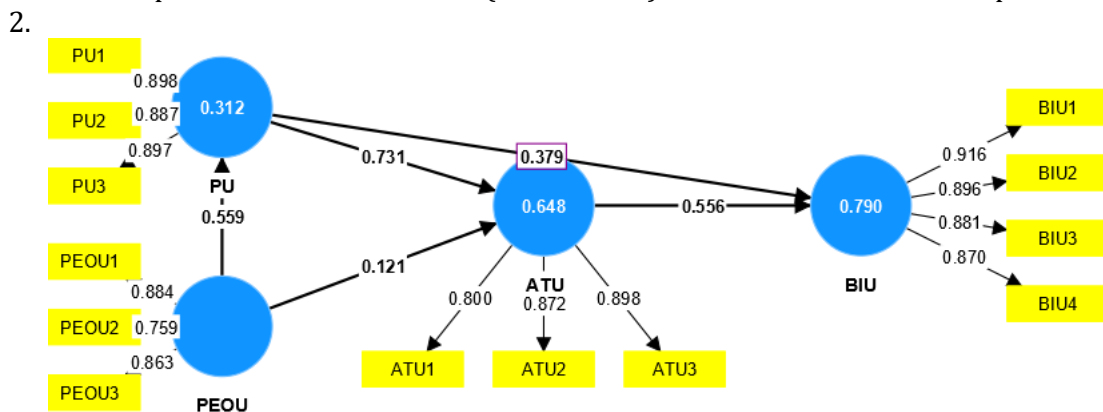


Figure 2. Results of the Measurement Model (Outer Model) Analysis

5. Hypothesis Testing

Hypothesis testing for the variables in PLS-SEM was conducted using the bootstrapping procedure, with the t-statistic as the criterion for significance. The critical t-value (t-table) for 210 degrees of freedom (df) at a 5% significance level (95% confidence) is 1.65. If the calculated t-statistic ≥ 1.65 , the null hypothesis (H_0) is rejected and the alternative hypothesis (H_a) is accepted, indicating a statistically significant relationship. Conversely, if the t-statistic ≤ 1.65 , H_0 is accepted,

and H_a is rejected. The results of the bootstrapping analysis for the path coefficients are presented in Table 7.

Table 7. Path Coefficients and Hypothesis Testing Results

	Original Sample (O)	Average Sample (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV) > 1,65	P Values < 0,05
ATU -> BIU	0.556	0.558	0.063	8.869	0.000
PEOU -> ATU	0.121	0.122	0.054	2.263	0.024
PEOU -> PU	0.559	0.562	0.052	10.842	0.000
PU -> ATU	0.731	0.729	0.052	14.182	0.000
PU -> BIU	0.379	0.378	0.063	6.048	0.000

According to the hypothesis testing results for each variable relationship, the outcomes are as follows:

1. Hypothesis 1: PEOU has a positive effect on PU.
The test results show that the influence of PEOU on PU has a t-statistic of 10.842 > 1.65. This indicates that the hypothesis is statistically significant. Therefore, H_a is accepted and H_0 is rejected for Hypothesis 1.
2. Hypothesis 2: PU has a positive effect on ATU.
The test results show that the influence of PU on ATU has a t-statistic of 14.182 > 1.65. This indicates that the hypothesis is statistically significant. Therefore, H_a is accepted and H_0 is rejected for Hypothesis 2.
3. Hypothesis 3: PEOU has a positive effect on ATU.
The test results show that the influence of PEOU on ATU has a t-statistic of 2.263 > 1.65. This indicates that the hypothesis is statistically significant. Therefore, H_a is accepted and H_0 is rejected for Hypothesis 3.
4. Hypothesis 4: PU has a positive effect on BI.
The test results show that the influence of PU on BI has a t-statistic of 6.048 > 1.65. This indicates that the hypothesis is statistically significant. Therefore, H_a is accepted and H_0 is rejected for Hypothesis 4.
5. Hypothesis 5: ATU has a positive effect on BI.
The test results show that the influence of ATU on BI has a t-statistic of 8.869 > 1.65. This indicates that the relationship is statistically significant and positive. Therefore, H_a is accepted and H_0 is rejected for Hypothesis 5.

B. Discussion

The discussion interprets the findings of the hypothesis tests within the TAM framework and contextualizes them with previous research.

1. The Effect of Attitude Toward Using (ATU) on Behavioral Intention (BI).
The analysis confirms a significant positive effect of Attitude Toward Using (ATU) on Behavioral Intention (BI), supported by a t-statistic of 8.869 (t-table = 1.65). This finding indicates that a teacher's positive feelings and satisfaction toward the Ruang GTK application directly strengthen their intention to use it. This aligns with prior TAM-based research, such as the study by Pertiwi and Sharif (2019), which also found that a positive attitude significantly influences behavioral intention to adopt technology.
2. The Effect of Perceived Ease of Use (PEOU) on Attitude Toward Using (ATU)
The test result shows a significant effect of Perceived Ease of Use (PEOU) on Attitude Toward Using (ATU), with a t-statistic of 2.263. This suggests that when teachers find the Ruang GTK application intuitive and easy to navigate, they develop a more favorable attitude toward its use. This result is consistent with findings by Iskandar et al. (2022), who reported that ease of use significantly shapes users' acceptance attitudes toward a system.
3. The Effect of Perceived Ease of Use (PEOU) on Perceived Usefulness (PU)

A strong and significant effect of PEOU on PU was found (t-statistic = 10.842). This means that the perceived ease of using the Ruang GTK application enhances teachers' belief in its usefulness for their teaching tasks. This relationship is a core tenet of TAM and is corroborated by studies like that of Priambodo et al. (2021), confirming that ease of use is a key antecedent to perceived usefulness.

4. The Effect of Perceived Usefulness (PU) on Attitude Toward Using (ATU)
The most substantial influence in the model is from PU to ATU (t-statistic = 14.182). This highlights that the primary driver of a positive attitude among teachers is their conviction that the application genuinely improves their effectiveness and professional development. This finding strongly supports the TAM framework and echoes results from Khan et al. (2023), who emphasized the critical role of perceived usefulness in forming a favorable attitude.
5. The Effect of Perceived Usefulness (PU) on Behavioral Intention (BI)
The analysis also confirms a significant direct effect of PU on BI (t-statistic = 6.048). This indicates that, beyond shaping attitude, the perceived benefits of the application independently motivate teachers' intention to use it. This direct path is supported by research such as Lin et al. (2021), which found perceived usefulness to be a significant predictor of usage intention.

CONCLUSIONS AND SUGGESTIONS

A. Conclusion

This study's findings reveal that Perceived Ease of Use is the most critical factor (t=10.842) in shaping high school teachers' positive attitude toward using the Ruang GTK application, followed by Perceived Usefulness (t=14.182). Furthermore, it can be concluded that the system's accessibility exerts a stronger influence on developing teachers' perceptions of both the usefulness and ease of use of the platform. Beyond enriching learning resources, the application effectively encourages teachers to independently develop their pedagogical, professional, and technological competencies. The practical implication of this research is the necessity for continuous mentoring and support in the application's utilization and the optimization of collaborative features to foster a community of practice among educators. For future research, it is recommended to explore mediating factors, such as teacher motivation or institutional support, in strengthening the impact of digital applications or platforms on teacher competency.

B. Suggestion

Based on the findings regarding the acceptance of the Ruang GTK application among public high school teachers in South Lampung Regency, several recommendations are proposed:

1. Relevant Content: The content and features available on the Ruang GTK application must be directly relevant to the daily needs and challenges faced by teachers in their professional practice.
2. Enhanced Support: Increase technical and pedagogical support for teachers through dedicated assistance and mentoring programs to facilitate optimal application use.
3. Intensive Socialization: Conduct more intensive outreach regarding the application's benefits and potential through regular workshops, seminars, or webinars to guide teachers in understanding its full capabilities.
4. User-Friendly Design: The application should maintain a simple, intuitive design with straightforward navigation to ensure easy access to all features, accommodating users with varying levels of digital literacy.
5. Periodic Evaluation: Implement regular evaluations of application usage, content, and features to ensure ongoing relevance, effectiveness, and alignment with evolving teacher needs.
6. Impact Monitoring: Establish a clear mechanism to monitor and evaluate student learning outcomes associated with the use of the Ruang GTK application. This will help teachers and relevant stakeholders measure the application's direct impact on improving educational quality in South Lampung Regency.

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