



The Effectiveness Factors of Student Learning through TikTok Media with the Application of the TAM Model

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ABSTRACT

This study aims to examine the factors that have an impact on the learning effectiveness of students who use social media TikTok for learning and gaining knowledge. Extended Technology Acceptance Model (TAM) theory is the main framework used to analyze, with the constructs of perceived ease of use, perceived usefulness, attitude towards TikTok Use, Behavioral intention to use, and learning effectiveness. Questionnaire data collection was carried out by hosting an online Google Form which was distributed to active students on the island of Java using nonprobability method and involving 181 samples. The data obtained was analyzed using LISREL with SEM and confirmatory factor analysis (CFA) to test the validity, reliability, hypothesis testing, and models. The results of the study show that the model has been able to explain the factors of learning effectiveness and the acquisition of new knowledge using TikTok media for university students in Java. In addition, the relationship between behavioral intention to use and learning effectiveness is a prominent and significant construct of this research.

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1. INTRODUCTION

Contemporary communication and media technology have enabled learning and the sharing of various knowledge through online communities (Szymkowiak *et al.*, 2021). Particularly in the present time, where social media is considered to be used as a learning tool, it also facilitates the creation and dissemination of knowledge among individuals with similar attitudes and goals, resulting in alternative views and new ideas within online communities (Manca and Ranieri, 2016). One such platform is the short video social media platform TikTok, which has become a popular form of social media application among teenagers for sharing entertaining content.

Based on previous research, the application of the TAM model has been observed in the realm of mobile learning experiences (Park *et al.*, 2012), the intention to use e-learning during the pandemic (Mailizar *et al.*, 2021), and other studies that focus on the acceptance of video technology for learning purposes (Al-Marroof *et al.*, 2021). However, there remains a dearth of comprehensive research that thoroughly investigates the adaptation of the immensely popular social media platform TikTok as a viable medium for learning, particularly within the Indonesian context. Despite the burgeoning trend of utilizing video media as a means of disseminating knowledge, there is a paucity of quantitative studies examining the attitudes towards and effectiveness of learning through TikTok. Consequently, this study seeks to bridge this knowledge gap and aims to explore the relationship between perceived ease of use, perceived usefulness, attitude towards TikTok use, behavioral intention to use TikTok, and their impact on the perceived effectiveness of learning among students. This research endeavor holds significance due to the expanding role of social media as a knowledge-seeking tool, coupled with the prevalent utilization of TikTok as a search engine among students. Consequently, it is imperative to assess the efficacy of incorporating this technological platform into the learning process and to evaluate its potential as an effective educational medium.

Based on Vygotsky's sociocultural theory of learning (1978), individuals learn through social interaction, sharing ideas, and experiences. Recent research by Vygotsky on social construction as a learning mechanism highlights that social processes drive cognitive change through social interactions. Therefore, this article employs the TAM model to measure the effectiveness of learning through the TikTok social media platform. The Technology Acceptance Model (TAM) (Davis, 1986) is widely used to assess users' acceptance of new technology. The primary purpose of this model is to explain user behavior regarding technology adoption (Chang *et al.*, 2017).

2. LITERATURE REVIEW

Previous research has addressed the adaptation of educational technology, particularly e-learning and social media, and their effectiveness in learning. Social media within higher education is assessed by Tess (2013) as having mostly adequate infrastructure for its use, although instructors lack proficiency in utilizing these facilities. Broadly speaking, social networking sites are used as sources of social knowledge that provide students with opportunities to validate and appreciate their creativity, support their peers, and receive institutional support (Al-Rahmi *et al.*, 2018). In this context, social media is considered beneficial for interactions between students and professors (Greenhow and Gleason, 2012). Several studies examining the use of social media for collaborative learning (Al-Rahmi *et al.*,

2018) have found that satisfaction with social media usage positively impacts students' learning performance and enriches their knowledge acquisition activities by facilitating group discussions.

Engaging in collaborative activities requires the utilization of ideas, sharing, and understanding different perspectives. Widely used social media offers insights into various ways individuals can interact with each other by sharing knowledge, thus integrating online interactions into everyday life. Additionally, literature has also proven that the use of social media networks yields positive learning outcomes and engagement experiences (Lee *et al.*, 2014; McCarthy, 2010). The focus remains on social media networks as they are considered online tools that provide significant benefits in terms of enhanced learning outcomes and better experiences through cognitive engagement and social interaction (Lee *et al.*, 2014).

To achieve this goal, active collaborative learning is enabled to provide resources, maximize engagement within the curriculum, and facilitate knowledge transfer through networks (Baird & Fisher, 2006). Several studies have been conducted to confirm whether students who are given the opportunity to engage in wiki-based communities tend to learn better than those taught through traditional methods (Al-Rahmi *et al.*, 2018). These studies have noted the positive effects of using wikis in the context of learning, including maximum collaboration, interaction with peers, and improved learning processes.

According to Davis (1989), how and when users will adopt new technology can be investigated using the Technology Acceptance Model (TAM). This model is the most widely used framework for investigating users' attitudes and intentions to adopt technology (Mailizar *et al.*, 2021). Davis (1989) states that behavioral intention is influenced by attitude towards use, and is also directly or indirectly affected by perceived ease of use and perceived usefulness. Attitude is an important factor in explaining technology usage behavior.

3. METHOD

3.1. Research Overview

This research employs a quantitative approach with an associative method, conducted through an online survey using Google Form as the host. The researcher chose this research method because it is considered to provide valid results and is accessible to students located outside the city. With a quantitative approach, the researcher can also make generalizations to the population when the data used comes from a representative sample. The collected data is processed and analyzed using LISREL software.

3.2 Hypotheses and Model Diagrams

Hypothesis is a possible answer to the research problem, as well as the researcher's conjecture derived from theory (Cho, 2014). In this study, the first researcher selected the main factors in the TAM model as variables, namely perceived usefulness (PU), perceived ease of use (PEU), Attitude towards TikTok Use (ATT), Behavioral Intention to Use TikTok (INT), and Learning Effectivity (LE), with the following model (See **Figure 1**).

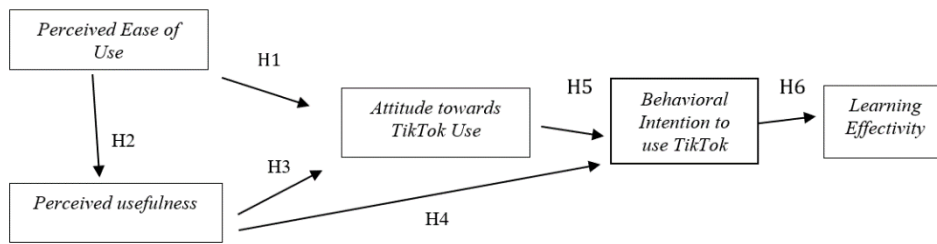


Figure 1. Diagrammatic model hypothesis.

H1: There is a significant relationship between perceived ease of use and attitude towards TikTok use.

H2: There is a significant relationship between perceived ease of use and perceived usefulness.

H3: There is a significant relationship between perceived usefulness and attitude towards TikTok use.

H4: There is a significant relationship between perceived usefulness and behavioral intention to use TikTok.

H5: There is a significant relationship between attitude towards TikTok use and behavioral intention to use TikTok.

H6: There is a significant relationship between behavioral intention to use TikTok and learning effectivity.

3.3 Population

Population is the area of generalization, consisting of subjects or objects with specific qualities or characteristics that have been determined by the researcher for study, and conclusions are drawn based on it. The population in this research consists of active students from universities in Java. The selection of active students from the 2020, 2021, and 2022 cohorts took several considerations into account. Firstly, due to the pandemic, many students have been using TikTok as a medium for assignments and orientation activities. Therefore, students who have completed assignments and uploaded them on TikTok can provide more accurate answers regarding their feelings and experiences using TikTok as a learning tool. Secondly, a diverse population allows for a more representative study as there will be a variety of different answers and experiences from universities in Java, with different experiences of using TikTok as a means of acquiring new knowledge. Thirdly, many universities in Java have adopted technology and social media in their assignments.

3.4. Sampling technique

A sample is a subset or portion of a population, and it provides an accurate representation of the population. In this research, a non-probability sampling technique called convenient sampling will be used, where the questionnaire is distributed to various students through different forums. Based on the G-Power analysis, it was determined that a minimum of 130 samples is sufficient for this study, and the researcher selected 181 respondents as the sample from students in various universities in Java.

3.5. Data analysis

Data analysis will be conducted using the LISREL software. To test the hypotheses, structural equation modeling (SEM) will be employed. Furthermore, confirmatory factor analysis (CFA) will be conducted to assess the reliability, validity, and internal consistency of

the measurement instruments (Mailizar, 2021). Goodness-of-fit parameters will also be analyzed to evaluate the model.

4. RESULTS AND DISCUSSION

4.1. Factor analysis

To assess the factor analysis, first, five constructs were identified in the model, namely PEU (perceived ease of use), PU (perceived usefulness), ATT (attitude towards TikTok use), INT (behavioral intention to use TikTok), and LE (learning effectivity). The structural model and its paths were depicted in Figure 2, obtained through the Structural Equation Modeling (SEM) analysis using the LISREL software. In the regression and path analysis, it can be observed from Figure 2 and Table 1 that all items have loading factors above 0.5, indicating that all the items are valid.

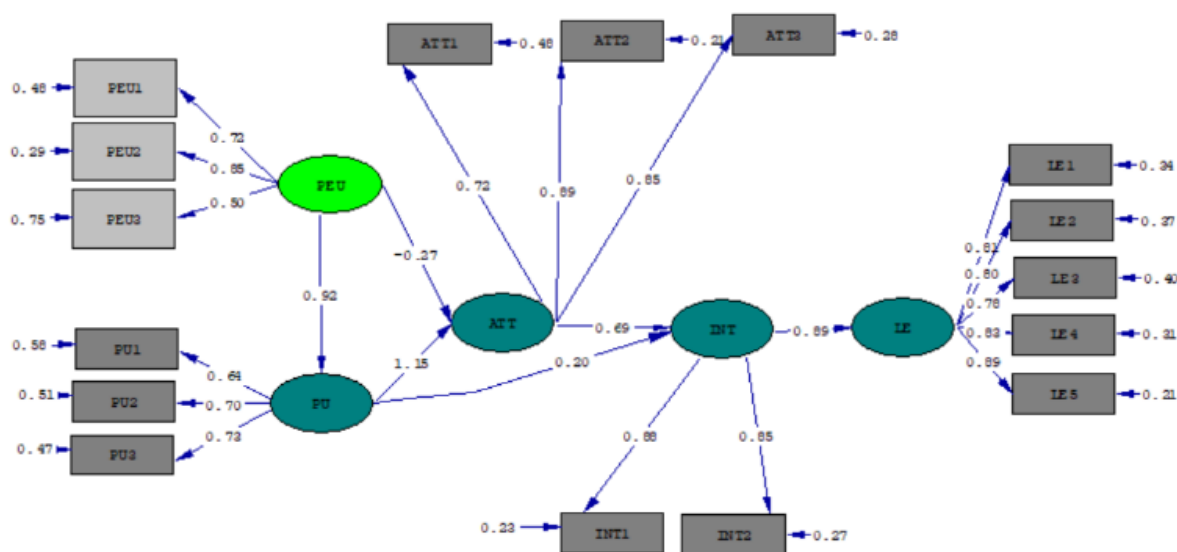


Figure 2. Model structure and path coefficients (generated with LISREL).

Table 1 Convergent validity and composite reliability.

No	Variable	indicator	Loading Factor	standard loading ²	measurement error	CR	AVE
1	Perceived ease of use	PEU1	0,720	0,518	0,482	0,740	0,512
		PEU2	0,850	0,723	0,278		
		PEU3	0,500	0,250	0,750		
		sum	2,070	1,491	1,509		
2	Perceived Usefulness	PU1	0,640	0,410	0,590	0,732	0,508
		PU2	0,700	0,490	0,510		
		PU3	0,730	0,533	0,467		
		sum	2,070	1,433	1,568		
3	Attitude towards TikTok Use	ATT1	0,720	0,518	0,482	0,862	0,678
		ATT2	0,890	0,792	0,208		
		ATT3	0,850	0,723	0,278		
		sum	2,460	2,033	0,967		
4	INTENT	INT1	0,880	0,774	0,226	0,856	0,748
		INT2	0,850	0,723	0,278		

No	Variable	indicator	Loading Factor	standard loading ²	measurement error	CR	AVE
	<i>Behavioral Intention to use TikTok</i>	sum	1,730	1,497	0,503		
5	<i>Learning Effectivity</i>	LE1	0,810	0,656	0,344	0,913	0,677
		LE2	0,800	0,640	0,360		
		LE3	0,780	0,608	0,392		
		LE4	0,830	0,689	0,311		
		LE5	0,890	0,792	0,208		
		sum	4,110	3,386	1,615		

Next, the researcher conducted an assessment of convergent validity and composite reliability. Firstly, regarding convergent validity, the loading factors of the indicators and the averaged variance extracted (AVE) were analyzed. Good convergent validity is indicated by loading values equal to or greater than 0.7. Secondly, composite reliability was measured to confirm internal consistency reliability. CR values above 0.7 indicate sufficient reliability consistency. **Table 1** presents the loading values, squared loading values, measurement errors, as well as the CR and AVE values for each construct. All indicators have loadings above 0.7 for CR, demonstrating high and acceptable reliability. Additionally, all AVE values are also satisfactory (≥ 0.5), confirming good convergent validity. Therefore, these results provide evidence that the constructs are valid and reliable.

4.2. Hypothesis testing and model

Based on hypothesis H1, which states a significant relationship between perceived ease of use and attitude towards TikTok use, it can be observed from **Table 3** that the model test results show a t-value of -0.50, which is below the critical value of 1.96, indicating that the relationship in hypothesis H1 is not significant. Therefore, Hypothesis H1 is rejected, and the null hypothesis (H0) is accepted. Moving on to Hypothesis 2, which states a significant relationship between perceived ease of use and perceived usefulness of TikTok, the model results in **Table 3** indicate a t-value of 3.19, indicating that the relationship in H2 is significant as the t-value is ≥ 1.96 . Thus, Hypothesis H2 is accepted (see **Table 2**).

Table 2 Hypothesis Results.

Hypotesis	Relation	Loading Factor	T-value	Critical Value	Conclusion	Decision
H1	PEU -> ATT	-0,27	-0,50	1,96	not significant	The hypothesis (H0) is accepted
H2	PEU -> PU	0,92	3,19	1,96	significant	Hypothesis (H2) is accepted
H3	PU -> ATT	1,15	1,96	1,96	significant	Hypothesis (H3) is accepted
H4	PU -> INT	0,20	1,07	1,96	not significant	The hypothesis (H0) is accepted
H5	ATT -> INT	0,69	2,53	1,96	significant	Hypothesis (H5) is accepted
H6	INT -> LE	0,89	6,28	1,96	significant	Hypothesis (H6) is accepted

Regarding Hypothesis H3, which states a significant relationship between perceived usefulness of TikTok and attitude towards TikTok use, the t-value is ≥ 1.96 with a value of 1.96. Therefore, the relationship between PU and ATT is considered significant, and Hypothesis H3 is accepted. Moving on, Hypothesis H4 states a significant relationship between perceived usefulness of TikTok and behavioral intention to use TikTok. The model test results show a t-value of 1.07, which is smaller than the critical value of 1.96. Therefore, H4 is not supported or temporarily rejected, while H0 is accepted.

Next, for Hypothesis H5, which states a significant relationship between attitude towards TikTok use and behavioral intention to use TikTok, **Table 3** shows a t-value greater than 1.96, specifically 2.53, indicating a significant relationship between attitude and intention, thus confirming H5. Finally, for H6, which states a significant relationship between behavioral intention to use TikTok and learning effectivity, the model test results show a high t-value of 6.28, above the critical value of 1.96, indicating that behavioral intention to use TikTok is significantly related to learning effectivity. Therefore, Hypothesis H6 is accepted.

Table 3 Goodness-of-fit indices of all models.

Index name	cutoff	findings	interpretation
<i>Chi-square (p-value)</i>	p-value >0,05	217,06 (p-value=0.00)	
<i>Goodness of Fit Index (GFI)</i>	>0,90	0,87	<i>Marginally fit</i>
<i>Comparative Fit Index (CFI)</i>	>0,90	0,94	<i>Good fit</i>
<i>Normed Fit Index (NFI)</i>	>0,90	0,90	<i>Good fit</i>
<i>Parsimony Normed Fit Index (PNFI)</i>	0,06-0,09	0,073	<i>Good fit</i>
<i>Incremental Fit Index (IFI)</i>	>0,90; >0,95	0,94	<i>Good fit</i>
<i>Standardized RMR</i>	<0,08	0,054	<i>Good fit</i>

Using Structural Equation Modeling (SEM), the measurement model was presented and tested for comprehensive evaluation, as shown in **Table 3**. The assessment of the model's validity through CFA indicates a good and satisfactory model fit. **Table 3** provides a summary of the fit indices resulting from the CFA. The Chi-Square value is 217.06 at $p = 0.00$, with 98 degrees of freedom (df). In other parameters, CFI shows 0.94, which is higher than the required 0.90 for good fit. NFI indicates 0.90, which is acceptable as a fit. PNFI also yields a result of 0.73, falling within the range of 0.06-0.09, indicating a good fit. IFI is found to be 0.94, above the >0.90 fit parameter, and the standardized RMR is 0.054, smaller than the <0.08 parameter, indicating a good fit. Thus, these five parameters support the overall goodness of fit of the structural model.

4.3. Discussion

This study aimed to evaluate the factors contributing to learning effectivity, including the perceived ease of use, perceived usefulness of TikTok, attitude towards TikTok use, behavioral intention to use TikTok, and learning effectivity. This research differs from previous studies as it examines the use of TikTok in the field of new knowledge and learning in Indonesian universities quantitatively, using the TAM theory, and explores different variables of learning effectivity from previous research.

The results of this study indicate that perceived ease of use is not significantly related to attitude towards TikTok use. This finding contradicts some previous studies, particularly those

related to PEU in social media (Al-Khasawneh, 2022). However, other studies have also shown that the ease of use does not have a strong influence on attitudes (Zhao, 2020; Al-Marroof, 2021). This may be attributed to the normalization of technology use, where ease of use has become a common expectation in social media but is not directly related to attitudes towards that social media platform.

It was also found that perceived ease of use is significantly related to perceived usefulness. This supports previous research indicating a positive relationship between the perception of ease and the perception of usefulness of social media as a learning and educational tool. Perceived usefulness was also found to be significantly related to attitude, aligning with previous studies.

On the other hand, perceived usefulness was not found to have a significant impact on behavioral intention to use TikTok. This finding also contradicts some studies that have found a relationship between perceived usefulness and usage intention (Lee *et al.*, 2014). However, several other studies have also found no relevance between perceived usefulness and behavioral intention (Lew *et al.*, 2019; Mailizar, 2021). According to Lew *et al.* (2019), the insignificant effect of perceived usefulness on behavioral intention suggests that resistance to new technology may not be as crucial as in the past.

Attitude towards TikTok use was found to be significantly related to behavioral intention to use TikTok. This finding supports previous studies indicating that a positive attitude towards social media will drive usage intention. Furthermore, the relationship between behavioral intention and learning effectivity was found to be significant. Overall, the model can explain the factors influencing learning effectivity and knowledge acquisition through TikTok in Indonesia.

4.4. Limitations

Setting limitations or boundaries for a study is necessary to ensure a focused and relevant research. The scope of this study includes the following limitations:

- (i) The study sampled only students studying in West Java, Indonesia.
- (ii) The study focuses on the relationships between perceived ease of use, perceived usefulness, attitude towards use, behavioral intention, and learning effectivity, without examining external

5. CONCLUSION

This study proposes a model to comprehend the factors influencing the intention and efficacy of TikTok-based learning. The analysis employs the Technology Acceptance Model (TAM) theory, with learning effectiveness as an additional construct. This theoretical model explains the factors associated with TikTok usage intention and learning effectiveness in an effective manner. On the contrary, it was discovered that perceived ease of use is unrelated to perceived utility, and that perceived usefulness has no effect on usage intention.

Students are already aware of the benefits and positive value that TikTok brings to the learning process, according to the findings of a study on the application of TikTok as an educational instrument. When students have a strong intention to use TikTok for learning, they also have a more positive and effective learning experience. Consequently, educational institutions and universities can consider employing TikTok as a medium for instruction and assignments.

Future research could investigate the use of TikTok in education using alternative models or incorporate external variables to examine other factors influencing the learning efficacy of TikTok in an educational context.

AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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