Analysis of Student Acceptance of SPADA E-Learning Using UTAUT Method

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Abstract

SPADA UWGM is an e-learning platform used by Widyagama Mahakam University Samarinda (UWGM). This platform has been used since 2020 for the teaching and learning process, both to provide materials, assignments, and quizzes and to take attendance. The use of e-learning is certainly a technological innovation in the field of education. This progress is something that cannot be avoided because it is also strongly supported by the advancement of science, so there needs to be a measurement of the extent to which this e-learning can be accepted from the perception of its users. This study uses the UTAUT method with six variables, namely performance expectancy, effort expectancy, social influence, facilitating condition, use behavior, and Behavioral Intention to measure the level of student acceptance of SPADA UWGM. The questionnaire used was a questionnaire with answer choices in the form of a Likert scale and was processed using the smart PLS application to see the reliability and validity of the questionnaire items and prove the hypothesis between variables with an error tolerance limit of 10%. The results of this study indicate that performance expectancy does not affect behavior intention. While effort expectancy and social influence influence behavior intention. Other things such as facilitation conditions and behavioral intentions influence use behavior. So based on the research conducted, it can be concluded that the performance of the SPADA UWGM e-learning system does not influence students' interest in using and utilizing the existing e-learning system. Meanwhile, social influence and a sense of trust that the existing system is easy to use have a significant influence on students' efforts and intentions in using the SPADA UWGM e-learning system. Other things such as the condition of campus facilities in supporting the use of the system have an influence on students' seriousness in using the e-learning system, which means that the better the facilities, the more students' motivation will increase in utilizing SPADA UWGM sustainably.

Keywords: *E-learning, UTAUT, Smart PLS, SPADA.*
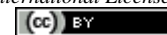
1. Introduction

The development of technology today has a very broad impact on human life. Technology comes with providing convenience in all things so that work becomes more practical [1]. Technological progress is something that cannot be avoided because it is also strongly supported by the progress of science. This progress can also be felt in real terms in various fields, one of which is in the field of education where the development of this technology offers various new ways to optimize the teaching and learning process in an educational institution [2]. The current learning model can be combined with teaching and learning interactions through cyberspace with the help of the internet or in popular terms e-learning. Through e-learning media, students do not have to meet directly with lecturers to carry out the teaching and learning process [3].

Universitas Widyagama Mahakam Samarinda (UWGM) is one of the universities that has used an e-learning platform called SPADA (Sistem Pembelajaran Daring). This platform has been used since 2020 for the teaching and learning process, both for providing materials, assignments, and quizzes and for taking attendance [4]. SPADA is a web-based platform developed by the Ministry of Research, Technology, and Higher Education to manage the online learning process organized by various universities in Indonesia [5].

The quality of software such as a website is one of the assets in meeting the needs of its users. Because if the software has defects, it may reduce user trust in the software and the worst condition is that the software will be abandoned [6]. So it must be measured whether the software used has been well received by its users and what factors influence this acceptance. One method that can be used to measure and analyze the level of user acceptance of software is UTAUT [7]. This method synthesizes elements from eight previously existing technology acceptance models, namely the theory of reasoned action (TRA), motivation model (MM), technology acceptance model (TAM), theory of planned behavior (TPB), model of PC utilization (MPTU), social cognitive theory (SCT), and innovation diffusion theory (IDT) [8].

In the case of e-learning, several previous studies have used the UTAUT method in measuring factors that influence the level of user acceptance of e-learning platforms, including research [9][10] which shows that several factors or variables influence user acceptance of an e-learning platform. Another study [11] shows that aspects of system performance and intention to use the system are factors that can be accepted by students, followed by other factors that have not been accepted, namely in terms of convenience, system facilities, and the influence of the campus environment.

Based on previous research, shows that evaluating an e-learning system is something that needs to be done to support the successful implementation of a learning system in an educational institution. Therefore, this study will conduct a perception analysis from the perspective of UWGM e-learning system users using the UTAUT method using six variables, namely performance experience (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), behavioral intention (BI), use behavior (UB).

2. Research Methods

2.1. Research Model Framework

The method used in this study is UTAUT in measuring the level of student acceptance of the SPADA UWGM platform. The UTAUT model is a model first developed by Venkatesh in 2003 to analyze user intentions (Behavioral Intention) in accepting and using an Information Technology system [12]. The explanation of each variable is as follows:

a. Performance expectancy (PE) is a person's feeling and action of trust that by using the information system it will be a tool that helps a user to achieve goals and improve their performance.

b. Effort expectancy (EE) is the user's sense of trust that the existing information system is easy to use and operate.

c. Social factors (SF) are an individual's view of the importance of using a system based on encouragement from other users who have previously used the information system, such as friends, colleagues, and family.

d. Facilitating condition (FC) This is a user's sense of trust that with adequate facilities, they can support the use of existing information systems.

e. Use behavior (UB) is the seriousness and continuity of a user in using an existing information system.

f. Behavioral Intention (BI) is an effort and interest in utilizing information systems, which can be influenced by gender, experience, and age.

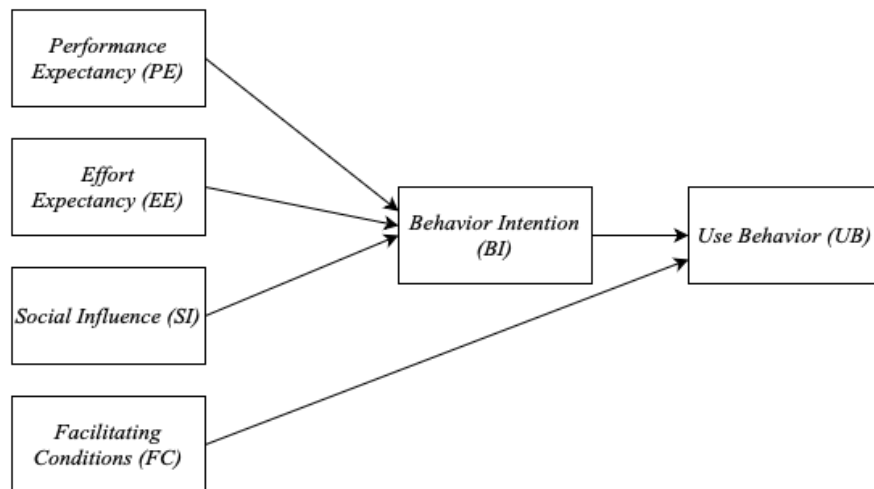The model framework that will be used is shown in Figure 1.

Figure 1. UTAUT model relationship design on SPADA UWGM use behavior.

From the UTAUT model framework used, there are five hypotheses as follows:

H1. Performance Expectancy Influences SPADA UWGM User Behavior Intention.
H2. Effort Expectancy influences SPADA UWGM User Behavior Intention.
H3. Social Influence Influences SPADA UWGM User Behavioral Intentions.
H4. Facilitating Conditions Influence SPADA UWGM User Behavior.
H5. Behavioral Intention Influences SPADA UWGM User Behavior.

2.2. Method of collecting data

The data collection method used is in the form of a questionnaire. Journal written by [13], a questionnaire is a data collection technique carried out by giving a set of questions to respondents to answer. The questionnaire

model used in this study is the Likert scale. The Likert scale is used to measure respondents' opinions and perceptions regarding social phenomena [14]. The scales used are shown in Table 1.

Table 1. Likert scale of questionnaire items

Score	Information
1	Strongly disagree
2	Disagree
4	Agree
5	Strongly agree

The questions used refer to research conducted by [15] and [16], then the language of the questions is adjusted to a language that is easy for potential respondents to understand without changing the meaning of the questions. The questions can be seen in Table 2.

Table 2. Questionnaire items used

Variable	Question items	Indicator
PE	The use of SPADA UWGM is useful in speeding up and making my lecture process more efficient.	PE1
	Using UWGM SPADA increases equity among all students	PE2
	In the lecture process, using SPADA UWGM is very useful in saving me time	PE3
	The use of SPADA UWGM improves the quality of the learning process for me	PE4
EE	Using SPADA UWGM is easy for students	EE1
	It was easy for me to become skilled in using SPADA UWGM	EE2
	By using SPADA UWGM I can get learning services easily	EE3
	I easily interact with SPADA UWGM	EE4
SI	My friends suggested me to use SPADA UWGM	SI1
	Friends whose opinions I value prefer it if I use SPADA UWGM	SI2
	My friends who influenced me thought that I should use SPADA UWGM	SI3
	In general, the university has supported the use of SPADA UWGM	SI4
FC	I have adequate resources or equipment to use SPADA UWGM	FC1
	I have sufficient knowledge to use SPADA UWGM	FC2
	Some certain people or groups can help when I experience problems using SPADA UWGM.	FC3
	SPADA UWGM has the same appearance and remains compatible when accessed via smartphone, tablet, and PC	FC4
BI	I have the intention to use SPADA UWGM in the future..	BI1
	I anticipate that I will be using SPADA UWGM in the future.	BI2
	I have plans to use SPADA UWGM in the future.	BI3
	I will recommend using SPADA UWGM to my friends.	BI4
UB	I consider myself a regular user of SPADA UWGM	UB1
	I would rather consider using SPADA UWGM because the system is already available.	UB2
	I do most of my learning tasks using SPADA UWGM	UB3
	I tend to use SPADA UWGM whenever possible.	UB4

Questionnaire items will then be distributed to respondents, namely UWGM students, via Google Form media. Determining the number of samples to be used will follow the calculation results of the Slovin formula, where this formula can determine the number of samples used based on the population and how much tolerance (error) value is used [17]. The form of the Slovin formula in Eq (1).

$$n = \frac{N}{1+Ne^2}$$ (1)

N = Number of samples
n = Population size
e = Error tolerance limit

2.3. Data Analysis Methods

The data successfully collected through the Google Form questionnaire will be saved in the form of an Excel file and then processed and analyzed using Smart PLS. Smart PLS is a tool that can be used to test hypotheses through inner models and test the validity and reliability or reliability of measurements carried out using outer models [18]. The outer model and inner model measurements are designed using the PLS-SEM (Partial Least Squares Structural Equation Models) model by combining econometric and psychometric prediction models

[19]. Meanwhile, SEM analysis is a multivariate analysis model. SEM is superior when compared to path analysis and multiple regression because it can analyze data more comprehensively and more broadly.

3. Results and Discussion

3.1. Data collection results

Based on data from PDDIKTI, it can be seen that the number of active students in 2024 from Widyagama Mahakam University Samarinda is 4062. Then by using the Slovin formula with an error tolerance limit of 10%, the number of respondents was 97. So for the next data analysis process, the respondent data used was 97 students.

3.2. Data analysis results

The first stage of analysis carried out is to conduct a validity and reliability test (outer model). This is intended to see whether the measuring instrument used (questionnaire items) is valid or not. Questionnaire items are said to be valid if the questions in the questionnaire can reveal what is to be measured [20]. A reliable value for measuring the consistency of indicators with variables can still be accepted if Cronbach's Alpha value is between 0.6 - 0.7 [15]. Table 4.1 shows the Cronbach's Alpha value above 0.6 so that the question items in the questionnaire are declared reliable. Another thing that can be seen is composite reliability, the composite reliability value can be said to have high reliability if the value is above 0.7 [21].

The next analysis is the discriminant validity test or cross-loading factor which aims to determine the discriminant in the research construct. If the comparison results show a larger number between the intended loading value and other loading values, then the construct can be said to be adequate [22]. The results of the discriminant validity test are shown in Table 3 and Table 4.

Table 3. Validity and Reliability Test Results

Variable	Cronbach's Alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	AVE
BI	0.897	0.897	0.929	0.767
EE	0.873	0.890	0.913	0.725
FC	0.851	0.853	0.900	0.692
PE	0.817	0.817	0.879	0.646
SI	0.791	0.810	0.878	0.707
UB	0.800	0.815	0.870	0.627

Table 4. Discriminant Validity Test Results

	BI	EE	FC	PE	SI	UB
BI1	**0.919**	0.518	0.447	0.539	0.706	0.644
BI2	**0.904**	0.463	0.382	0.434	0.607	0.600
BI3	**0.916**	0.506	0.345	0.445	0.644	0.633
BI4	**0.754**	0.715	0.675	0.772	0.611	0.767
EE1	0.431	**0.741**	0.636	0.764	0.443	0.641
EE2	0.607	**0.891**	0.649	0.685	0.528	0.651
EE3	0.531	**0.877**	0.684	0.789	0.360	0.678
EE4	0.599	**0.889**	0.725	0.732	0.530	0.725
FC1	0.509	0.638	**0.876**	0.643	0.509	0.633
FC2	0.459	0.633	**0.819**	0.593	0.536	0.588
FC3	0.267	0.674	**0.829**	0.533	0.322	0.563
FC4	0.555	0.677	**0.801**	0.706	0.285	0.642
PE2	0.478	0.693	0.678	**0.821**	0.464	0.599
PE3	0.515	0.668	0.695	**0.791**	0.379	0.649
PE4	0.559	0.776	0.491	**0.780**	0.428	0.650
SI1	0.547	0.490	0.454	0.449	**0.794**	0.518
SI2	0.706	0.498	0.395	0.513	**0.913**	0.529
SI3	0.599	0.399	0.416	0.423	**0.810**	0.524
UB1	0.735	0.675	0.616	0.660	0.527	**0.884**
UB2	0.648	0.723	0.593	0.720	0.437	**0.812**
UB3	0.483	0.584	0.482	0.528	0.503	**0.724**
UB4	0.533	0.506	0.617	0.503	0.509	**0.736**
PE1	0.507	0.622	0.551	**0.821**	0.499	0.558

After the outer model analysis is carried out, the next step is the inner model analysis, namely the R square and F square tests. R square is a determination analysis or measure that shows how much the X variable contributes to Y or can be said to be how much the influence of all independent variables (PE, EE, SI, FC, BI) contributes to the dependent variable (UB) [23]. Based on research [22], it states that a strong influence if the R square value is 0.67 a moderate influence if the value is 0.33, and a weak influence if the value is 0.19. The results of the R square test conducted in this study showed strong results with an R square value of 0.729 as shown in Table 5.

Table 5. R square test results

	R Square	R square adjusted
BI	0.636	0.624
UB	0.729	0.723

After the F square test was conducted. This test is used to determine whether the independent variables together have a significant influence on the dependent variable [23]. Three categories can be used, namely 0.2 small, 0.5 medium, and 0.35 large. The results of the measurement test conducted are shown in Table 6.

Table 6. F square test results

	BI	EE	FC	PE	SI	UB
BI						0.715
EE	0.024					
FC						0.516
PE	0.024					
SI	0.526					
UB						

In Table 6 the influence between each variable where EE (Effort Expentancy) and PE (Performance Expentance) have a small influence on BI (Behavior Intention). However, the SI (Social Influence) variable has a large influence, then the influence of BI (Behavior Intention) and FC (Facilitating Conditions) has a large influence on UB (Use Behavior).

The next step is to conduct a hypothesis test. There are five hypotheses in this study, namely H1 observing the relationship between PE and BI variables, H2 observing the influence of EE variables on BI, H3 observing the influence of SI to BI, H4 observing the influence of FC variables to UB, and H5 observing the influence of FC to UB. Based on the hypothesis test where T-Statistic> 1.290 with an error value of 10% indicates that the hypothesis has a significant influence and can be accepted if the T-Statistic value is at 1.290 and above, then the results of the hypothesis test of this study are shown in Table 7.

Table 7. Hypothesis test results

Hypothesis	Variable	T statistics (|O/STDEV|)	Result
H1	Performance Expectancy -> Behavior Intention	1.069	rejected
H2	Effort Expentancy -> Behavior Intention	1.322	accepted
H3	Social Influence -> Behavior Intention	6.114	accepted
H4	Facilitation Condition -> Use Behavior	4.254	accepted
H5	Behavior Intention -> Use Behavior	5.325	accepted

Based on the hypothesis testing in Table 7, the first hypothesis (H1) with a T-Statistic value of 1.069. The hypothesis is rejected, meaning that there is no significant effect of Performance Expectance on Behavior Intention and it can be concluded that user expectations of system performance do not have a significant effect on user intentions, behavior, and interest in SPADA UWGM.

The second hypothesis (H2) with a T-statistic value of 1.322 is accepted, meaning that Effort Exponency has a significant influence on Behavior Intention, which can be concluded that the user's trust that the system is easy to use has an influence on the user's intention and behavior in using SPADA UWGM.

Third hypothesis (H3) with a T-statistic value of 6.114. The hypothesis is accepted, meaning that Social Influence has a large influence on Behavior Intention and it can be concluded that social factors have an influence on user intentions or behavior towards SPADA UWGM.

Fourth hypothesis (H4) with a T-Statistic value of 4.254. The hypothesis is accepted, meaning that the Facilitation Condition has a large influence on Use Behavior, which can be concluded that the condition of the facility influences the seriousness and behavior of users in using SPADA UWGM.

The last hypothesis (H5) with a T-statistic value of 5.325. The hypothesis is accepted, meaning that Behavior Intention has a significant influence on Use Behavior and it can be concluded that user effort and intention influence the serious behavior of users in using SPADA UWGM.

The result of this study can certainly be used as a consideration for Widya Gama Mahakam University Samarinda in evaluating the factors that influence student acceptance and motivation in using the SPADA UWGM E-Learning system.

3. Conclusion

From the test results in the discussion of this study, it can be concluded that user expectations of the performance of the SPADA UWGM E-Learning system do not influence user interest, in this case students, in using and utilizing the SPADA UWGM E-Learning system. Meanwhile, social influence, a sense of trust that the existing system is easy to use, has a significant influence on user efforts and intentions in using the SPADA UWGM E-learning system and it can be concluded that an easy-to-use system can trigger an increase in student desire to use the existing system. Other things such as the condition of campus facilities in supporting the use of the

system influence the seriousness of students in using the SPADA UWGM E-Learning system, meaning that the better the facilities, the more students' intentions or motivations will increase to use the SPADA UWGM E-Learning system sustainably.

The results of this study can be a reference for further research on the SPADA UWGM E-Learning system. Researchers hope to be able to use more samples with smaller error values for further research so that the results obtained are more accurate.

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