# User Acceptance of Online Examination System Using the Unified Theory of Acceptance and Use of Technology (UTAUT) Model

## Mario Hendrial Christanto Ay <sup>a,1,\*</sup>, Aede Hatib bin Musta'amal <sup>b,2</sup>

<sup>a</sup> Faculty of Engineering, Universitas Negeri Malang, Jl. Semarang No.5, Sumbersari, Kota Malang, 65145 Indonesia

<sup>b</sup> Faculty of Social Sciences and Humanity, Universiti Teknologi Malaysia, 81310 Skudai, Johor, Malaysia

<sup>1</sup> mariohcay@gmail.com \*; <sup>2</sup> aede@utm.my

\* Corresponding author

## Article Info

Article history: Received: Dec 15, 2022 Revised: Jan 28, 2023 Accepted: Feb 15, 2023

*Keyword:* User Acceptance Online Examination System Website UTAUT PLS-SEM

## ABSTRACT

To enhance the quality of the online examination system, it is imperative to consider user acceptance as a crucial factor. This study employs the Unified Theory of Acceptance and Use of Technology (UTAUT) as an evaluation model to gauge the acceptance of the web-based online examination system at Public VHS 4 Malang, with a focus on factors such as performance expectancy, effort expectancy, social influence, and facilitating conditions as exogenous latent variables and behavioral intention as an endogenous latent variable. The study targeted 274 12th-grade students in the 2022/2023 school year as respondents and analyzed data using the Partial Least Square (PLS) method via SmartPLS 3 software. The findings revealed that performance expectancy, effort expectancy, and facilitating conditions significantly and positively impact behavioral intention. In contrast, social influence, although positive, does not have a significant effect on behavioral intention.

#### I. INTRODUCTION

Schools have made many innovations in learning activities, especially at the high school level. Many high schools are trying to improve the quality of learning activities by implementing an online examination system [1]. The online examination system is designed to replace the use of paper examinations with the help of computers [2]. Using computers can reduce the costs of printing and distributing question-and-answer sheets. During the COVID-19 pandemic, implementing an online examination system greatly supports the implementation of online learning activities.

Public VHS 4 Malang is one of the schools implementing an online examination system. The online examination system used is a web-based system. The system can be accessed through the school's local network, so students cannot commit cheating, such as searching for answers on the Internet. During the COVID-19 pandemic, there was a change in policy so that the online examination system would be accessible from anywhere. The online examination system is specifically designed to conduct the final semester examination. The problem is that not all students are ready and accustomed to online examination systems. Students' readiness to use the online exam system will affect the results obtained [3]. From these advantages and problems, various student perceptions arise towards accepting the online examination system. Student perception is one of the things that determines the success of the online exam system [4].

User acceptance of a system can be known using specific models. Some existing models are Theory of Reasoned Action (TRA) [5], Technology Acceptance Model (TAM) [6], Motivational Model (MM) [7], Theory of Planned Behaviour (TPB) [8], combined TAM and TPB [9], Model Of PC Utilization (MPCU) [10], Innovation Diffusion Theory (IDT) [11], and Social Cognitive Theory (SCT) [12]. Each model has advantages and disadvantages, but there is a new model, the Unified Theory of Acceptance and Use of the Technology (UTAUT), developed by [13]. The UTAUT model can explain 70% compared to other models, which generally explain 40% of technology acceptance [13]. Based on this, this study will use the UTAUT model to determine user acceptance.

The UTAUT model has four primary constructs that influence the acceptance and use of a technology, which include behavioral intention and use behavior, including (1) performance expectancy, (2) effort expectancy, (3) social influence, and (4) facilitating conditions. Several earlier investigations have employed the UTAUT model for distinct purposes. For instance, [14] explored the interplay of acceptance factors concerning computer-based school exam applications, while [2] delved into the assessment of UNBK acceptance among vocational high school (VHS) students, and [15] analyzed the reception and utilization of Computer-Based Testing (CBT) technology. In this particular study, the primary objective is to assess user perceptions regarding the acceptance of the Web-Based Online Exam System at Public VHS 4 Malang, utilizing the UTAUT model as the framework

#### A. Online Examination System

The examination implementation is needed to determine student success in following the learning process. An examination is an activity carried out by the teacher to assess student success in participating in learning activities [16]. Online examinations allow students to practice their ability to understand the material with the help of technology. Students will take the exam using a computer device connected to the internet within a specific time limit [17].

The online examination can be done in two ways, namely: (1) the answer is written on paper, then the answer using a computerassisted optical marker reader; (2) the answer can be directly entered into the computer without having to be written on paper and then immediately get feedback from the computer [18].

## B. Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT) is a recognized theoretical framework for assessing technology acceptance and utilization. Within the UTAUT model, there are four distinct constructs: (1) performance expectancy, (2) effort expectancy, (3) social influence, and (4) facilitating conditions, which serve as pivotal factors influencing behavioral intention and use behavior. Furthermore, there are four moderating constructs in the UTAUT model, including (1) gender, (2) age, (3) experience, and (4) voluntariness of use, which influence the relationship between the independent and dependent constructs. Numerous studies have utilized the UTAUT model, albeit with variations or adaptations to accommodate the specific context and objectives of each study. Such modifications aim to align the UTAUT model with the particular research scope. A summary of UTAUT research, along with the variables employed, can be found in Table I.

Table I demonstrates that several previous UTAUT studies have not incorporated all the variables from the original UTAUT model. Typically, the commonly employed variables in these studies include Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), and Behavioral Intention (BI). Hence, this present study adopts the UTAUT model, focusing on these five frequently utilized variables as the core components of its analysis. Moderating variables were not used in this study because the research subjects were from the same batch, were relatively the same age, had the same experience using the system, and the system used was mandatory.

Performance Expectancy (PE) is an individual's belief and expectation that technology will improve their performance and complete their work [13]. PE has a very significant influence on BI, this was found in research [19]–[21].

Effort Expectancy (EE) is the view of individuals who believe that the ease of use of technology can increase interest in its reuse or continued use [22]. EE has a significant influence on BI, as found in research [23]–[25].

Social Influence (SI) is an individual's view that the greater the influence of other people or the environment on the use of technology, the greater the interest in using the technology [19]. SI has a significant influence on BI, as found in research [19], [25], [26].

Facilitating Conditions (FC) is the view that with the availability of facilities that support the use of a technology, interest in using the technology will increase [15]. FC has been found to have a significant influence on BI, this was found in research [29, 30].

Behavioral intention (BI) is a person's level of interest in doing or using something [15]. In research [14], [22], [27], BI is the last dependent construct. There is no relationship between the construct BI and Use Behavior (UB) because UB cannot be analyzed when the system used is a mandatory system used within a predetermined time [14].

#### C. Partial Least Square (PLS)

PLS is one of the analytical methods using multivariate statistical techniques to compare multiple independent variables with numerous dependent variables [27]. PLS is an alternative prediction technique to structural equation modeling (SEM). PLS is well suited for small and large sample sizes and all data scales. The advantage of PLS over SEM is that it does not require normally distributed data [28].

In PLS, a variable is called a latent variable, and the independent variable is called an exogenous latent variable, while the dependent variable is called an endogenous latent variable. A latent variable has one or more indicators called manifest variables. There are two ways of describing the relationship between latent variables and their manifest variables, namely formative and reflective. The productive relationship changes the manifest variable, affecting the latent variable. At the same time, the reflective relationship results in changes that occur in the latent variable and will affect all manifest variables [28].

 TABLE I.
 COMPARISON OF VARIABLES USED IN PREVIOUS UTAUT RESEARCH

Research Title					Varia	bles Used	1			
Kesearch Thue	PE	EE	SI	FC	BI	UB	Age	Gdr	Exp	VoU
User Acceptance of Information Technology: Toward a Unified View [13]	$\checkmark$									
Analisis Manfaat Penerapan Sistem Informasi Ujian Online: Studi Kasus SMK Pasim Plus [3]	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	-	-	$\checkmark$	-	-

Research Title -					Varia	bles Use	d			
		EE	SI	FC	BI	UB	Age	Gdr	Exp	VoU
Hubungan Faktor Penerimaan Aplikasi Ujian Sekolah	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	-	-	-	-
Berbasis Komputer Menggunakan Model UTAUT [14]										
Analisis Penerimaan dan Penggunaan Teknologi CBT sebagai	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	-	-	-	-
Media Ujian Online dengan Model UTAUT [15]										
Analysis of Factors Affecting Behavioral Intention to Use	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	-	-	-	$\checkmark$	$\checkmark$
E-Learning Uses the Unified Theory of Acceptance and Use of										
Technology Approach [19]										
An Implementation of the UTAUT Model for Understanding	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	-	-	-	-	-
Students' Perceptions of Learning Management Systems [20]										
The Acceptance and Use of an Online Exam System by Online	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	-	-	-	-	-
Learners: Implementation of the UTAUT Model [21]										
Analisis Perilaku Penggunaan Aplikasi USBK Menggunakan	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	-	-	-	-	-
Model UTAUT di SMK Negeri 1 Batipuh [26]										
Behavioral Intention of e-Learning: A Case Study of Distance	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	-	-	-	-	-
Learning due to the COVID-19 Pandemic [28]										
An E-Learning Acceptance Evaluation Through UTAUT Model In	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	-	-	-	-
a Postgraduate Program [30]										
Total	10	10	10	10	9	4	1	2	2	2

#### II. METHODS

This research falls under the category of explanatory research, which is employed to elucidate the cause-and-effect relationships between variables through hypothesis testing. The research model of choice is the UTAUT, aimed at dissecting the factors that influence user acceptance of the Web-Based Online Exam System at SMK Negeri 4 Malang. Figure 1 illustrates several of the stages executed within this study.

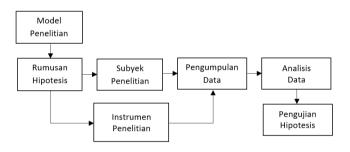


Fig. 1. Research Process

Based on literature studies on previous research that has been done, the research model used in this study can be seen in Figure 2.

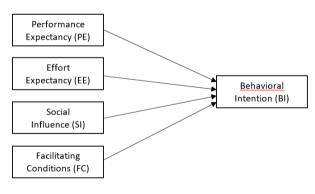


Fig. 2. Research Model

The hypotheses proposed in this study, based on the research model formulated, are as follows.

- H1: PE has a positive and significant effect on BI.
- H2: EE has a positive and significant effect on BI.
- H3: SI has a positive and significant effect on BI.
- H4: FC has a positive and significant effect on BI.

The respondents of this study were 274 students from 9 departments of  $12^{\text{th}}$  grade in the 2022/2023 school year who had used the online examination system.

The research instrument used is a questionnaire adapted from research [13] and adapted to the scope of this research. The questions in the questionnaire were measured based on a Likert scale with 4 alternative response options consisting of: (1) Strongly Agree, (2) Agree, (3) Disagree, and (4) Strongly Disagree.

The data collection technique is to use an online questionnaire that is distributed directly at the school. Using online questionnaires can speed up and simplify the data collection process.

The data obtained will then be analyzed using the PLS method with the help of SmartPLS 3 software. The steps in the data analysis process include:

#### A. Outer Model Evaluation

Outer model evaluation is used to test the model's validity and reliability. The criteria for external model evaluation [29] are shown in Table II.

TABLE II.	OUTER MODEL EVALUATION CRITERIA
-----------	---------------------------------

Test	Parameter	Rule of Thumb
Convergent validity	Loading factor AVE	> 0,7 > 0,5
Discriminant validity	Fornell Larcker criterion HTMT	It's latent variable > Another latent variable. < 0,9
Reliability Test	Composite reliability, Cronbach's alpha	> 0,7

#### B. Inner Model Evaluation

Inner model evaluation is used to predict the causal relationship between latent variables and to determine the level of goodness and fit of the model. The criteria for internal model evaluation [29], [30] are shown in Table III.

	TABLE III.	INNER MODEL EVALUATION CRITERIA
--	------------	---------------------------------

Test	Rule of Thumb
Collinearity	Inner VIF $< 5 =$ no collinearity
	Inner VIF $> 5 =$ collinearity
	The ideal Inner VIF $< 3$
Coefficient of determnation $(R^2)$	$R^2 > 0,25 = $ weak
	$R^2 > 0,50 = \text{moderate}$
	$R^2 > 0.75 = \text{strong}$
Effect Size $(f^2)$	$f^2 > 0.02 = \text{small}$
	$f^2 > 0.15 = medium$
	$f^2 > 0.35 = \text{large}$
Predictive Relevance $(Q^2)$	$Q^2 > 0 = \text{small}$
	$Q^2 > 0.25 = medium$
	$Q^2 > 0.50 = 1$ arge
Goodness of Fit Index (GoF)	GoF > 0,1 = 10W
	GoF > 0,25 = medium
	GoF > 0.36 = high

#### C. Hypothesis Testing

Hypothesis testing is performed using the bootstrapping method with the help of SmartPLS 3 software. The results of hypothesis testing are obtained based on the value of the path coefficient ( $\beta$ ), the p-value, and the T-statistic. The hypothesis is accepted if the  $\beta$  value > 0 (positive influence), the p-value < 0.05 (significant influence), and the T-statistic value > T-table (1.651). Conversely, the hypothesis is rejected if it does not meet these criteria.

### **III. RESULTS & DISCUSSION**

#### A. Descriptive Statistics

Before the Partial Least Square (PLS) analysis, the data were processed using descriptive statistics. The mean values obtained in the descriptive statistics are used to determine how the respondents rated each variable, which is classified as follows: 1) 1,00 - 1,75: Strongly Disagree; 2) 1,76 - 2,50: Disagree; 3) 2,51 - 3,25: Agree; and 4) 3,26 - 4,00: Strongly Agree.

TABLE IV. DESCRIPTIVE ANALYSIS OF RESPONDENT'S ANSWERS

Variables	Item	Min	Max	Mean	St. Dev
PE	15	20	60	3,330	0,694
EE	13	22	52	3,294	0,633
SI	8	8	32	2,810	0,844
FC	9	13	36	3,311	0,653
BI	5	9	20	3,225	0,678

Based on Table IV, it can be described as follows:

- PE consists of 15 items with a theoretical score range of 15 to 60, the empirical score obtained is between 20 to 60, and the mean value is 3.330, meaning the average respondent strongly agrees with PE.
- EE consists of 13 items with a theoretical score range of 13 to 52, the empirical score obtained is between 22 to 52, and

the mean value is 3.294, which means that the average respondent strongly agrees with EE.

- SI consists of 8 items with a theoretical score range of 8 to 32, the empirical score obtained is between 8 to 32, and the mean value is 2.810, meaning the average respondent agrees with SI.
- FC consists of 9 items with a theoretical score range of 9 to 36, the empirical score obtained is between 13 to 36, and the mean value is 3.311, meaning the average respondent strongly agrees with FC.
- BI consists of 5 items with a theoretical score range of 5 to 20. The empirical score is between 9 to 36, and the mean value is 3.225, meaning the average respondent agrees with BI.

#### B. Outer Model Evaluation

#### 1) Convergent validity

All indicators of a latent variable should be highly correlated.

Variable	Item	Loading	Item	Loading	AVE
	PE1	0.735	PE9	0.767	
	PE2	0.783	PE10	0.787	
	PE3	0.746	PE11	0.763	
DE	PE4	0.805	PE12	0.744	0.500
PE	PE5	0.750	PE13	0.808	0.598
	PE6	0.782	PE14	0.791	
	PE7	0.782	PE15	0.770	
	PE8	0.783			
	EE1	0.780	EE8	0.781	
	EE2	0.751	EE9	0.789	0.595
	EE3	0.749	EE10	0.757	
EE	EE4	0.788	EE11	0.765	
	EE5	0.798	EE12	0.768	
	EE6	0.756	EE13	0.792	
	EE7	0.754			
	SI1	0.741	SI5	0.797	
SI	SI2	0.757	SI6	0.701	0.561
51	SI3	0.800	SI7	0.710	0.301
	SI4	0.760	SI8	0.718	
	FC1	0.750	FC6	0.784	
	FC2	0.764	FC7	0.726	
FC	FC3	0.709	FC8	0.748	0.573
	FC4	0.798	FC9	0.757	
	FC5	0.771			
	BI1	0.836	BI4	0.835	
BI	BI2	0.796	BI5	0.872	0.709
	BI3	0.867			

Based on Table V, it can be seen that all statement items have an outer loading value of more than 0.7, and each variable has an AVE value of more than 0.5. Thus the model has met the convergent validity criteria.

#### 2) Discriminant validity

Each indicator of a latent variable should not be highly correlated with a different latent variable. Based on Table VI, it can be seen that all variables have a root AVE value more significant than the correlation value between each latent variable and other latent variables, so they have met the discriminant validity criteria.

TABLE V	I. FO	ORNELL L	ARCKER	CRITERIO	ON RESU
	PE	EE	SI	FC	BI
PE	0,773				
EE	0,683	0,772			
SI	0,462	0,429	0,749		
FC	0,635	0,654	0,461	0,757	
BI	0,662	0,724	0,436	0,653	0,842
				_	
	TABL	E VII.	HIMTI	RESULTS	
	PE	EE	SI	FC	BI
PE					
EE	0,714				
SI	0,500	0,469			
FC	0,678	0,704	0,513		
BI	0,710	0,774	0,487	0,721	

Based on Table VII, all relationships between variables have the recommended HTMT value of less than 0.85. Thus, the discriminant validity criteria through the calculation of HTMT can be met.

#### 3) Reliability test

A reliability test ensures that a measuring instrument/device can show accuracy, consistency, and precision in making measurements.

TABLE VIII. RELIABILITY TEST RESULTS

Variable	Composite Reliability	Cronbach's Alpha
PE	0,957	0,952
EE	0,950	0,944
SI	0,911	0,888
FC	0,923	0,907
BI	0,924	0,897

Based on Table VIII, it can be seen that the model is declared reliable because all variables have a composite reliability value and Cronbach's alpha of more than 0.7.

#### C. Inner Model Evaluation

#### 1) Collinearity

Collinearity is performed to ensure no collinearity between variables so that the obtained model estimation results are not biased.

TABLE IX. COLLINEARITY RESULTS

Variables Correlation	Inner VIF
$PE \rightarrow BI$	2,196
$EE \rightarrow BI$	2,232
$SI \rightarrow BI$	1,364
$FC \rightarrow BI$	2,056

Based on Table IX, it can be seen that all the internal VIF values are less than 5. Thus, all the relationships between variables are declared free from collinearity, and the proposed model can proceed to the next evaluation stage. The next step is calculating the coefficient of determination, effect size, and predictive relevance.

TABLE X. COEFFICIENT OF DETERMINANT, EFFECT SIZE, AND PREDICTIVE RELEVANCE RESULTS

Variable	$R^2$	$f^2$	$Q^2$
PE		0,053	
EE		0,188	
SI		0,007	
FC		0,062	
BI	0,602		0,423

#### 2) Coefficient of determination (R2)

Based on Table IX, the R2 value obtained is 0.602, included in the moderate category. This value also means that the endogenous latent variable (behavioral intention) can be explained by the exogenous latent variables (performance expectancy, effort expectancy, social influence, and facilitating conditions) by 60.2%. Other variables outside the model can explain the rest.

#### 3) Effect size (f2)

Based on Table IX, the performance expectancy variable has an f2 value of 0.053 (small), effort expectancy has an f2 value of 0.188 (moderate), social influence has an f2 value of 0.007 (none), and facilitating conditions has an f2 value of 0.062 (small).

#### 4) Predictive relevance (Q2)

Based on Table IX, the  $Q^2$  value obtained is 0.423, which indicates that the endogenous latent variable can be predicted by 42.3% by the exogenous latent variable based on the data used. The  $Q^2$  value obtained also shows that the model has a predictive relevance value with moderate criteria.

#### 5) Goodness of Fit Index (GoF Index)

The GoF Index is obtained from the square root of the multiplication of the average AVE and the average R2 or can use Equation (1).

the GoF = 
$$\sqrt{\text{AVE x } R^2}$$
 (1)  
=  $\sqrt{0.585 \times 0.602}$   
= 0.593

Based on the GoF Index value obtained, it can be seen that the feasibility level of the model is high, so it can be concluded that the proposed model is excellent and feasible as a whole, including the measurement and structural models.

#### D. Hypothesis Testing

In this study, hypothesis testing was carried out using the bootstrapping method using SmartPLS 3 software. Hypothesis Testing is shown in Table XI.

#### 1) Effect of PE on BI

Hypothesis testing results show that PE has a value of  $\beta = 0.215$ , p-value = 0.000, T-statistic = 3.892 > 1.651, at a confidence interval of 95%. Changes that occur in PE can affect BI by 0.130  $\geq \beta \geq 0.300$ . From these results it is known that PE has a positive and significant effect on BI, so H1 is accepted. This result indicates that students' desire to use an online exam system will be higher if they believe that using an online exam system can help them achieve performance benefits in carrying out exams.

The results of the same research by [13] found that PE has a significant effect on BI in both mandatory and non-mandatory systems. When conducting online learning, the use of an online exam system allows students to complete exam questions more quickly [21]. Students can read and answer exam questions faster using an online exam system, so it does not require less time to take the exam [19]. Then, regarding the acceptance of web services, students can complete academic activities correctly and quickly, thus having a positive impact on studies and improving academic performance [20]. Research results [1], [15], [31] on accepting online exam systems also found that PE has a positive and significant influence on BI.

#### 2) Effect of EE on BI

Hypothesis testing results show that EE has a value of  $\beta = 0.406$ , p-value = 0.000, T-statistic = 7.321 > 1.651, at a 95% confidence interval, changes that occur in EE can affect BI by  $0.322 \ge \beta \ge 0.492$ . From these results, it is known that EE has a positive and significant effect on BI, so H2 is accepted. The results of this test indicate that students' desire to use the online exam system will be higher if the online exam system is easy to use. In this study, EE is the variable that has the most decisive influence on BI among other independent variables.

The results of the same research by [13] found that EE has a significant effect on BI both in systems that are mandatory to use and not. Implementing easy-to-use computer-based learning can motivate students to use it [32]. An easy-to-use system should function correctly on various devices and have an efficient, productive, attractive interface design [33]. In the implementation of CBT systems in schools, the ease of use of the system makes students motivated to use it [23]. The results of other studies conducted by [1], [3], [24], [25] on accepting online exam systems also found that EE has a positive and significant influence on BI.

#### 3) Effect of SI on BI

Hypothesis testing results show that SI has a value of  $\beta = 0.060$ , p-value = 0.083, T-statistic = 1.385 < 1.651, at a 95% confidence interval, changes that occur in SI can affect BI by  $-0.005 \ge \beta \ge$ 0.135. From these results, it is known that SI has a positive but insignificant effect on BI, so H3 is rejected. The results of this test indicate that students' desire to use the online exam system will be higher if there is support from people who are important to them. The effect of SI on BI is the weakest and insignificant in this study.

The insignificant effect on the SI variable is due to the low influence on several statement items. SI6 and SI7 have the most downward influence, with an outer loading value of 0.701 and 0.710. This indicates that some students feel that using an online exam system is not a prestigious thing and has no effect on their profile. Using internet-based learning technology is already a habit for teenagers, so it does not cause changes in them [25].

The results of the same research by [13] found that SI has a positive effect on BI both in systems that must be used or not. Students required to use a system related to learning activities do not affect their intention to use it [21]. The social environment in learning activities can affect students' interest in using learning media. Teacher skills in teaching and using the latest media can support creating suitable learning activities [34]. In using elearning at school, the most significant influence comes from parents and the school. Students' intention to use e-learning will increase if it is required for learning activities [26]. The results of

other studies conducted by [1], [3], [15], [31] on the acceptance of online exam systems also found that SI has a positive influence on BI.

Hypoth esis	Path Coeffici ent (β)		Path ficient dence val Ma	T- Statist - ics	P- Valu es	Result	Decisi on
		WIIII	Х				
H1 (PE $\rightarrow$ BI)	0,215	0,1 30	0,3 00	3892	0,00 0	Positiv ely signific ant	Accep ted
H2 (EE $\rightarrow$ BI)	0,406	0,3 22	0,4 92	7,321	0,00 0	Positiv ely signific ant	Accep ted
H3 (SI $\rightarrow$ BI)	0,060	- 0,0 05	0,1 35	1,385	0,08 3	Positiv ely not signific ant	Reject ed
H4 (FC $\rightarrow$ BI)	0,224	0,1 30	0,3 19	3885	0,00 0	Positiv ely signific ant	Accep ted

#### 4) Effect of FC on BI

Hypothesis testing results show that FC has a value of  $\beta = 0.224$ , p-value = 0.000, T-statistic = 3.885 > 1.651, at a 95% confidence interval, changes that occur in FC can affect BI by  $0.130 \ge \beta \ge 0.319$ . These results indicate that FC has a positive and significant effect on BI. Thus, H4 is accepted. The results of this test suggest that students' desire to use the online exam system will be higher if the infrastructure and technical support are obtained.

The results of this study are different from the results of research [13], which found that FC does not affect BI when PE and EE are proposed but will have a significant effect if PE and EE are not offered. This difference occurs allegedly because, besides looking for performance benefits and ease of use of the online exam system, students also want supporting facilities and infrastructure to use it smoothly and comfortably. Problems that arise when taking exams can interfere with student concentration during the exam. Thus, the condition of good supporting facilities is expected to provide a sense of security and comfort for students when taking exams to improve learning outcomes [35]. Students will be more likely to use CBA when resources are available through the system employed or academic staff [25]. System usage guidelines and adequate technical infrastructure must be in place for the successful implementation of an online exam system [21]. In accepting the use of e-learning, the influential thing is the support and assistance provided by teachers when difficulties occur [36]. The results of other studies conducted by [3], [14], [15] on accepting online exam systems also found that FC has a positive and significant influence on BI.

#### IV. CONCLUSION

The main focus of this research is to analyze the UTAUT factors that influence user acceptance of the Web-Based Online Exam System at SMK Negeri 4 Malang. Based on the analysis and

discussion in this study, it can be concluded that performance expectancy has a positive and significant effect on behavioral intention. Students' desire to use an online exam system will be higher if they believe that using an online exam system can help them achieve performance benefits in carrying out exams. Most students strongly agree that using an online exam system will make it easier and shorter for them to complete the exam.

Effort expectancy has a positive and significant effect on behavioral intention. Students' desire to use the online exam system will be higher if the online exam system is easy to use. Most students can quickly become skilled in using the online exam system and find the operation of the online exam system easy for them.

Social influence has a positive but insignificant effect on behavioral intention. Students' desire to use the online exam system will be higher if there is support from people who are important to them. The most extensive support comes from the school and teachers who strongly support students using the online exam system. Some students feel that using an online exam system is not a prestigious thing and has no effect on their profile.

Facilitating conditions have a positive and significant effect on behavioral intention. Students desire to use the online exam system will be higher if better infrastructure and technical support are obtained. Most students feel that the online exam system is compatible with their devices so that they can operate it properly and smoothly. Students also feel that assistance from teachers and school technicians when they have difficulties using the online exam system is beneficial.

#### V. SUGGESTION

In this study, there are still some limitations, namely, the number of samples used only comes from one generation, the samples used only come from students, and the UTAUT model used does not involve moderator variables. Suggestions for future research are to be able to use samples that include students from each generation (10th, 11th, and 12<sup>th</sup> grade) to get more relevant results. Then, it can consist of teachers as a sample to get more comprehensive results because teachers also use the online exam system to upload exam questions. If both suggestions are carried out, moderator variables such as age, gender, and experience can be added so that the results obtained are maximized.

## References

- I. F. Sandria, "TA: Pola Penerimaan Ujian Nasional Berbasis Komputer (UNBK) Terhadap Siswa SMK Prapanca Dengan Menggunakan Metode Unified Teory Of Acceptance And Use Of Technology (UTAUT)." Institut Bisnis dan Informatika Stikom Surabaya, 2017.
- [2] S. Hadi, *Pengembangan Computerized Adaptive Test Berbasis Web*. Aswaja Pressindo, 2013.
- [3] E. Andika, D. Djajasukma, and H. Heryanto, "Analisis Manfaat Penerapan Sistem Informasi Ujian Online: Studi Kasus SMK Pasim Plus," J. Teknol. Rekayasa, vol. 2, no. 1, pp. 47–54, 2017.
- [4] N. Hidayatun, "Kajian Teknologi Sistem Ujian Online Dengan Menggunakan Model Utaut," *Paradigma*, vol. 15, no. 1, pp. 68–80, 2013.
- [5] M. Fishbein and I. Ajzen, "Belief, attitude, intention, and behavior: An introduction to theory and research." 1977.
- [6] F. D. Davis, R. P. Bagozzi, and P. R. Warshaw, "User acceptance of computer technology: A comparison of two theoretical models," *Manage. Sci.*, vol. 35, no. 8, pp. 982–1003, 1989.

- [7] F. D. Davis, R. P. Bagozzi, and P. R. Warshaw, "Extrinsic and intrinsic motivation to use computers in the workplace 1," J. Appl. Soc. Psychol., vol. 22, no. 14, pp. 1111–1132, 1992.
- [8] I. Ajzen, "The theory of planned behavior," Organ. Behav. Hum. Decis. Process., vol. 50, no. 2, pp. 179–211, 1991.
- [9] S. Taylor and P. A. Todd, "Understanding information technology usage: A test of competing models," *Inf. Syst. Res.*, vol. 6, no. 2, pp. 144–176, 1995.
- [10] R. L. Thompson, C. A. Higgins, and J. M. Howell, "Personal computing: Toward a conceptual model of utilization," *MIS Q.*, pp. 125–143, 1991.
- [11] G. C. Moore and I. Benbasat, "Development of an instrument to measure the perceptions of adopting an information technology innovation," *Inf. Syst. Res.*, vol. 2, no. 3, pp. 192–222, 1991.
- [12] D. R. Compeau and C. A. Higgins, "Application of social cognitive theory to training for computer skills," *Inf. Syst. Res.*, vol. 6, no. 2, pp. 118–143, 1995.
- [13] V. Venkatesh, M. G. Morris, G. B. Davis, and F. D. Davis, "User acceptance of information technology: Toward a unified view," *MIS Q.*, pp. 425–478, 2003.
- [14] A. P. Widodo and R. Gernowo, "Hubungan Faktor Penerimaan Aplikasi Ujian Sekolah Berbasis Komputer Menggunakan Model Utaut," in *Prosiding Seminar Nasional & Internasional*, 2017.
- [15] Y. Sriyeni, D. Antoni, and M. Akbar, "Analisis penerimaan dan penggunaan teknologi computer based test (cbt) sebagai media ujian online dengan model uified theory of acceptance and use of technology (UTAUT)," J. Teknol. dan Inform., vol. 8, no. 1, pp. 93–104, 2018.
- [16] O. Hamalik, "Kurikulum dan pembelajaran edisi 1," Bumi Aksara, Jakarta, 2013.
- [17] W. Wahana, "Pemanfaatan Teknologi Informasi untuk Pendidikan dengan Ujian Berbasis Komputer," J. Teknol. Pendidik., vol. 2, no. 2, pp. 177–185, 2013.
- [18] R. G. Jimoh, A. J. K. Shittu, and Y. K. Kawu, "Students' perception of computer based test (CBT) for examining undergraduate chemistry courses," *J. Emerg. Trends Comput. Inf. Sci.*, vol. 3, no. 2, pp. 125–134, 2012.
- [19] M. Jawaid, F. A. Moosa, F. Jaleel, and J. Ashraf, "Computer based assessment (CBA): Perception of residents at Dow University of Health Sciences," *Pakistan J. Med. Sci.*, vol. 30, no. 4, p. 688, 2014.
- [20] M. Arif, K. Ameen, and M. Rafiq, "Factors affecting student use of Webbased services: Application of UTAUT in the Pakistani context," *Electron. Libr.*, vol. 36, no. 3, pp. 518–534, 2018.
- [21] G. A. Adanir and M. Çinar, "The acceptance and use of an online exam system by online learners: Implementation of the UTAUT model," *Sak. Univ. J. Educ.*, vol. 11, no. 3, pp. 412–430, 2021.
- [22] A. Nurkhin, "Analysis of factors affecting behavioral intention to use elearning uses the unified theory of acceptance and use of technology approach," *KnE Soc. Sci.*, pp. 1005–1025, 2020.
- [23] M. Zheng and D. Bender, "Evaluating outcomes of computer-based classroom testing: Student acceptance and impact on learning and exam performance," *Med. Teach.*, vol. 41, no. 1, pp. 75–82, 2019.
- [24] S. Prasiska, D. Kurniadi, and M. A. Anwar, "Analisis Perilaku Penggunaan Aplikasi Ujian Sekolah Berbasis Komputer Menggunakan Model UTAUT (Unified Theory Of Acceptance And Use Technology) Di SMK Negeri 1 Batipuh," *Voteteknika (Vocational Tek. Elektron. dan Inform.*, vol. 6, no. 2, pp. 15–21, 2018.
- [25] J. M. Sirianni, Y. J. Ng, and A. Vishwanath, "Adopting Computer-Based Assessments: The Role of Perceived Value in Classroom Technology Acceptance," *Online J. Commun. Media Technol.*, vol. 7, no. 4, pp. 1–23, 2017.
- [26] M. Asvial, J. Mayangsari, and A. Yudistriansyah, "Behavioral intention of e-learning: A case study of distance learning at a junior high school in Indonesia due to the covid-19 pandemic," *Int. J. Technol.*, vol. 12, no. 1, pp. 54–64, 2021.
- [27] W. Abdillah and J. Hartono, "Partial least square (PLS) Alternatif structural equation modeling (SEM) dalam penelitian bisnis," *Yogyakarta Penerbit Andi*, vol. 22, pp. 103–150, 2015.
- [28] J. Sarwono and U. Narimawati, Membuat skripsi, tesis, dan disertasi dengan partial least square sem (pls-sem). Yogyakarta: Andi, 2015.

- [29] J. F. Hair, J. J. Risher, M. Sarstedt, and C. M. Ringle, "When to use and how to report the results of PLS-SEM," *Eur. Bus. Rev.*, vol. 31, no. 1, pp. 2–24, 2019.
- [30] M. Wetzels, G. Odekerken-Schröder, and C. Van Oppen, "Using PLS path modeling for assessing hierarchical construct models: Guidelines and empirical illustration," *MIS Q.*, pp. 177–195, 2009.
- [31] A. Ginting, R. Roslina, and W. Wanayumini, "Analisis Peneriman Sistem Ujian CBT Menggunakan Metode UTAUT (Unified Theory of Acceptance and Use of Technology) di Lingkungan Kampus," J. Media Inform. Budidarma, vol. 5, no. 2, pp. 532–539, 2021.
- [32] M. M. Abbad, "Using the UTAUT model to understand students' usage of e-learning systems in developing countries," *Educ. Inf. Technol.*, vol. 26, no. 6, pp. 7205–7224, 2021.
- [33] F. G. Karaoğlan Yılmaz, R. Yılmaz, and T. Öztürk, "Examining university students' acceptance of web-based formative assessment system." Hacettepe Üniversitesi, 2020.

- [34] H. Elmunsyah, W. N. Hidayat, and K. Asfani, "Influence of Augmented Reality on the Achievement and Student Learning Independence," in 2019 International Seminar on Application for Technology of Information and Communication (iSemantic), IEEE, 2019, pp. 559–563.
- [35] S. W. Maulida, H. Elmunsyah, and S. Patmanthara, "The contributions of computer facility, test preparation, and learning motivation against the results of computer-based final examination result of VHS students of software engineering expertise package in Malang city," in *AIP Conference Proceedings*, AIP Publishing, 2017.
- [36] R. D. Mahande and J. D. Malago, "An E-Learning Acceptance Evaluation through UTAUT Model in a Postgraduate Program.," *J. Educ. online*, vol. 16, no. 2, p. n2, 2019.