Jurnal mandiri IT
Vol. 8 No. 2, January (2020), pp. 52-59
ISSN 2301-8984 (Print), 2809-1884 (Online)

Analysis Of Acceptance Of E-Service Using Unified Theory Of Acceptance And Use Of Technology (Utaut) Faculty Of Engineering, Universitas Negeri yogyakarta

Byan Dicky Novaldi
Informatics Engineering Education Study Program, Faculty of Engineering, Universitas Negeri Yogyakarta

ARTICLEINFO

Article history:

Received Dec 23, 2019
Revised Jan 10, 2020
Accepted Jan 20, 2020

Keywords:

E-Services;
Unified Theory of Acceptance and Use of Technology (UTAUT);
Partial least squares (PLS).

ABSTRACT

This study aims to determine the factors that influence the acceptance and use of the application of E-Service services at the Faculty of Engineering, Yogyakarta State University. The model used in this study is The Unified Theory of Acceptance and Use of Technology (UTAUT). This research method uses an explanative quantitative approach. The population in this study were students using E-Service at the Faculty of Engineering, Yogyakarta State University. Sampling of 100 students. The data collection method used is a questionnaire. The analysis technique uses Partial least square (PLS) analysis. The results of this study are that performance expectations have a positive effect on student interest in using E-Service, (Effort expectations have a positive effect on student interest in using E-Service.

Corresponding Author:

Byan Dicky Novaldi
Informatics Engineering Education Study Program,
Faculty of Engineering Universitas Negeri Yogyakarta
E-mail: byandicky54@gmail.com

1. INTRODUCTION

In the digital era like today, various activities that were initially carried out manually and limited by space and time because they can only be done at certain places and times can now be done anywhere and anytime using gadgets via the internet network. The internet is a communication medium that can answer various demands and facilitate various activities. With the internet itself, various institutions and companies are competing to innovate in the field of technology, especially those using internet media to improve performance. With the development of various media and applications that use the internet, the growth of internet users has increased quite significantly(Faiza & Firda, 2018).

In Indonesia, according to a survey conducted by the Association of Indonesian Internet Service Providers (APJII), the percentage of internet users in 2018 was 171.17 million out of a population of 264 million or 64.8% of the total population. This figure has increased by 10% from the previous year which was only 54.7% of the total population. From the survey data, at the age of 15-30 years, 88% are internet users. From these data, it can be concluded that the largest internet media users are productive young people and students are included(Widyakusuma, Yuda, & Suwarba, nd).

Before the creation and implementation of online administrative services in the form of an E-Service website, the administrative service process was still carried out by submitting directly to the student administration service counter. All files and prerequisites must be managed manually.

Services that are still done manually are considered less efficient in terms of time and energy. In fact, in practice, if a problem occurs, it will interfere with academic activities(Saggaf, Said, & Saggaf, 2018).

Like various types of technology development in various fields and levels, research on the level of acceptance and use from the user's perspective needs to be carried out in order to determine the extent to which user attitudes are viewed from the interest and use of the technology. In the implementation of UNY's E-Service web-based information system services, it is necessary to analyze the level of acceptance and use(Khoirunnisa, 2018). There are so many ways or models that have been developed to measure the level of acceptance and use of a system or technology. One theory or model that can be used to represent the level of acceptance and use of a technology is the Unified Theory Of Acceptance and Use Of Technology (UTAUT).(Prasetyo, 2017).

UTAUT is a theory or model that has been developed by Vekantesh, et al. (2003). Through the process of reviewing eight models/theories of acceptance and use of technology. By using this model, it can be seen an overview of the factors that influence a person's acceptance of a technology(DEWI & SALAMAH, 2018).

2. METHOD

This research is classified as an explanatory research. Explanatory research is a study in which the withdrawal and hypothesis testing are intended to explain the causal relationship between research variables (Sugiyono 2010; 118). This study will describe whether or not there is a relationship between the variables to be studied and the extent to which these relationships influence each other. Because the main purpose of explanatory research is to test the hypotheses that have been proposed, through this research it is hoped that the relationship and influence between research variables can be described.

This research includes quantitative research.In quantitative research there are two methodsfor data collection, namely surveys and experiments. In this study, the method that will be used is the survey method. The survey method is a method where primary data collection is done by asking questions to respondents (Jogiyanto, 2007: 117). The survey method is used to collect data from individuals in certain areas that are natural (not artificial), but researchers can perform several treatments in the data collection process. In testing research hypotheses, both descriptive, associative, and comparative hypotheses survey methods are one of the suitable methods to be used (Sugiyono 2010: 12).This research was conducted using the UTAUT model, which is a research model used to analyze and describe the factors that influence the acceptance and use of a technology. In this case, the technology being researched is a web-based information system service, E-Service, Yogyakarta State University.

3. RESULTS AND DISCUSSIONS

3.1 Data Description

The description of the data that will be presented below is a general description of the distribution of data obtained from the results of research in the field. The sample taken is 100 respondents, namely students of the Faculty of Engineering, Yogyakarta State University. The research was conducted from July 1 to July 18, 2019. The research was conducted by distributing closed questionnaires to collect data to the students of the Faculty of Engineering, users of the UNY E-Service. Data collection was carried out within two weeks with a questionnaire return rate of 100% and all questionnaire data obtained were complete so that they met the requirements for processing.

Table 1.
Questionnaire Distribution Details

No	Major	Amount Questionnaire Distributed	Number of Questionnaires Return	Questionnaire Return Rate	Questionnaire Used
1	Pend.Electronic Engineering	45	45	100%	45
2	Pend. Electrical Engineering	14	14	100%	14
3	Pend. Mechanical Engineering	10	10	100%	10
4	Pend. Automotive Engineering	11	11	100%	11
5	Pend. Civil Engineering and Planning	12	12	100%	12
6	Pend. Catering and Clothing Techniques	8	8	100%	8
	Amount	100	100	100%	100

The data obtained were then processed using descriptive statistical techniques with the help of IBM SPSS v1.0 software. The analysis table will be presented in the form of minimum score, maximum score, total score, average score, and standard deviation. The following is a descriptive statistical table of data for each construct:

Table 2.
Descriptive statistics of each construct . data

	PE	EE	SI	FC	BI	UB
N	100	100	100	100	100	100
Minimum	8	7	7	6	4	1
Maximum	20	16	15	14	12	4
Sum	1421	1205	1196	1113	925	305
Mean	14.21	12.05	11.96	11.13	9.25	3.05
Std. Deviation	2,775	1,992	1,681	1,785	1.373	0.575

3.2 Analysis Prerequisite Test

1. Inner model design

The design of the inner model between constructs is based on the research hypothesis. The design of the inner model using the help of the smartPLS 3 software can be seen in

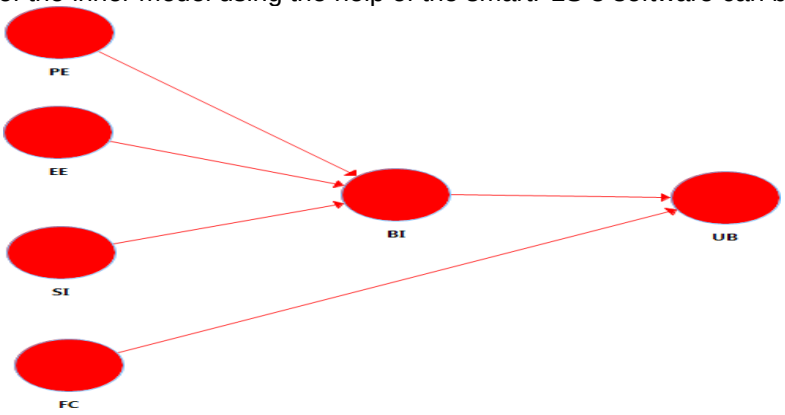

Figure 1. Inner model design.

In the design of the inner model from the picture above, it is known that H1 PE has an effect on the BI variable. Then H2, namely EE, has an effect on the BI variable.

Furthermore, H3 which is SI has an effect on BI, followed by H4 FC has an effect on UB. The last one is H5, namely BI has an effect on UB.

2. Outer model design

The outer model is designed with the help of smartPLS v3.2 software. Indicators of all constructs from PE, EE, SI, FC, BI to UB constructs on the outer model are reflexive. Therefore, the direction of the arrow drawn from the construct leads to the indicator. and can be seen in Figure 4.

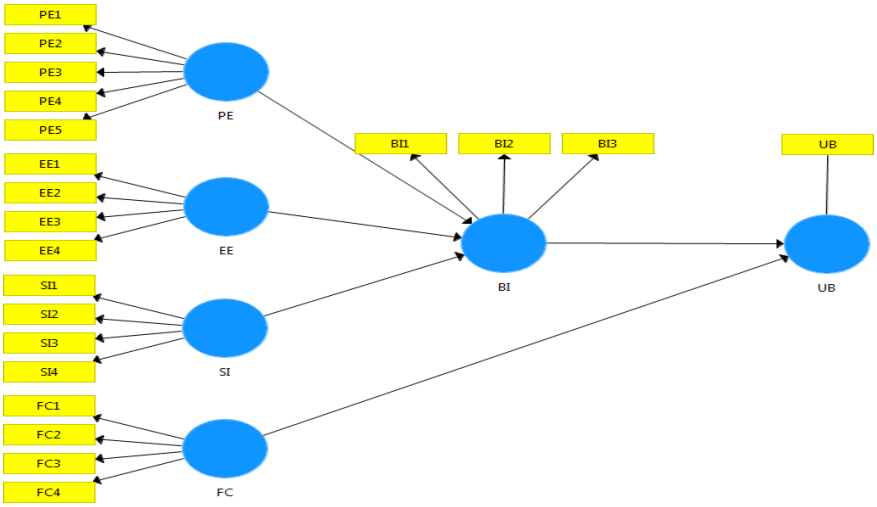

Figure 2. Outer model design.

From the picture above, it can be seen that PE or performance expectations have indicators PE1, PE2, PE3, PE4 and PE5. PE has an influence on BI. EE or business expectations have indicators EE1, EE2, EE3, and EE4. EE has an influence on BI. SI or social influence has indicators SI1, SI2, SI3 and SI4. SI has an influence on BI. FC or facilitating conditions have the indicators FC1, FC2, FC3, and FC4. FC has influence on UB. BI or behavioral intention has indicators BI1, BI2, and BI4. BI has an influence on UB. UB or usage behavior has UB indicators.

3. Model Estimation

The method used to estimate parameter values (estimations) in this study uses the PLS Algorithm from smartPLS v3.2. To measure this, the dimensionality of each construct is viewed from the convergent validity of each construct indicator. A category that indicates an individual reflexive correlation is of high value if it has a value above 0.70 with the construct being measured. The values that have a loading factor of 0.50 to 0.60 can still be used for models that are still in the development stage (chin, 1998). The results of testing the model using the PLS Algorithm can be seen in Figure 5.

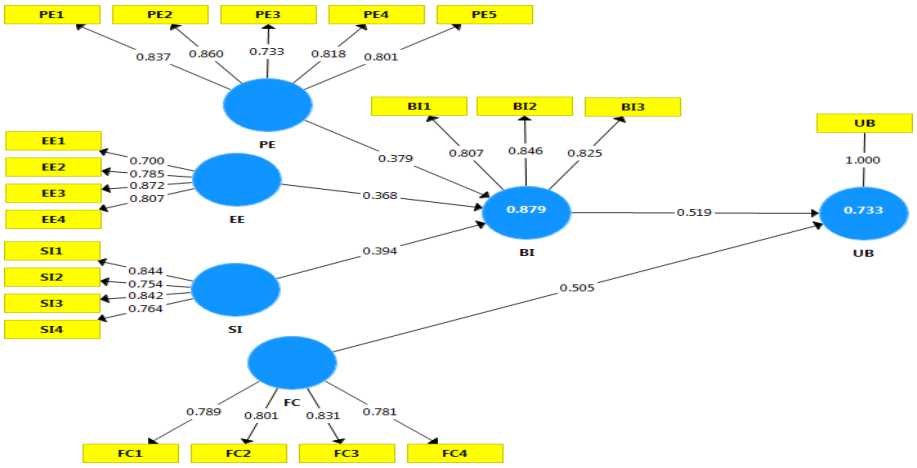

Figure 3. Model Execution Results.

The picture above shows that all indicators of the model have a loading factor above 0.50 so that it can be accepted for later evaluation.

Furthermore, from the image above we can get:

1) H1. Expected performance or PE has an influence on BI of 0.379
2) H2. Business expectations or EE have an influence on BI of 0.368
3) H3. Social influence or SI has an influence on BI of 0.394
4) H4. Facilitating conditions or FC have an influence on UB by 0.505
5) H5. Behavioral intention or BI has an influence on UB by 0.519

4. Model Evaluation

Model evaluation for the inner model and outer model can be done by looking at the calculation results from the PLS Algorithm using the SmartPLS v3.2 software. Testing Outer model evaluation of the outer model is carried out to test the feasibility of the measurement model used both in terms of validity and reliability. In the evaluation of the outer model with reflexive indicators, the level of validity is sought with the convergent validity and discriminant validity approaches, while in terms of reliability, the composite reliability approach is sought. Convergent validity of the measurement model with reflexive indicators can be known through the correlation between the indicator value and its construct, in this case, it can be seen from the results of the outer loading output. The output outer loading of the estimation results from the PLS Algorithm with SmartPLS software can be seen in tables 3 and 4 below:

Table 3.
Output Outer Loadings BI, EE, and FC constructs

	BI	EE	FC	PE	SI	UB
BI1	0.807					
BI2	0.846					
BI3	0.825					
EE1		0.7				
EE2		0.785				
EE3		0.872				
EE4		0.807				
FC1			0.789			
FC2			0.801			
FC3			0.831			
FC4			0.781			

Table 4.
Output Outer Loadings PE, SI, and UB constructs.

	BI	EE	FC	PE	SI	UB
PE1				0.837		
PE2				0.86		
PE3				0.733		
PE4				0.818		
PE5				0.801		
SI1					0.844	
SI2					0.754	
SI3					0.842	
SI4					0.764	
UB						1

From the results of the outer loading output above the loading factor for all indicators, each construct can be declared to meet the convergent validity criteria, because all the loading factor values for each indicator are greater than 0.50. Discriminant validity of reflexive indicators can be seen from the value of cross loading between indicators and their constructs. The output of cross loading estimation results from the PLS Algorithm with SmartPLS software can be seen in tables 5 and 6 below:

Table 5.
Output cross loading BI and EE constructs.

	BI	EE	FC	PE	SI	UB
BI1	0.807	0.675	0.261	0.581	0.655	0.543
BI2	0.846	0.636	0.378	0.623	0.577	0.666
BI3	0.825	0.707	0.346	0.671	0.611	0.574
EE1	0.483	0.7	0.241	0.238	0.377	0.34
EE2	0.706	0.785	0.424	0.585	0.482	0.532
EE3	0.74	0.872	0.437	0.593	0.474	0.618
EE4	0.611	0.807	0.24	0.442	0.386	0.391

Table 6.
Output cross loading of FC, PE, SI and UB constructs.

	BI	EE	FC	PE	SI	UB
FC1	0.264	0.293	0.789	0.149	0.222	0.544
FC2	0.223	0.224	0.801	0.086	0.302	0.547
FC3	0.367	0.439	0.831	0.256	0.271	0.615
FC4	0.413	0.427	0.781	0.246	0.332	0.569
PE1	0.611	0.514	0.186	0.837	0.315	0.392
PE2	0.581	0.466	0.133	0.86	0.261	0.335
PE3	0.578	0.418	0.314	0.733	0.34	0.481
PE4	0.632	0.501	0.207	0.818	0.365	0.462
PE5	0.655	0.554	0.114	0.801	0.299	0.381
SI1	0.66	0.505	0.393	0.35	0.844	0.512
SI2	0.564	0.435	0.398	0.307	0.754	0.472
SI3	0.622	0.469	0.162	0.355	0.842	0.415
SI4	0.527	0.325	0.165	0.229	0.764	0.359
UB	0.72	0.608	0.712	0.506	0.551	1

From the results of the cross loading output, it can be seen that the correlation of each indicator to the construct is higher than to other constructs. So it can be said that the latent construct predicts the indicators better than other construct indicators.Another way to

determine discriminant validity is by comparing the square root value of the Average Variance Extacted ($\sqrt{AVE}$) of each construct with the value of the latent variable correlation or correlation between constructs. The model is considered to meet the discriminant validity criteria if the AVE square root value of each construct is greater than the value of the latent variable correlation. The AVE output and the latent variable correlation estimation results from the PLS Algorithm with SmartPLS software can be seen in tables 7 and 8 below.

Table 7.
Output cross loading of FC, PE, SI and UB constructs.

	AVE	AVE . root
BI	0.682	0.825833
FC	0.641	0.800625
SI	0.643	0.801873
EE	0.63	0.793725
PE	0.657	0.810555
UB	1	1

Table 8.
Output Latent Variable Correlation.

	BI	EE	FC	PE	SI	UB
BI	1	0.814	0.398	0.757	0.743	0.72
EE	0.714	1	0.436	0.609	0.546	0.608
FC	0.398	0.436	1	0.233	0.352	0.712
PE	0.757	0.609	0.233	1	0.391	0.506
SI	0.743	0.546	0.352	0.391	1	0.551
UB	0.72	0.608	0.712	0.506	0.551	1

Based on Tables 7 and 8, it is known that the square root value of AVE for each construct is greater than the correlation value of each construct to another construct. For example, it is known that the AVE root value for the BI construct is 0.826, which is greater than the correlation value for the BI and EE constructs of 0.814, greater than the correlation value for the BI and FC constructs of 0.398, greater than the correlation value between BI and PE constructs of 0.757, greater than The correlation value between BI constructs and SI is 0.743, and is greater than the correlation between BI constructs and UB is 0.72. So it can be concluded that all constructs in this model are declared to meet the criteria of discriminant validity.

4. CONCLUSION

The purpose of this study was to determine the level of acceptance and use by students of the implementation and utilization of the E-Service system at the Faculty of Engineering, State University of Yogyakarta. The model or theory used in analyzing the factors that influence user acceptance of the implementation and utilization of E-Service services is The Unified Theory Of Acceptance and Use Of Technology (UTAUT). The method used in the process of analyzing the relationship between constructs is the PLS method. Based on the analysis of the research results and the discussion that has been presented, there are several conclusions, including: Performance has a positive influence on student interest in using E-Service by 38%. From these results, it is known that the level of students' confidence that by utilizing E-Service services can provide benefits to their performance in lecture activities, it has a large enough contribution to their interest in utilizing E-Service services. So that for most students who feel they can increase their performance by utilizing E-Service services, there will be a desire to use E-Services to support their lecture activities. Harapan Usaha has a positive influence on student interest in using E-Service by 37%. From these results it is known that the level of ease of utilizing E-Service services in several activities involving E-Service services has a large enough contribution to their interest in utilizing E-Services.

References

DEWI, C., & SALAMAH, I. (2018). Penerapan model UTAUT untuk pemahaman sistem informasi akademik di Politeknik Negeri Sriwijaya. *Proceeding SENTIKA (Seminar Nasional Teknologi Informasi Dan Komunikasi)*, 216–224. Universitas Atmajaya-Yogyakarta.

Faiza, A., & Firda, S. J. (2018). *Arus metamorfosa milenial*. Penerbit Ernest.

Khoirunnisa, E. (2018). *Pengaruh Penggunaan E-Banking, Kepercayaan (Trust), Dan Kualitas Pelayanan Terhadap Loyalitas Nasabah Bank Bni Syariah Kantor Cabang Surakarta*. IAIN SALATIGA.

Prasetyo, D. Y. (2017). Penerapan metode UTAUT (Unified Theory of Acceptance and Use of Technology) dalam memahami penerimaan dan penggunaan website KKN LPPM UNISI. *Sistemasi: Jurnal Sistem Informasi*, *6*(2), 26–34.

Saggaf, S., Said, M. M., & Saggaf, W. S. (2018). *Reformasi Pelayanan Publik di Negara Berkembang* (Vol. 1). SAH MEDIA.

Widyakusuma, I. G. N. A. J., Yuda, I. M. D., & Suwarba, I. G. N. M. (n.d.). *Profil anak dengan ketergantungan internet di SMPN 2 Denpasar*.