

**AN ANALYSIS OF STUDENTS' PREFERENCES FOR ONLINE
EXAMINATION SYSTEM (SISTEM UJIAN ONLINE-SUO): A STUDY
ON UT STUDENTS AT UPBJJ-UT MAKASSAR**

Andi Sylvana

I Made Gunawan Sanjaya

Online Examination System (Sistem Ujian Online-SUO) refers to an evaluation system of student learning development. To date, Universitas Terbuka (UT) has carried out examinations with ICT that enables computer-based examinations to be properly conducted. This study sought to establish factors that affected students' preferences for SUO. Such factors include performance expectations, effort expectations, social influences and facilitating conditions. We gathered data from 62 respondents of UT students participating in SUO at UPBJJ-UT Makassar. The result demonstrated that each of the variables had a positive and significant effect on students' preferences for SUO. The most dominant variables, in a descending order, were facilitating conditions, performance expectations, effort expectations and social influences. On that basis, we settled on a model of students' preferences for SUO as an alternative to traditional examination system.

Keywords: SUO, performance expectations, effort expectations, social influences and facilitating conditions

1. INTRODUCTION

Sistem Ujian Online (SUO) serves as one of the many ICT-based facilities provided by Universitas Terbuka, based on Rencana Strategis Universitas Terbuka (Renstra-UT) 2010-2021. A key aim of this is to provide a myriad of ICT-based academic services that are highly accurate throughout all areas in management and learning system at UT by 2021 (Universitas Terbuka, 2011). In addition to academic services, ICT allows for the opportunities that UT is able to gain reputation and recognition from society for its fast and easy access, accuracy and affordability.

UT first developed SUO in 2005, formerly known as Computer-Based Examination (Ujian Berbasis Komputer-UBK). UBK aimed examination system service at students who are unable to attend scheduled paper examination by the end of semester. UBK provided individual services and might offer questions different from the paper examinations (Ujian Akhir Nasional). The principal intent of UBK was to set up a platform where students were given flexibility in terms of examination schedules. As a result, UT could significantly improve student retention.

The fast-growing ICT has enabled UT to constantly foster SUO as the improvement of UBK. A major highlight of SUO is that it provides faster examination scripts as it is directly connected to the network at SUO location, as opposed to UBK which strictly depended on the server at UPBJJ-UT. A secured network connection is therefore necessary as the scripts are directly downloaded from UT Headquarter. The type of questions in SUO measures the same

competencies and is set out within the same format and framework as that in paper examinations. In addition, SUO, administered by local exam supervisors, is presented with multiple-choice questions, correct-incorrect questions, pairing tests and short-answer tests.

Based on the annual report of UT Rector in 2016, Table 1 reveals that the number of SUO participants at UT has had a dramatic increase within several years – most notably in 2016.1 and 2016.2 with an impressive percentage of 82,3% and 106%, respectively. This strongly indicates the increasingly optimal implementation of SUO and student acceptance of the online examination.

Table 1
The Number of SUO Participants
Universitas Terbuka

The Number of SUO Participants	Registration Term							
	2013.1	2013.2	2014.1	2014.2	2015.1	2015.2	2016.1	2016.2
Non Basic Education Program	2.945	3.036	3.237	3.385	5.187	5.090	6.008	7.120
Basic Education Program	1.670	1.784	1.915	2.350	3.606	3.920	7.380	8.913

This is, however, not the case at UPBJJ-UT Makassar. As seen in Table 2, the number of SUO participants, both in Basic Education Program and Non Basic Education Program, enormously fluctuates from 2013 to 2017 in each semester. The lowest number of SUO participants at UPBJJ-UT Makassar, as an illustration, is seen in 2016.1, while the total number of SUO participants at UT has a

significant rise of 82,3%, which constitutes 11.234 students in Non Basic Education and 10.393 in Basic Education Program. This suggests that the contribution of UPBJJ-UT Makassar to the rising number of SUO participants, in total, is 0,003% for Non Basic Education and 0,004% for Basic Education Program.

Table 2
The Number of SUO Participants
UPBJJ-UT Makassar

The Number of SUO Participants	Registration Term								
	2013.1	2013.2	2014.1	2014.2	2015.1	2015.2	2016.1	2016.2	2017.1
Non Basic Education Program	193	144	97	106	94	64	36	182	163
Basic Education Program	203	130	154	112	102	55	48	235	179

The same trend can be seen in the comparison between the total number of students and SUO participants at UPBJJ-UT Makassar. The number of SUO participants only reaches 3%, while the remaining attend face-to-face examination (Figure 1).

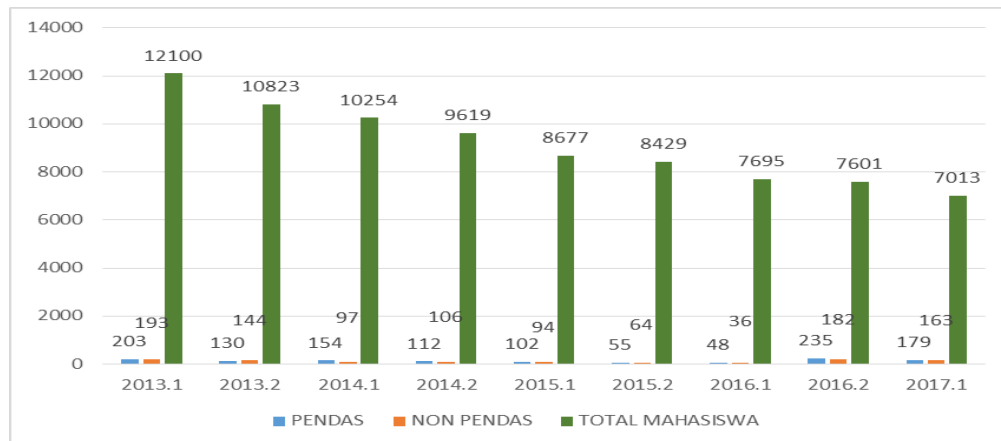


Figure 1

The Comparison of the Total Number of Students and SUO Participants at UPBJJ-UT Makassar

The number of SUO participants at UPBJJ-UT Makassar, in other words, gives tremendously low contribution to the number of SUO participants at UT. The determinant factors of students' preferences for SUO at UPBJJ-UT Makassar are therefore necessary to be observed as an effort in improving student services, especially SUO.

To analyze the determinant factors of students' preferences for SUO, we used Unified Theory of Acceptance and Use of Technology (UTAUT), a new model that elaborates the acceptance and the use of technology. This model has previously been observed and adopted by Viswanath Venkatesh, Michael G. Morris, Gordon B. Davis and Fred D. Davis (2003).

UTAUT model will help us delve into the determinant factors of students' preferences for SUO that include performance expectations, effort expectations, social influences and facilitating conditions. We will also go over the user

acceptance and user adoption of mandatory technology, which is students' acceptance and adoption of SUO, in this case.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 The Definition of Online Examination System

Evaluation of Learning Outcomes (Evaluasi Hasil Belajar-EHB) critically examines the entire aspects of teaching-learning experience. Without EHB, students' learning progress and achievement can hardly be observable and measurable. Rowntree (1997) states that EHB is achieved from an assessment process to obtain and interpret information on one's knowledge, understanding, ability and behavior. Similarly, Arikunto (2004) refers evaluation to as an activity that gathers information on how one works, which is used to determine a proper alternative in decision making. The role of EHB gets all the more important in Open and Distance Learning (ODL), owing to the physical distance between teachers and students as opposed to its in-class counterpart.

SUO is integrated in ODL system that takes place in technological platforms and the Internet or e-learning. Information technology platform is closely related to database that serves as data input and data storage based on users' needs. SUO is designed to meet that purpose and, in turn, allows a great deal of accessibility and flexibility of the purpose (Morgan and O'Reilly, 1999).

2.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

UTAUT is one of the most influential and widely adopted theories that has been applied to numerous researches on user acceptance of information technology. The theory may account for 70% of the user behavior of technology acceptance. The theory identifies four major constructs that affect user acceptance – performance expectations (the extent to which a certain technology use generates benefits to one's job performance), effort expectations (the degree to which a certain technology is easily operated), social influences (influences that one copes with to conform to others' expectations to adopt a certain technology) and facilitating conditions (the degree to which organizational infrastructures exist to support a certain technology).

2.3. Research Hypothesis

We believe that the fascinating shift from traditional examination to SUO comes with tremendous merits that are closely related to the four constructs previously described. Performance expectation (X_1) indicates more efficiency, averts input error and enables faster examination process. Effort expectation (X_2) allows for the ease of use of SUO without spending too much effort and self-preparation. Social influence (X_3) occurs in a mandatory environment where one conforms to participate in SUO. Facilitating condition (X_4) refers to infrastructures and supports that exist to sustain and foster the implementation of SUO such as guidance, direction and socialization. On the basis of the merits, we propose a hypothesis that the four constructs are the determinant factors that affect students' preference for SUO.

3. RESEARCH METHOD

3.1 Research Design

In this study, we examined four variables: Performance Expectations (X_1) (with indicators – input accuracy, more efficiency and faster examination process), Effort Expectations (X_2) (with indicators – clear and easy interaction with the system, ease of use and less effort and self-preparation), Social Influences (X_3) (with indicators – mandatory environment, peer pressure and prestige), Facilitating Conditions (X_4) (with indicators – infrastructures, support, direction and guidance for operating the system and socialization). To examine these, we used quantitative descriptive analysis that aimed to discover the determinant factors of students' preferences for SUO.

3.2 Participants

The target population of the research is the entire SUO-participating students in Non Basic Education Program. We used a simple random sampling on account of the relatively homogeneous samples.

We gathered primary and secondary data from various sources; while primary data were collected directly from questionnaires and interviews, secondary data were collected from library research, database of UT students and Rector Report in 2016. Subsequent to the distribution of questionnaires, 87 were returned while 62 were completed.

3.3 Instrument

To elicit data from respondents for our research work, respondents were given questionnaires with a 5-point Likert scale, where 1 denotes “completely disagree” and 5 denotes “completely agree.”

Table 3
Variable and Indicators

Variable	Indicators	Code
Performance Expectations (X1)	X1.1 Input accuracy	A1
	X1.2 More efficiency	A2
	X1.3 Faster examination process	A3
Effort Expectations (X2)	X2.1 Clear and easy interaction with the system	B1
	X2.2 Easily-used system	B2
	X2.3 Easily-operated system	B3
	X2.4 Less effort and self-preparation	B4
Social Influences (X3)	X3.1 Mandatory environment	C1
	X3.2 Peer pressure	C2
	X3.3 Prestige	C3
Facilitating Conditions (X4)	X4.1 Infrastructures	D1
	X4.2 Supports	D2
	X4.3 Directions	D3
	X4.4 Guidance and socialization	D4

3.4 Data Analysis

We begin the analysis with the process of developing the instrument measured using validity and reliability test to avoid errors that may affect the accuracy of data collected. Afterward, we complete factor analysis to identify the determinant factors of students' preferences for SUO.

Factor analysis is a statistical technique used to detect a number of factors that represent a correlation among the observed variables. This analysis also reduces a number of correlated variables into a fewer number of factors, thus extracting those variables into one or several factors (with SPSS). Factor analysis proceeds in two stages. First, total communalities and total variance explained are computed. Second, the computation presents eigenvalues which are requisite for identifying the number of factors. A commonly used criterion for the number of factors is eigenvalues greater than one (EGV1).

$$X_i = A_{i1}.F_1 + A_{i2}.F_2 + \dots + A_{im}.F_m + b_i.U_i$$

Where:

$$j = 1, 2, \dots, n \quad j = 1, 2, \dots,$$

$$m \quad X_i = -i^{\text{th}} \text{ variable}$$

$$A_{ij} = \text{communality coefficient}$$

$$F_j = -j^{\text{th}} \text{ communality}$$

$$b_i = \text{coefficient of the } -i^{\text{th}} \text{ unique factor}$$

$$U_i = -i^{\text{th}} \text{ unique factor}$$

3.5 Result

3.5.1 Validity and Reliability

The result of validity and reliability test is shown below:

Table 4

Result of Validity and Reliability Test

Indicators		Correlations	Sig	Validity	Cronbach's Alpha	Reliability
X1	X1.1	0.670	0.00	Valid	0.796	Reliable
	X1.2	0.797	0.00	Valid		
	X1.3	0.751	0.00	Valid		
X2	X2.1	0.651	0.00	Valid	0.720	Reliable
	X2.2	0.790	0.00	Valid		
	X2.3	0.652	0.00	Valid		
	X2.4	0.486	0.00	Valid		
x3	X3.1	0.812	0.00	Valid	0.822	Reliable
	X3.2	0.891	0.00	Valid		
	X3.3	0.690	0.00	Valid		
x4	X4.1	0.588	0.00	Valid	0.799	Reliable
	X4.2	0.783	0.00	Valid		
	X4.3	0.891	0.00	Valid		
	X4.4	0.738	0.00	Valid		

Source: SPSS Output, processed in 2017

Table 2 shows that each of the indicators that shape the variables demonstrates stable and consistent results, thus generating valid and reliable measurements.

3.5.2 Factor Analysis

14 questions were fit in a questionnaire with SPSS that was fully answered by 63 respondents. The result is as follows:

Factor Assumption Test

We generate KMO (Kaiser-Meyer-Olkin) at 0,673, which indicates properly-conducted factor analysis (greater than 0,5), and Bartlett Test of Sphericity at 376,318 with a significance of 0,000, which also meets the sufficient measurement (less than 0,05 or 5%). See table 3 below:

Table 4

The Values of KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.673
Bartlett's Test of Sphericity	Approx. Chi-Square	376.318
	Df	91
	Sig.	.000

The values of MSA (Measures of Sampling Adequacy) shown in the Anti Image Correlation from X1.1 – X4.4 generate greater than 0,5 (>0.5), thus indicating adequate measurement. The extracted values (communalities) X1.1 – X4.4 also generate >0.5 , which implies each of the indicators exists to account for the factors.

Table 5

Rotated Component Matrix^a

	Component				
	1	2	3	4	5
x21	.819	.129	.082	-.105	.034
x12	.807	.053	.147	-.019	.039
x22	.700	.328	.057	-.302	.315

x13	.673	.039	.129	.517	.037
x43	.214	.885	-.038	.053	.188
x44	-.028	.758	.197	-.162	-.045
x42	.222	.733	.167	.219	.136
x32	.142	.085	.909	-.003	.127
x31	.082	.148	.863	.197	-.155
x24	-.041	.229	.203	.783	.306
x23	.516	.293	-.005	-.560	.310
x33	.232	.206	.472	-.490	.401
x41	-.060	.332	.075	.104	.781
x11	.405	-.142	-.097	.029	.637

Extraction Method: Principal Component Analysis

Rotation Method: Varimax with Kaiser Normalization

Based on the Eigenvalues (enclosed), the Initial Eigenvalues identify 5 components in relation to students' preferences:

1. Component 1 (4.392) = 31,368 %
2. Component 2 (2.032) = 14,512 %
3. Component 3 (1,574) = 11,242 %
4. Component 4 (1,419) = 10,135 %
5. Component 5 (1.019) = 7,277 %

After 5 maximum factors are identified, each of the variables is determined based on Table 5 above.

Table 5 tells us that:

- a. Factor 1 (the major factor) includes X2.1 (clear and easy interaction with the system), X1.2 (more efficiency) and X2.2 (easily-operated system).
- b. Factor 2 includes X4.3 (direction), X4.4 (guidance for using the system and socialization) and X4.2 (support when it comes to dealing with difficulties).
- c. Factor 3 includes X3.2 (peer pressures) and X3.1 (mandatory environment).
- d. Factor 4 includes X2.4 (less effort and self-preparation).
- e. Factor 5 includes X4.1 (infrastructures) and X1.1 (input accuracy).

4. DISCUSSION

There are 5 factors extracted from 14 variable indicators. Variables are then grouped in terms of the 5 factors, among which are 4 major factors and 1 additional factor. However, while these factors are found to influence students' preferences for SUO, there are two factors – easily-operated system and prestige – that do not account for it. Our hypothesis, that performance expectations (X1), effort expectations (X2), social influences (X3) and facilitating conditions (X4) are the determinant factors of students' preferences for SUO, is accepted, nonetheless. The ability of UT to sustain the aspects of clarity, ease of use and efficiency of SUO is therefore imperative so as to improve students' interests in using SUO.

5. CONCLUSION

Among the 14 factors, there are 12 determinant factors of students' preferences for SUO. The most significant factors, in a descending order, are; Factor 1 (the major factor) that includes clear and easy interaction with the system and more

efficiency), easily-operated system, and faster examination process; Factor 2 that includes direction, guidance for using the system and socialization, and support when it comes to dealing with difficulties; Factor 3 that includes peer pressures and mandatory environment; Factor 4 that includes less effort and self-preparation; Factor 5 that includes infrastructures and input accuracy. The two factors that do not significantly account for the students' preferences for SUO include easily-operated system and prestige.

As a follow-up to our research work, UPBJJ-UT Makassar is expected to carry out socialization and promotion of SUO to study groups throughout South Sulawesi that emphasize the importance of the aforementioned factors to encourage and boost students' engagement in SUO.

BIBLIOGRAPHY

Hidayatun, Nunung. Kajian Teknologi Sistem Ujian Online dengan Menggunakan Model UTAUT. *Paradigma*, Vol. XV, n.1, Maret 2013, pp.67-79.

Laporan Kerja Tahunan Rektor Universitas Terbuka 2016.

Morgan. C. & O'Reilly. M. (1999). *Assessing Open and Distance Learners*. London: Kogan Page.

Rowntree. D. (1997). *Assessing Student: How Shall We Know Them?* London: Kogan Page.

Tian, Belawati. et.al. (2015). *Universitas Terbuka di Era Informasi*. Cetakan Pertama, Edisi 1, Tangerang Selatan: Universitas Terbuka, 2015.

Venkatesh, V., Morris, M.G., Davis, G.B., dan Davis, F.D., User Acceptance of Information Technology: Toward a Unified View. *MS Quarterly*, vol. 27, no.3. 2003, pp. 425-478.