

THE FACTORS OF STUDENT SATISFACTION IN ONLINE LEARNING

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Abstract

The development of information technology has been utilized in various fields, including in education, especially in higher education. Distance learning system by utilizing the online system, known as e-learning has been applied in various universities and tends to be a major need in the learning process. One interesting question about the use of online learning in education is student satisfaction that can be evaluated from various factors, especially for students in developing countries like Indonesia that the level of utilization of information technology is still low compared to developed countries. This study aims to determine student satisfaction towards online learning at Universitas Terbuka, Indonesia, in terms of five main factors, namely community learning, learner interface, personalization, learning materials, and technology quality. The results showed that there are factors that need improvement in order to achieve student satisfaction in online learning.

Keywords: Community learning, learner interface, learning materials, personalization, student satisfaction, technology quality

1 INTRODUCTION

Distance education is an education system which is implemented because there are limitations or constraints for the students to attend the class regularly. Constraints faced by student may be geographical barriers, i.e. long distances between home and school, as well as other barriers. The obstacles faced by these students can be overcome by the use of various modes of learning, including the use of internet known as online learning. With emerging internet commercialization and the proliferation of information technologies, online learning environments offer the possibilities for communication, interaction and multimedia material delivery that enhance learner-directed learning (Wu et al., 2008). Online learning becomes the most recent developments practice in education, especially in higher education. The growth of asynchronous online learning system has presented a unique challenge in learning process, both for students and teachers. Methods of assessing the effectiveness of online learning are still become a critical issue regarding satisfaction of the users. A number of factors have been identified as determinants of student satisfaction.

Although online learning may increase learning flexibility, eliminate geographical barriers, engage huge number of students, improve convenience and effectiveness for individualized and collaborative learning, it suffers from some drawbacks such as lack of peer contact and social interaction, high initial costs and time consuming for preparing multimedia content materials, substantial costs for system maintenance and updating, as well as the need for flexible tutorial support (Kinshuk & Yang, 2003; Yang & Liu, 2007; Wu et al., 2008). Furthermore, students in online learning environments may experience feelings of isolation, frustration and confusion (Hara & Kling, 2000) or reduced interest in the subject matter (Maki et al., 2000). In addition, student satisfaction and effectiveness for e-learning has also been questioned (Santhanam, Sasidharan, & Webster, 2008). However, online learning also be found to provide student satisfaction in certain circumstances. Online learning can be a superior mode of instruction if it is targeted to learners with specific learning styles (visual and read/write learning styles) and with timely, meaningful instructor feedback of various types (Eom et al., 2006).

The differences in research results regarding the satisfaction of students to online learning becomes an interesting subject to study, especially in situations when the user is very diverse, for example the students of Universitas Terbuka. As a university that implements open and distance learning system, Universitas Terbuka (UT) does not conduct a placement test for students to provide greater opportunities for Indonesian citizens to participate in higher education. Through this system, every Indonesia people who have graduated from high school have the opportunity to pursue higher education despite the separation between teachers and students. This system has an impact that students have different capabilities because there is no standard minimum ability to be a UT's student. Moreover, Indonesia is a developing country where internet access is not evenly distributed well to all

parts of Indonesia. This condition is a challenge for UT to afford a quality education for all Indonesian citizens.

The objective of this study is to investigate the factors of student satisfaction of online learning in a distance education institution. We begin by introducing the background of the study followed by literature review. The next section discusses the research methods, research results, and concludes with conclusion.

2 LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Online Learning

The education sector has now entered a new era with the increasing use of the internet for education. Online learning has been promoted as being more cost effective and convenient than traditional educational environments as well as providing opportunities for more learners to continue their educations, especially for distance education. Online learning has been defined as any class that offers at least part of its curriculum in the online course delivery mode, or as a transmission of information and/or communication via the Internet without instructors and students being connected at the same (Berge & Collins, 1995). Moreover, some authors have completed the definition of online learning by incorporating elements of technology in terms of online learning, such as Benson (2002) and Carliner (2004), who have defined online learning as access to learning experiences via the use of some technology. Today, online learning is defined more clearly as any class that offers its entire curriculum in the online course delivery mode, thereby allowing students to participate regardless of geographic location, independent of time and place (Richardson & Swan, 2003). In other words, online education is considered to be the best alternative in education when students can't attend a face-to-face class regularly to complete a course. Online learning becomes a solution to the problem of access to education, that is able to reach out a huge number of students and geographically separated utilizing information technology. Other authors discuss not only the accessibility of online learning but also its connectivity, flexibility and ability to promote varied interactions (Hiltz & Turoff, 2005; Oblinger & Oblinger, 2005).

Basically, the purpose of online learning, like any other learning approach, is to achieve the learning objectives. The objectives attainment measures can be environmental, technological, student related, and instructor related (Selim, 2007). The successful achievement of learning objectives that have been set is very dependent on online learning environment, in terms of facility, students, and lecturers. Besides the advantages created by online learning, there is still a problem in the utilization of online learning related to the satisfaction of the users, both by students and by tutors. Research in the area of online learning has demonstrated that the advantages offered by this environment. Some researchers have investigated the correlation between online learning and student satisfaction (Selim, 2007; Wu et al., 2010; Zhu, 2012; Kuo et al., 2013; Zhan & Mei, 2013; Croxton, 2014) in terms of convenience and flexibility offered by the "anytime, anywhere" accessibility which mean students have access to online courses and course materials 24 hours a day (time independent), regardless of location (place-independent), making them far more convenient than the traditional educational experience. Another advantage of asynchronous learning is it allows students to reflect upon the materials and their responses before responding; unlike traditional classrooms and students also have the ability to work at their own pace. Another characteristic of online learning that may be considered advantageous is that with the altered educational environment, the roles of students and tutors may also be transformed. The role of the tutors can be altered to become more similar to a facilitator than a lecturer, while the role of students can be altered by allowing them to become active learners. This role transformation, however, is not the only issue facing instructors involved in the delivery of online courses; there is also the issue of how teacher immediacy behaviors and social presence are affected by the environmental transformation (Richardson, 2003). All aspects related to the online learning, both in terms of technology and users have an enormous influence on the success of student learning that affect student satisfaction.

2.2 Student Satisfaction

Student satisfaction should be considered in evaluating the effectiveness of online learning when online learning environment is applied. The degree of students learning satisfaction with an online learning environment plays an important role in the adoption of online learning. Learners' satisfaction

can have repercussions on whether learners like to use systems or not, how learners work together and whether there is a good working atmosphere among learners (Zhu, 2012). Some studies found that students who participated in online collaborative tasks expressed higher levels of satisfaction with their learning process compared to students who didn't participate in online collaborative learning (Jung et al., 2002). Additionally, in web-based collaborative learning systems, learners' satisfaction with collaborative learning can be described as the degree to which a learner feels a positive association with his/her own collaborative learning experiences (Dewiyanti et al., 2007). Learners' characteristic and environmental factors also have positive impact on perceived satisfaction and perceived usefulness that both will impact on behavioral intention of using online learning (Liaw, 2008). Some studies use different factors or dimensions and different perspective to evaluate student satisfaction in an online learning environment. The most important thing in this situation is achievement of students and how students feel satisfied in online learning environment.

Despite the positive impact of online learning on student satisfaction and the growth of the online learning utilization in recent years, research also indicates that a high rate of students who commence online learning courses do not finish them (Dutton & Perry, 2002). This suggests that something is not working properly in online learning environments. By considering the responses of students who participated in online learning courses, it is possible to better understand the reasons why students are often dissatisfied with their online learning experience. Answering this condition, continuous evaluation becomes an important aspect in online learning, especially in distance education that most of course delivery is conducted via online. Among the attitudinal constructs, student satisfaction, referring to student perceptions of learning experiences and perceived value of a course, may be particularly worthy of investigation. Student satisfaction is related to several outcome variables such as persistence, retention, course quality, and student success (Kuo, 2013). High satisfaction leads to lower attrition rates, higher persistence in learning, and higher motivation in pursuing additional online courses (Allen & Seaman, 2008). Higher education institutions consider student satisfaction as one of the major elements in determining the quality of online programs in today's markets (Yukselturk & Yildirim, 2008). Online learner perspectives and satisfaction provide valuable information for institutions to gain a better understanding of their weaknesses, strengths and challenges in provision of online programs (Noel-Levitz, 2011). Complete data on student satisfaction, course designers, educators, and administrators can help institution to identify areas where improvement is needed (Reinhart & Schneider, 2001).

2.3 Hypotheses Development

This research was conducted based on previous research that try to investigate factors that impact on student satisfaction in an online learning environment. Based on the literature review that has been discussed above, we adopt five factors that is predicted will impact on student satisfaction; those are learner interface, learning community, learning materials, personalization, and technology quality. We tried to involve factors that will help us to explain their influence on student satisfaction in terms of learner, content, and technology. In order to attain research objective, the hypotheses proposed as follows.

H1 : learner interface will positively influence student satisfaction

H2 : learning community will positively influence student satisfaction

H3 : learning materials will positively influence student satisfaction

H4 : personalization will positively influence student satisfaction

H5 : technology quality will positively influence student satisfaction

3 METHOD

3.1 Research Design

This study is designed as causal research that tries to examine the influence of the independent variables on the dependent variable. This research is conducted based on previous research and theories that have been formed which strengthens the influence of the independent variables on the dependent variable. There are five independent variables in this research; those are learner interface, learning community, learning materials, personalization, and technology quality. These independent

variables will be tested further to prove their influence on dependent variable that is student satisfaction.

3.2 Participants

The empirical data were collected using a cross-sectional survey methodology. Participants for this study were students enrolled in online learning for five core courses in department of management curriculum. The selected students are students who are at a minimum in the second semester with purpose that they have had perceptions of online learning process. Based on their experiment in online learning, they will be able to determine their satisfaction during the online learning. Therefore, we implement purposive sampling to get the best data. We distributed 685 online questionnaires to the students. Due to the conventional expectation of low survey response rates in survey studies, we endeavored to contact them if they haven't returned the questionnaire in one week. 163 questionnaires were returned and valid responses for the statistical analysis.

3.3 Instrument

A survey instrument to explain variables that have been identified before was adopted from Wang (2013) and Sun et al. (2007). The indicators of each variable are measured using 5 points Likert scale begin with 1 = strongly disagree until 5 = strongly agree. Each variable has their own particular indicators used to measure the effect of the independent variables on the dependent variable as follows.

Table 1. Variable and Indicators

Variable	Indicators	Code
Learner interface	1. Online learning system is easy to use	I1
	2. Online learning is very user friendly	I2
	3. Content or materials presented in online learning is easy to understand	I3
	4. Online learning system is stable	I4
	5. Online learning system help me learn subjects	I5
	6. I feel comfortable learning through online learning	I6
Learning community	1. Online learning system help me to discuss with other students	L1
	2. Online learning system help me to get the materials that can be distributed to all students	L2
	3. Online learning help me to discuss with tutor	L3
	4. Online learning system help me to learn and share knowledge with other students	L4
Learning materials	1. Online learning provides materials that are up to date	C1
	2. Online learning provides materials that fit my needs	C2
	3. Online learning provides sufficient materials for students to learn	C3
	4. Online learning provides useful materials	C4
Personalization	1. Online learning system help me learn the material I needed	P1
	2. Online learning system facilitates me to choose what material I want to learn	P2
	3. Online learning system helps me measure the achievement of my personal understanding	P3
	4. Online learning system helps to improve my knowledge personally	P4
Technology quality	1. I can access online learning anywhere	TC1
	2. I do not experience any problems when learning online	TC2
	3. I do not encounter any difficulty in responding to the discussion	TC3
	4. I do not see any difficulty when uploading task	TC4
	I feel that technology for online learning is:	
	5. Easy to use	TC5
	6. Have useful functions	TC6
	7. Very helpful for learning the materials	TC7
8. Facilitate communication with tutors or other students	TC8	
Student satisfaction	1. I am satisfied with the whole system of online learning	S1
	2. Overall, online learning system is already well	S2
	3. Overall, online learning has been successfully	S3
	4. Learning through online learning system enable me to learn independently	S4
	5. I will keep learning through the online learning system in the future	S5

3.4 Data Analysis

To achieve the research objectives and prove the five hypotheses which have been arranged, then some statistical test were conducted in this study. The first step is to test the validity and reliability of the data that has been collected from survey respondents using Confirmatory Factor Analysis (CFA) and coefficient of Cronbach's Alpha. The next step is to test hypotheses to determine the effect among variables by multiple linear regressions. In testing the validity of indicators, each item can be classified as valid item if it has a factor loading greater than 0.40, level of significance at the 95%, and clustering in each group of variable. For the reliability test using Cronbach's Alpha, coefficients and item-to-total correlation is used to test the reliability of each variable. The results of reliability test was all variables have Cronbach's Alpha value greater than 0.60. This means that all variables have met the reliability test. In other words, the internal consistencies of the items in the questionnaires are acceptable. To understand the influence between variables, standard p value of ≤ 0.05 was employ that has meaning that the independent variable significantly influence the dependent variable, with a level of confidence of 95% and a maximum tolerated deviation rate of 5%.

4 RESULTS

Data processing begins with validity test using Confirmatory Factor Analysis (CFA). An item in question can be classified as a valid item/indicator if it has a loading factor greater than 0.4 and clustered into its group along with other items/indicators in the variable. The result of factor analysis as shown in Table 2.

Table 2. Factor Analysis (1st Step)

Item Code	Component						Remarks
	1	2	3	4	5	6	
I1		.874					Valid
I2		.877					Valid
I3				.420			Not Valid
I4		.924					Valid
I5		.866					Valid
I6		.863					Valid
L1					.943		Valid
L2					.919		Valid
L3					.925		Valid
L4					.773		Valid
C1			.413			.692	Not Valid
C2						.869	Valid
C3						.808	Valid
C4						.797	Valid
P1				.810			Valid
P2				.871			Valid
P3				.901			Valid
P4				.878			Valid
TC1			.897				Valid

Item Code	Component						Remarks
	1	2	3	4	5	6	
TC2		.463					Not Valid
TC3			.878				Valid
TC4			.853				Valid
TC5			.455				Valid
TC6			.910				Valid
TC7			.555				Valid
TC8			.734				Valid
S1	.816						Valid
S2	.826						Valid
S3	.859						Valid
S4	.861						Valid
S5	.881						Valid
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.							.845
Bartlett's Test of Sphericity			Approx. Chi-Square			7092.842	
			df			465	
			Sig.			.000	

Based on the results of CFA, it can be seen that the value of Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO-SA) is .845, which means that the factor analysis can be done. KMO-SA value ranges between 0 -1. An acceptable value of KMO-SA to perform further analysis must be greater than 0.50. Bartlett's Test of Sphericity has value of 7092.842 and significant at 0.000. These conditions show that the factor analysis test can be continued. The results of factor analysis shows that there are three items which do not meet the validity criteria, those are I3, C1, and TC 2. Item I3 is not clustered into the group of learner interface variable that is shown by other items in this variable are clustered in component 2. Item C1 has a double value, which appears in the component 3 and component 6. Supposedly, the items in the learning materials variable should be clustered in component 6. For item TC2, it's not clustered into its group that should be in component 3. Based on this condition, those three items are removed from the data and do not include in the further analysis. The next factor analysis therefore excludes these items with result the value of KMO-SA is .849, Bartlett's Test of Sphericity has value of 6567.322 and significant at 0.000. These conditions show that the factor analysis test can be continued. The result of factor analysis shows that all the items have factor loading greater than 0.4 and clustered into its group. Therefore, we can say that all items here are valid.

The next analysis is reliability analysis using Cronbach's Alpha. A variable can be classified as reliable if it has Cronbach's Alpha value greater than 0.60. The reliability test results as shown in Table 3.

Table 3. Reliability Analysis

Variable	Cronbach's Alpha Based on Standardized Items	Remarks
Learner interface	0.959	Reliable
Learning community	0.945	Reliable
Learning materials	0.947	Reliable

Variable	Cronbach's Alpha Based on Standardized Items	Remarks
Personalization	0.956	Reliable
Technology quality	0.888	Reliable
Student satisfaction	0.947	Reliable

After all variables passed the test of validity and reliability, the next step is to conduct hypotheses testing using multiple linear regression. The results of multiple linear regression as shown in Table 4.

Table 4. Multiple Linear Regression Result

Independent Variable	Dependent Variable	t	Sig t
Learner interface	Student satisfaction	3.875	.000
Learning community		1.228	.221
Learning materials		4.275	.000
Personalization		.759	.449
Technology quality		-2.521	.013
R ²			.236
Adjusted R ²			.211
F			9.686
Sig F			.000

Table 5. shows that learner interface, learning materials, and technology quality have positive impact on student satisfaction that is showed by the value of significance of t test at 0.000, 0.000, and 0.013 (below $\alpha = 0.05$). However, learning community and personalization do not support student satisfaction of online learning that is showed by the value of significance of t test at 0.221 and 0.449 (above $\alpha = 0.05$). Adjusted R² value in this model is also very low, 0.211, shows that only 21.1% of student satisfaction variation can be explained by learner interface, learning materials, and technology quality, the rest are influenced by other factors that are not being investigated. The influence of all independent variables on dependent variable can be seen from the significant value of F test at 0.000 (below $\alpha = 0.05$). Since it's less than $\alpha = 0.05$, regression model can be used to predict all factors that impact student satisfaction in this research.

Learner interface, learning materials, and technology quality are factors that have been proven have positive impact on student satisfaction, while learning community and personalization don't have positive impact on student satisfaction. Learner interface has found as the most important factor in predicting whether learner or student feel enjoy in online learning environment (Shee & Wang, 2008). Since many studies related to student satisfaction in online learning, user interface is an area where a high level of interaction takes place (Dam, 2001; Kumar et al., 2004), a well-designed, user-friendly learner interface therefore becomes one of the critical factors in determining learner satisfaction. In addition to a user-friendly interface, learners also place great value on learning materials. As a result, emphasizing the learning materials is critical. The emergence of information technology presents an opportunity of both technological breakthrough and theoretical advancement in online learning. The main goal of students learning through online learning is the achievement of a certain competence obtained through the use of information technology, not just through a paper based material or face to face. Therefore, the quality of the technology is the key factor of student satisfaction that will facilitate the student learning process.

5 CONCLUSION

The emergence of information technology has changed every aspect of human activities, including in education. Online learning primarily gears toward lifelong and remote learning. With the advancement of information technology, we believe online learning will have a very promising future in the new millennium. Online learning is becoming one of the alternatives in learning process as a complement to conventional learning system. Students do not have to follow lectures in a class, so it has a high

level of flexibility. Therefore, the system is highly suited to be implemented for in a distance education system. Several factors have been identified as factors that determine student satisfaction in online learning environments. This study sought to identify the factors that affect student satisfaction in online learning, namely learner interface, learning community, learning materials, personalization, and technology quality. By using multiple linear regressions, it is found that learner interface, learning materials, and technology qualities are factors that have a positive impact on student satisfaction. While personalization and learning community don't have positive impact on student satisfaction.

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