

Applying Service Quality Model as a Determinant of Success in E-learning: The Role of Institutional Support and Outcome Value

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ABSTRACT

Currently, the popularity of e-learning is increasing because of the ability and the speed of multimedia information exchange at a low cost. Universitas Terbuka (UT/Open University) as a Public University with distance education system has started *e-learning* since a few years ago. As a public university, UT needs to pay attention to student loyalty more closely. Students who are loyal would recommend a college where they study before and after graduation. Student satisfaction and loyalty to e-learning system has received great attention from educational institutions. According to student satisfaction survey on online tutorial service, *Customer Satisfaction Index* (CSI) of online tutorial is in the range of 38.87% that means less satisfactory for tutorial participants. Population of this study was students of online tutorial participants, and the selected sample was students of Faculty of Economics who were online tutorial participants registered at first period of 2017. This study utilizes primary data that was obtained by survey method through *google docs* website. Meanwhile, secondary data was obtained and collected from various literatures. Nonprobability sampling technique used is judgemental sampling with minimum sample size of 100 respondents along with multivariate analysis method of *Structural Equation Modeling Partial Least Square*. Result of hypothesis testing proves that service quality has a significant effect on satisfaction of students of Universitas Terbuka. The effect between both variables is very strong. It means improving service quality of online tutorial service improve increases the student loyalty of online tutorial user. This study also indicates that satisfaction has a direct and significant effect on student loyalty. The relationship between both variables is not very strong. This phenomenon is expected to occur because online tutorial users feel satisfaction, then encourage users to be loyal by providing recommendation or continuing to follow online tutorial to complete. In addition, the study result also indicates that the satisfaction effect on loyalty is greater than the effect of e-learning service quality on loyalty.

Keywords: e-learning service quality, satisfaction, loyalty

1. INTRODUCTION

Along with the rapid development of Information and Communication Technology (ICT), the need for ICT-based learning system increases. This system is then called as *e-learning*. Today, the popularity of *e-learning* is increasing because of its ability and multimedia information exchange at a low cost. In the United States, since 2009-2014, users of *e-learning* increased from 12 million to 22 million. In addition, the value of *e-learning* increased from \$35.6 million to \$51.5 million in 2016.

In Indonesia, *e-learning* system can become a solution to overcome the backwardness of education in international world. The lag can be due to the remoteness, limited facilities and infrastructure, to the lack of qualified educators. Universitas Terbuka (UT) as a public university with distance learning system has started *e-learning* since a few years ago. *E-learning* or online tutorial is a form of learning assistant that can be used by students in learning the process.

Online tutorials are not mandatory for students of UT; however, online tutorial has a enormous benefits. Through online tutorial, students can interact directly with tutor to learn and discuss the course materials that are not well-understood. In addition, online tutorial services can become alternatives if face-to-face tutorials cannot be implemented.

In the past few years, there has been a significant increase in the number of courses offered and the number of participants (Table 1). These improvements can be seen as a success for UT in providing online tutorial services. However, the increasing number of courses and students is not accompanied by the increase of student retention of online tutorial participant. The retention of the students tends to decline from 70.01% to 61.81%. If compared to the retention of online students in general, the retention of UT students is still higher, but still needs to be considered carefully.

Table 1
The Number of Courses Offered and Participants of Online Tutorial

Year	Course offered	Number of participant	Retention
2013.1	930	108.942	70,01%
2013.2	930	123.960	68,10%
2014.1	1.021	222.905	65,23%
2014.2	1.044	226.479	64,13%
2015.1	1.063	277.397	62,76%
2015.2	1.076	319.235	61,81%

Source: Rector's Annual Work Report 2013 – 2015

Retention is very important for educational institutions to develop and gain benefits (Martinez–Arguelles & Batalla–Busquets, 2016). Online learning services do not involve physical interaction between provider and recipient that student retention is more complicated to be done traditional services (Batalla–Busquets and Martinez–Arguelles, 2014). The growth of e-learning system has increased competition among higher education institutions and reduced barriers for students (Tham and Werner, 2005 in Dehghan *et al.*, 2014). Carvalho and de Oliveira Mota (2010) believed that ongoing relationship with students after graduation and the formation of student loyalty is really useful for the finance sustainability of higher education institutions. Therefore, UT as one public university of Public Service Agency (PTN-BLU) that most of the operational costs come from public funds need to pay attention more closely on student loyalty. In addition, the cost to maintain the existing students is cheaper than finding new students. Students who are loyal are willing to recommend the university where they study before and after graduation (Hennig-Thurau *et al.*, 2001 in Ayuni and Mulyana, 2015).

Student satisfaction and loyalty to e-learning system has become a great attention from educational institutions (Tham and Werner, 2005 in Dehghan *et al.*, 2014). Based on a survey on student satisfaction to online tutorial service, *Customer Satisfaction Index* (CSI) of online tutorial is around 3.87% that means less satisfactory for tutorial participants (Table 2).

In educational field, student loyalty and satisfaction can be achieved by providing a good quality of education service (Mohamad and Awang, 2009). In reality, the increase number of offered courses and online tutorial users is still accompanied student complaints on online tutorial services. The complaints include the difficulty in accessing online tutorial websites, difficulty to contact tutors, and tutor activeness in interacting as well as providing feedback (Rector's Annual Work Report 2014, 2015).

Table 2
CSI of Online Tutorial 2016

No	Attribute	Mean of Interest score	Importance Weighting Factors	Mean of Performance Score	Weighted Score
1	The ease to contact tutor	2.40	79.89%	1.78	1.42
2	Mastery of materials by tutor	2.11	70.39%	1.70	1.20
3	Role of tutor in assisting students to comprehend courses	2.19	73.00%	1.68	1.22
4	Feedback given by tutor to exercises/tasks	2.35	78.40%	1.75	1.37
5	Compatibility of the tutorial implementation with the schedule	2.01	67.04%	1.71	1.15
6	Ease of access to online tutorials	1.93	64.43%	1.68	1.08
Total		12.99	433.15%	10.29	
Weighted Average					1.55
Customer Satisfaction Index					38.87%

Source: PAU Universitas Terbuka (2016)

Based on the background identification, this study tries to analyze the interrelation between service quality, satisfaction and loyalty of students as online tutorial users of Universitas Terbuka.

2. LITERATURE REVIEW

Service industry plays an important role in the world's economy. In the United States, service sector contributes $\frac{2}{3}$ of *Gross Domestic Product* (GDP) and more than 50% of consumer's total expenditure is spent for services (Etzel *et al.*, 2001 in Tjiptono, 2007).

Service industry is varied and related to 4 main sectors, government sector, nonprofit sector, business sector, and manufacture sector. Higher education institution is one example of service industry categorized as nonprofit sector.

As a form of product, service can be defined as every action that can be offered by a party to other party that is nonphysical and does not end up to own something (Kotler, 2000 in Tjiptono, 2007). In practice, it is not easy to differentiate between goods and services because often the purchase of goods is completed with service. On the other hand, a service needs to be expanded by inserting or adding physical product on the service offers.

E-learning is a delivery of learning material through electronic media such as internet, TV, and CD-ROM (Kahiigi *et al.*, 2007). In the United States in 2006, almost $\frac{1}{2}$ of university applicants followed at least on online program (Pope, 2006 in Dehghan, 2012).

Online learning or web-based learning is a part of e-learning. E-learning is the use of internet technology to spread and send various materials that can improve knowledge and

performance (Itamar *et al.*, 2008). According to Hambrecht (2000) in Song (2010), e-learning consists of *Web-based Learning* (WBL), *Internet-based Training* (IBT), *Advanced Distributing Learning* (ADL) and *online learning* (OL). More generally, Govindasamy (2002) stated that e-learning is an instruction sent to all electronic media including internet, intranet, ekstranet, and other hypertext media.

Tutorial is learning assistant service for students of UT. In tutorial, learning activities are conducted under tutor guidance as facilitator. In tutorial, that are considered difficult and important to be mastered by students are discussed.

Quality has various different meanings. Service quality is the result between service delivery and real service result (Gronroos, 1984 in Yarimoglu, 2014). Meanwhile, Parasuraman *et al.* (1985) in Tjiptono (2007) stated that service quality is the difference between customer expectation about service and perception of service performance. Dissatisfaction occurs when expectation is greater than performance and quality perception is less than satisfactory. Until today, both dimensions of SERVQUAL and SERVPERF are the main media to measure service quality from various service marketing literatures. However, along with the increase of growth and development of service industry, both models are no longer relevant with various existing services (Martinez-Arguelles *et al.*, 2013). To measure service quality of *e-learning* Martinez-Arguelles *et al.* (2013) developed 24 indicators that are classified into 4 dimensions, including teaching dimension, administrative services, support services and system.

In the context of higher education, students are the main customers (Sultan dan Wong, 2013). According to Sapri *et al.* (2009), student satisfaction plays an important role in deciding accuracy and authentication of service provided. This statement is supported by Barnett (2011) in Ali *et al.* (2016) who stated that student satisfaction is very important as the indicator of higher education service quality. In online environment, various instruments have been used on satisfaction measurement. This diversity is resulted from different point of view and approaches of researches. According to Kim *et al.* (2009), online satisfaction is measured using 3 indicators, including experience gained, satisfaction with the process traversed and total satisfaction perceived.

Customer loyalty is defined as a respond related closely to pledges and promises to uphold the commitment underlying the relationship continuity and is usually reflected in ongoing purchase from the same service provider on the basis of dedication as well as pragmatic constraints (Bendapudi and Berry, 1997 in Tjiptono, 2007). In the educational environment, Mohamad and Awang (2009) applied behavioral and attitudinal approaches as loyalty dimension. Dimension of loyalty behavior is defined as the desire of student to survive in college until the completion of the course and the intention of student to continue study in the same college in the future. On the other hand, attitudinal dimension is defined as the desire of student in providing *word of mouth* and positive recommendation about university they study to families, friends, and colleagues when there is a chance (Mohamad and Awang, 2009). Dehghan *et al.* (2014) measured online learning loyalty as *first order* variable that is measured with 3 indicators, including providing recommendation to friends, still opting for online courses and considering following other online programs.

Educational services must pay attention to service quality provided. According to Parasuraman *et al.* (1985) in Martinez-Arguelles *et al.* (2013), service quality is the difference between customer expectation on services and perception of service performance. Generally, service quality influences customer satisfaction in conventional educational field (Mohamad and Awang, 2009; Rojas-Mendez *et al.*, 2009; Fikri *et al.*, 2016; Hanafiah, 2015; Mulyono, 2014), distance education (Goolamally and Latif, 2014) and online education (Martinez-

Arguelles *et al.*, 2016; Ayuni and Mulyana, 2015; Dehghan, 2014,). Satisfaction is the feeling of pressure or disappointment of someone as a result of the comparison between product performance and expectation (Arif and Ilyas, 2013).

Besides satisfaction, according to Martinez-Arguelles & Batalla-Busquets (2016), Goolamally & Latif (2014), Rojas-Mendez *et al.* (2009), Dehghan *et al.* (2014) , Fikri *et al.* (2016), Hanafiah (2015), Ayuni & Mulyana (2015), Mulyono, (2014) and Mohamad and Awang (2009) in higher education institutions, service quality affects student loyalty. Oliver (1999) in Mohamad and Awang (2009) defined customer loyalty as an in-depth commitment in repurchasing product or service consistently in the future.

In educational field, besides affected by service quality, loyalty is also influenced by satisfaction (Martinez-Arguelles & Batalla-Busquets, 2016; Mohamad & Awang, 2009; Goolamally dan Latif, 2014; Dehghan *et al.*, 2014; Hanafiah, 2015; Ayuni & Mulyana, 2015; Mulyono, 2014).

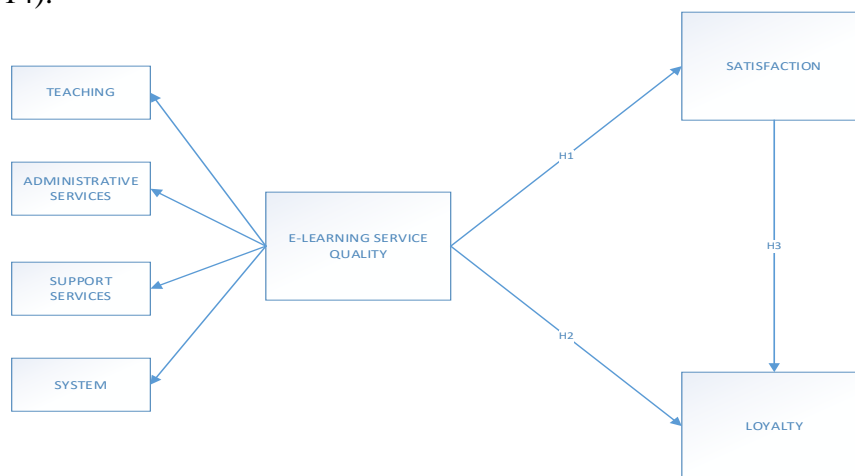


Figure 1. Conceptual Model

Thus, hypotheses proposed in this study based on conceptual model above are as follows:

H1 : Service quality affects student satisfaction

H2 : Service quality affects student loyalty

H3 : Student satisfaction affect student loyalty

3. RESEARCH METHOD

Students as online tutorial participants are research subject respondents. Student population chosen as observation and analysis units in this study are students that participate in online tutorial of 2017.1. The research object is Universitas Terbuka as a distance university using online tutorial (*e-learning*) as one of leaning facilities.

Research method or technique used in this method is survey, which is field research conducted to several sample members of a certain population to find out about the perception of the population on research object so that data or actual information is obtained. Data collected is primary data with questionnaire as research instrument.

Basically, data required in this research is classified into 3 variables, namely service quality consisting of 26 indicators, satisfaction variable consisting of 3 indicators, and loyalty variable consisting of 3 indicators. All research instruments are based on Martinez-Arguelles *et al.* (2013), Kim *et al.* (2009) dan Dehgan *et al.* (2015).

In this study, there two required data, primary and secondary data. Primary data is obtained through survey method, that is by distributing online questionnaire through situs

google docs website. On the other hand, secondary data is obtained from various literatures, books, journals theses, and data taken from internet that is considered relevant. Data measurement that will be done utilizes Likert scale with the following measures: 1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Agree, 4 = Agree, 5 = Strongly agree.

The population of this study is students of Universitas Terbuka who are online tutorial users in registration period of 2017.1. Meanwhile, sample chosen is students of Faculty of Economics who used online tutorial in registration period of 2017.1. *Nonprobability sampling* technique used is *judgemental sampling*, which is sampling technique performed based on characteristics set against target population element tailored with the research purpose or problem. The minimum acceptable sample size is 100 (Yamin and Kurniawan, 2011). This number is sample size required by multivariate analysis of *Structural Equation Modeling Partial Least Square*. The analysis consideration is the extension of several multivariate techniques including multiple regression and factor analysis that are able to describe the relationship of dependent variables simultaneously.

4. RESULT AND DISCUSSION

4.1 Characteristics of Respondents

Based on data collection result from the distribution of online questionnaire completed by 316 respondents, characteristics data of students of online tutorial users of Universitas Terbuka was obtained. Respondent characteristics include age, gender, marital status, occupation, recent education, and UPBJJ (Distance Learning Program Unit) where they registered.

Seen from study result based on age (Table 3), it is known that most students who use online tutorial are between 21 – 25 years old as many as 45.89%. Followed by students who were less than 21 years old as many as 21.20%. Next, users who were between 26 – 30 years old are on third position with proporsion as many as 19.62%. Students who are between 31 – 35 years old are 7.91%. Finally, students over 35 years old are 5.38%. This can be due to the facts that most of undergraduate students of Faculty of Economics (FE) of UT are younger employees who want to improve their careers and knowledge by studying at FE-UT.

Next, based on gender, male students are as much as 48.73%, while 51.27% is female students. This shows that undergraduate students of FE-UT have a composition that is not much different between male and female, which means the use of online tutorials is not affected by gender.

Based on marital status, most of students are not married by 69.62%, while 28.16% of students is married. As for the rest, 2.22% is widow/widower. This composition is in accordance with the condition of students where most of them are less than 25 years old and are young employees.

Based on study result, it can be concluded that the most student work as private employees by 53.80%. This number is followed by other occupations, entrepreneurs, and not yet working gain respectively as many as 12.97%, 12.34% and 11.39%. Civil Servant and teacher have smaller proportion from all students, namely 9.18% and 0.32%. This shows that students have diverse job background, without being fixated on particular job someone has. Besides, educational program in FE-UT is for those who want to increase their knowledge at a relatively low cost.

Based on the research, most of recent education of students is high school and vocational school with proportion as much as 50.63% and 38.61%. After that, followed by diploma, undergraduate, and graduate respectively as many as 9.18%, 1.27% and 0.32%. This shows

that most students are high school graduate and equal who want to increase their knowledge and not yet have bachelor degree.

The distribution of students as research respondents come from 34 UPBJJ (Distance Learning Program Unit) across Indonesia and abroad. Most of respondents come from large cities such as Jakarta by 24.68%, Bogor by 7.91%, Bandung 6.33%, Semarang 6.01% and Surabaya 5.06%. On the other hand, proportion of other cities is less than 5%. Based on the proportion, it can be concluded that online tutorial is followed by students from larges cities with good internet access. In addition, students from large cities have better computer literacy than local students.

Table 3 Characteristics of Respondents

Characteristics	Detail	Proporsion
Age	< 21 years	21.20%
	21 - 25 years	45.89%
	26 - 30 years	19.62%
	31 - 35 years	7.91%
	> 35 years	5.38%
Gender	Male	48.30%
	Female	51.27%
Marital Status	Unmarried	69.62%
	Married	28.16%
	Widow/Widower	2.22%
Occupation	Civil Servant	9.18%
	Private employee	53.80%
	Teacher	0.32%
	Businessman	12.34%
	Unemployed	11.39%
	Others	12.97%
Recent Education	High School	50.63%
	Vocational School	38.61%
	Diploma	9.18%
	Bachelor	1.27%
	Graduate	0.32%
UPBJJ (Distance Learning Program Unit)	Jakarta	24.68%
	Bogor	7.91%
	Bandung	6.33%
	Semarang	6,01%
	Surabaya	5.06%
	Others	<5.00%

Source: Study Result (2017)

4.2 Structural Analysis of Equation Modeling Partial Least Square (PLS)

Structural Equation Modeling (SEM) is an analysis method that consists of two models: the measurement and structural model. The assumption of SEM modeling is multivariate normally distribution and large relatively sample size. In some cases there are data that doesn't

meet these assumptions so that required some handling. In this study, the handling is done by using the approach Partial Least Square (PLS).

4.2.1 Evaluation of Measurement Model (Outer Model)

Indicators are considered *reliable* if they have correlation value above 0.70 (figure 2: PLS algorithm model).

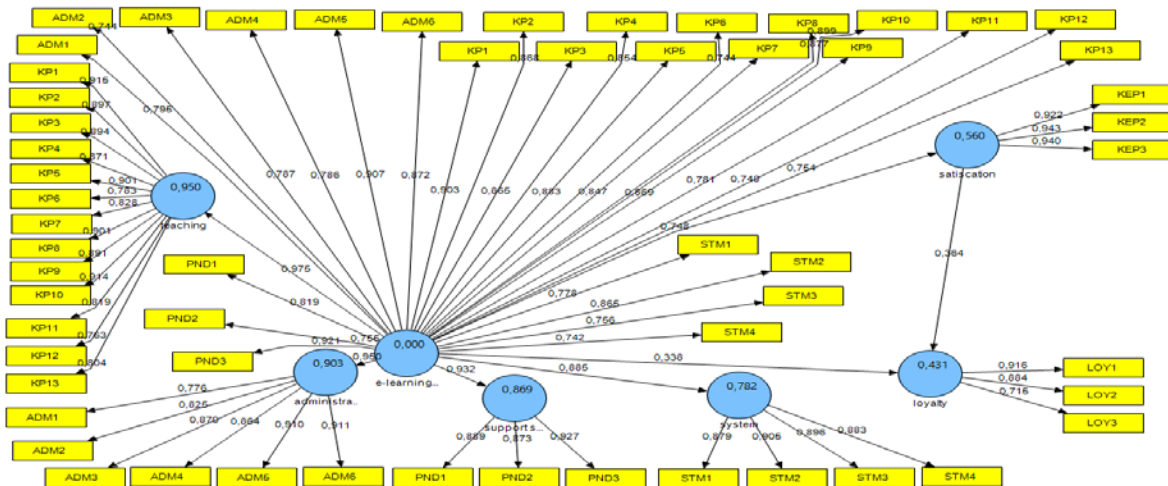


Figure 2. PLS Algorithm Model

Validity value is regarded as good if it has Average Variance Extrated (AVE) value > 0,50. Output result of AVE shows that AVE value is greater than 0,5.

Table 4 Value of Average Variance Extrated (AVE)

Construct	AVE
E-learning service quality	0.682251
Satisfaction	0.874143
Loyalty	0.710760
Teaching	0.742598
Administrative services	0.740930
Support services	0.803858
System	0.793380

In addition to construct validity test, construct reliability test was also performed measured by 2 criteria, *composite reliability* and *cronbach alpha*. Construct is regarded *reliable* is values of *composite reliability* and *cronbach alpha* are above 0.70.

Table 5 Value of Composite Reliability and Cronbach Alpha

Construct	Composite Reliability	Cronbach Alpha
E-learning service quality	0.982311	0.981069
Satisfaction	0.954201	0.928005
Loyalty	0.879395	0.795227
Teaching	0.973940	0.970745
Administrative services	0.944775	0.929353

Construct	Composite Reliability	Cronbach Alpha
Support services	0.924740	0.878061
System	0.938864	0.913275

4.2.2 Structural Model Testing (Inner Model)

Testing on structural model was conducted by viewing R-Square value that is *goodness of fit model test*. The model of *e-learning service quality effect on satisfaction* results in R-Square value of 0.5595. It means, variability of satisfaction construct can be explained by variability of e-learning service quality konstruk as much as 55.95%, meanwhile other 44.05% is explained by variables outside of the study. The same applies with R-Square value of the effect of e-learning service quality and satisfaction on loyalty as much as 0.4306, which can be interpreted that loyalty variability can be explained by variability of e-learning service quality and satisfaction as much as 43.06%. Other 56.94% is explained by variables outside the study.

Table 6 Value of R-Square

	R-Square
Satisfaction	0.5595
Loyalty	0.4306

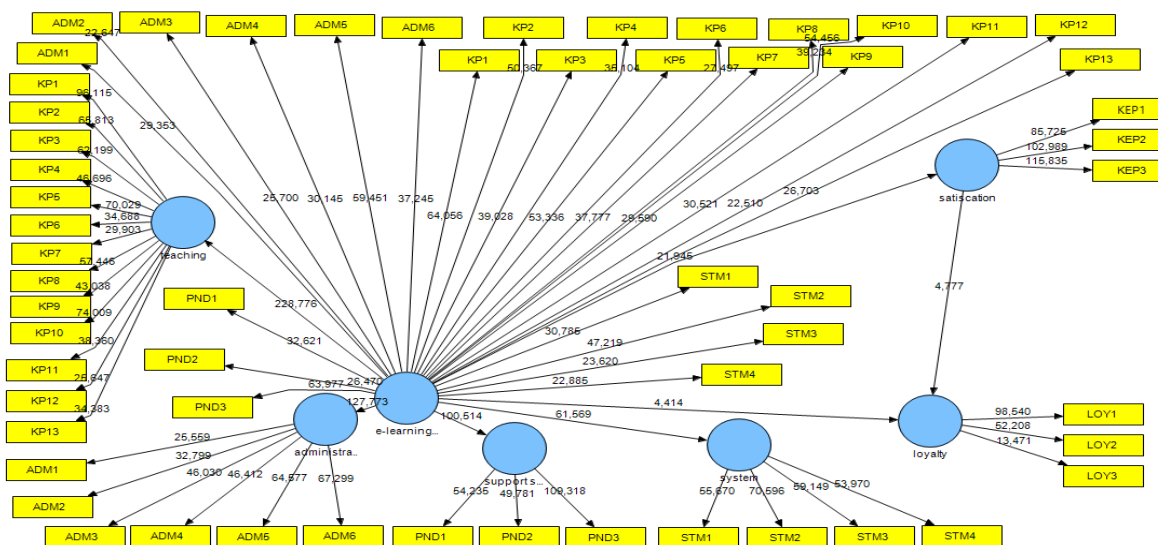


Figure 3. Bootstrapping Model

This part is related to evaluation on coefficients or parameters that show causal relationship or the effect of one latent variable to other later variable. These causal relationships then became research hypotheses.

Significance test of contribution of each variable manifested on latent variable can be seen from t count value. Manifest variabel can be said to have meaningful contribution value if it has t count value that is greater than t critic (± 1.96). Based on recapitulation table above, it is known that t count value for all indicators are greater (± 1.96) by using the error rate by 5%. This shows that all indicators are significant in reflecting latent variables.

Table 7 Evaluation of Structural Model Coefficient and Research Hypotheses

Hypothesis	Path	t-value	Loading Factor	Conclusion
1	Service value on satisfaction	21.413643	0.748036	Accepted
2	Service value on loyalty	4.615049	0.338029	Accepted
3	Satisfaction on loyalty	5.137245	0.363878	Accepted

Source: Research Result (2017)

4.2.3 Detailed Result of Structural Equation Model Analysis

Based on testing result of coefficient on path diagram, analysis result will be presented in detail for every variable/dimension formed or determined from indicators presented in the following table.

Table 8 Detailed Analysis Result

Variable	Dimension	Indicator	Loading Factor
E-Learning Service Quality	Administrative services	Every complain of online tutorial is handled quickly	0.911
		Managers are always friendly in responding friendly to any online tutorial issue	0.910
		Technical problem in online tutorial is handled quickly	0.870
		Procedure of online tutorial program activation can be easily done	0.864
		Complaints of online tutorial are easy to submit	0.825
		Activation issue of online tutorial program can be handled quickly	0.776
		Teaching	0.975
	Tutor has good competence	0.915	
	Tutor consistently assesses student's assignment	0.914	
	Online tutorial program is well-designed	0.901	
	Tutors provide good guidance for online tutorial participants	0.901	
	Tutor provides feedback in online tutorial activities	0.897	
	Tutor provides solutions on issues occurred in online learning process	0.894	
	Tutor consistently assesses students' discussion activities	0.891	
	Online tutorial program contributes positively in learning process	0.871	
	Online tutorial program has an up-to-date learning sources	0.828	
	Tutor is always friendly in managing online tutorial class	0.819	
	Online tutorial assessment system is performed transparently	0.804	
	Online tutorial program has an up-to-date materials	0.783	
	Online tutorial assessment is performed fairly	0.763	

Variable	Dimension	Indicator	Loading Factor
	Support services		0.932
		Online tutorial programs provide interaction facilities among students such as community forums	0.927
		Online tutorial program support services are well-given such as online library services and virtual reading room	0.889
		Tutors provide real time interaction tools, such as text messages, chat rooms or video calls	0.873
	System		0.885
		Online tutorial program has a strong connectivity	0.905
		Online tutorial program has a stable connectivity	0.896
		Online tutorial program user interface navigation that is easy to use	0.883
		Online tutorial program provides a responsive user interface navigation	0.879
Satisfaction			0.364
		I am satisfied with the learning process in online tutorial program	0.943
		I am totally satisfied in the implementation of online tutorial program	0.940
		I am satisfied with my experience of participating online tutorial program	0.922
Loyalty			0.338
		I will recommend online tutorial program to my fellow students in UT	0.916
		I will continue following online tutorial program until the end	0.884
		I will consider to follow online tutorial program for other courses	0.715

Source: Research Result (2017)

Based on analysis conducted, next step is answering problem identification and research hypotheses. The hypotheses of this study are as follows:

4.2.4 Discussion of Hypothesis 1: The Effect of E-Learning Service Quality to Satisfaction of Students in Universitas Terbuka

The first hypothesis testing proves that service quality has a significant effect on student loyalty in Universitas Terbuka. The effect between both variables is very strong. Student satisfaction can be explained by service quality variable as much as 55.95% and 44.057% by other variable. This finding indicates that service quality consisting of learning quality, administration service, support service, and system quality has a direct effect on student satisfaction consisting of satisfaction toward process, experience, and total satisfaction of online tutorial usage. This research result is in accordance with studies conducted by Martinez-Arguelles and Batalla-Busquets (2016), Ayuni and Mulyana (2015), Dehghan *et al.* (2014) and Goolamally & Latif (2014) in online and distance educational environment. In addition, the research result is also in line with researches in other fields such as library service (Bakti and Sumaedi, 2013), *e-shopping* (Gounaris *et al.*, 2010) banking service (Auka, 2012; Kushwah, 2014) and small service enterprise (Seesaiprai, 2016).

The greatest ability to describe the service quality variable is shown by teaching quality dimension, followed by administrative services dimension, support services dimension and

system quality dimension. Three most important indicators of teaching quality are competence, assessment consistency of online tutorial assignment by tutor, and a good online tutorial program design. Meanwhile, three main indicators of administrative service dimension include the fast respond for online tutorial program complaint, friendliness of managers in responding every issue in online tutorial program, and fast respond in handling technical problem in online tutorial program. In support service dimension, the highest indicator is that online tutorial program provides interaction facility between students, followed by support service of online tutorial program that is well-provided, such as online library service and virtual reading room. On system dimension, the biggest 3 indicators are that online tutorial program has strong connectivity, that online tutorial program has a stable system, and that online tutorial program has an easy-to-use user interface navigation.

4.2.5 Discussion of Hypothesis 2: The Effect of Service Quality on Student Loyalty of Students in Universitas Terbuka

Based on previous estimation, service quality has a significant effect on loyalty. From this study, it can be seen that the effect of service quality on loyalty is not very strong. This result is in accordance with previous studies conducted by Martinez-Arguelles & Batalla-Busquets (2016), Mohamad and Awang (2009), Santouridis & Trivellas (2010) and Dehghan *et al.* (2014). This could be happen because online tutorial user loyalty is formed directly by service quality. It means, the improvement of service quality of online tutorial program automatically increases loyalty of user students.

4.2.6 Discussion of Hypothesis 3: The Effect of Student Satisfaction on Student Loyalty of Universitas Terbuka

Satisfaction affects loyalty. This study shows that satisfaction has a direct and significant effect on loyalty. Relationship between both variables is not very strong. This study result supports the study results by Martinez-Arguelles & Batalla-Busquets (2016), Goolamally and Latif (2014), Dehghan *et al.* (2014) and Seesaiprai (2016). This phenomenon is predicted to occur because online tutorial users feel satisfied, and then support users to be loyal in providing recommendation or survive following online tutorial until completed. In satisfaction dimension, it can be seen that students feel satisfied with learning process in online tutorial program and that students feel completely satisfied in the implementation of online tutorial program. This study also shows that the effect of satisfaction on loyalty is greater than the effect of e-learning service quality on loyalty.

5. CONCLUSION

Service quality has a significant effect on student satisfaction of Universitas Terbuka. The effect between both variables is very strong. It means that service quality consisting of learning quality, administration service, support service, as well as system quality has a direct effect on student satisfaction and loyalty including satisfaction toward process, experience complete satisfaction of online tutorial usage, providing online tutorial program to fellow students, and following online tutorial program until the end. Therefore, Universitas Terbuka needs to pay attention to other factors such as complaints on online tutorial program that are easy to do and online tutorial program activation issues that is easy to be handled, up-to-date tutorial materials, fair assessment system, real time interaction facility, and online tutorial

program that provides a responsive user interface navigation so that online tutorial can run well.

Based on this study, it can also be seen that the effect of service quality on loyalty is not very strong. It is predicted to occur because online tutorial user loyalty directly formed by service quality. This means that the increase of online tutorial service quality automatically increase user student loyalty. However, Universitas Terbuka needs to pay attention whether students will keep following online tutorial program until completed and will follow other courses.

Satisfaction affects loyalty. This study shows that satisfaction has a direct and significant effect on loyalty. The relationship between both variables is not very strong. This phenomenon could happen because online tutorial users feel satisfactory, that encourage users to become loyal by providing recommendation or surviving following online tutorial until completed. This study also shows that the effect of satisfaction of loyalty is greater than the effect of e-learning service quality on loyalty.

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