UNIVERSITAS TERBUKA

AAOU
Asian Association
of Open Universities

The 31ST Annual Conference
of the Asian Association of Open Universities

AAOU2017

27 - 29 September 2017, Royal Ambarrukmo Hotel
Yogyakarta, Indonesia

PROCEEDINGS
Quality Assurance in Open University

UT WEBSITE USER SATISFACTION IMPROVEMENT MODEL BASED ON PERCEIVED USEFULNESS, PERCEIVED EASE OF USE, PERCEIVED INFORMATION QUALITY AND PERCEIVED SYSTEM QUALITY (CASE STUDY ON PAGE WWW.MAKASSAR.UT.AC.ID)

Nina Utami Y Sanusi[1], I Made Gunawan Sanjaya[2], Andi Sylvana[3]

[1]*Universitas Terbuka (INDONESIA)*
[2]*Universitas Terbuka (INDONESIA)*
[3]*Universitas Terbuka (INDONESIA)*

Abstract

In every opportunity, the Open University always strives to provide the best service for all parties primarily to the UT academic community. Various efforts have been made including providing information services about the UT through the website, thus facilitating the flow of information flowing to the remote areas and can be accessed by all groups. In order for web services provided to be effective and generate satisfaction for UT web service users it is necessary a model to increasing user satisfaction based information system services in terms of Perceived Usefulness, Perceived Ease of Use, Perceived Information Quality Dan Perceived System Quality. This study aims to determine the level of satisfaction of UT web service users in terms of Perceived Usefulness, Perceived Ease of Use, Perceived Information Quality Dan Perceived System Quality case study on web pages www. Makassar.ut.ac.id. Using the sample of 60 web page user respondents, the result that Perceived Usefulness, Perceived Ease of Use, Perceived Information Quality Dan Perceived System Quality are able to significantly influence UT website user satisfaction and the dominant influence was Perceived Ease of Use, Perceived System Quality, Perceived Usefulness and last Perceived Information Quality. On this basis finally formed a model that can be made recommendations in improving user satisfaction UT website services.

Keyword: website, satisfaction, improvement, perceived, quality.

1. INTRODUCTION

The on-going advances of technology information have significantly affected how society behaves. Such advances have changed the concept of what it means to be social. One of the upsides is that the information access is able to overcome time and space barriers. The advances are seamless and ubiquitous, permeating in every aspect of life including education. Universitas Terbuka (UT), as a long-distance education institution, heavily depends on the information technology for its academic productivity. The most essential part of learning at UT is the space-time separation between students and UT also students and tutors mediated by the information technology.Improving the service quality, most particularly access to information about registration and learning experience for its students, prompts UT to develop a website at each Unit of Distance Learning (UPBJJ). UPBJJ-UT Makassar for South Sulawesi has developed and operated *www.makassar.ut.ac.id* since 2012. The website anticipates the needs of both prospective and existing students for information about UT and addresses them, which, in turn, encourages user satisfaction. However, website-related problems are common among users. Among them are access difficulty, loading speed, outdated information and download speed. To resolve such problems, a model for improvement to user satisfaction with respect to the perceived usefulness, perceived ease of use, perceived information quality and perceived system quality is necessary. This is the focus of this study that aims to measure the rate of web-user satisfaction at *www.makassar.ut.ac.id* based on those aforementioned dimensions.

2. LITERATURE REVIEW AND HYPHOTESIS DEVELOPMENT

2.1 Perceived Usefulness

Davis (1989) in Kartika (2006) defines perceived usefulness as a condition in which an individual believes that using a particular system will enhance his/ her work performance. The notion of usefulness roots from the definition of "useful" which is "capable of being used advantageously." Perceived

usefulness is the benefit from which an individual obtain during the technology use. Within the context of user service, this benefit is closely related to the adjustment of available information to users' needs. Similarly, Jogiyanto (2003) defines perceived usefulness as the extent to which the use of technology affects user work performance. This affects the individual's belief in the process of decision making. This decision making leads to a successful adoption of a given information system.

2.2 Perceived Ease of Use

Perceived ease of use refers to the degree to which an individual believes that a particular technology is easily used (Davis, 1989 in Kartika, 2006). Perceived ease of use is critical as to how an individual operates a particular technology in achieving maximum work performance and time management. Easy-to-use technology does not require a great deal of effort and time in operating a certain system. Use frequency and user interaction may define the perceived ease of use. A more frequently-used system indicates a more commonly-known and easily-used system (Goodwin and Silver in Adam et al., 1992 in Irmadhani, 2005).

2.3 Perceived Information Quality

Information quality holds three information components, which are data clarity, data accuracy and comprehensive information format. In addition, information quality generates an economic value in the process of decision making on resource allocation that makes the information an important economic resource. Similarly, DeLone and McLean (1992) describe that information quality measures the quality of an output generated from a certain information system. Furthermore, Romney and Steinbart (2006) classify a number of dimensions that measure information quality, which are relevance, reliability, completeness, timeliness, understandability and verifiability. Such dimensions serve as prerequisites to gaining high-level information quality, which, in turn, generate high-level user satisfaction. This is consistent with prior work by Leclercqs (2007), Wixom and Todd (2007), Livari (2005), Palmer (2002) and Rai et. al (2002) that found a positive effect of information quality on user satisfaction.

2.4 Perceived System Quality

In a study by DeLone and McLean (1992), system quality refers to a characteristic of information inherent in the system itself, which impacts the extent to which the system is able to generate benefits to users. Guimares et al. (1992) state that system quality reflects user satisfaction of a computer system, while Davis et al. (1989) and Chin and Todd (1995) associate system quality with perceived ease of use that impacts the benefits generated by a system. Kulkarni et al. (2006), Wu and Wang (2006) and Halawi et al. (2007) describe that system quality is posited to drive use intention, which, in turn, is posited to induce user satisfaction. This is in line with prior findings by Chiu et al. (2007), Hsieh and Wang (2007), Almutairi and Subramanian (2005), Livari (2005) and McGill et al. (2003) that identified a strong influence of system quality on user satisfaction.

2.5 Website-User Acceptance and Satisfaction

Satisfaction of a certain information system relates to how users perceive the information system on a practical basis, rather than on a technical basis (Guimares, Staples and McKeen, 2003). In theory and in practice, often user satisfaction applies to the measurement of the effectiveness of information system (Melone, 1990). This is consistent with prior findings by DeLone and Mclean (1992), McKiney et al. (2005), Rai et al. (2002), McGill et al. (2003), Almutairi and Subramanian (2005) and Livari (2005) that concluded the quality of information system was strongly associated with user satisfaction.

2.6 Hypotheses Development

The model in this study proposed a number of hypothesized relationships as follows:
H1: Perceived usefulness will be positively and significantly related to user satisfaction of UT website.
H2: Perceived ease of use will be positively and significantly related to user satisfaction of UT website.
H3: Perceived information quality will be positively and significantly related to user satisfaction of UT website.
H4: Perceived system quality will be positively and significantly related to user satisfaction of UT website.

3. METHOD

3.1 Research Design

This study was designed as an explanatory analysis that sought to verify the hypothesized relationships by elaborating phenomena based on a scientific examination. The independent variables included in this study are perceived usefulness, perceived ease of use, perceived information quality and perceived system quality, while the dependent variable is user satisfaction of ut website.

3.2 Participants

Method for data collection in this study is cross-sectional survey. The population comprises the entire students at UPBJJ-UT Makassar who use web service at *www.makassar.ut.ac.id*. The samples were acquired from random sampling and the questionnaires were delivered online. The collected data were gathered from 60 respondents.

3.3 Instrument

Data collection was completed using questionnaires with a 5-point likert scale ranging from 1 (strongly disagree or highly dissatisfied) to 5 (strongly agree or highly satisfied).

Variable	Indicators	Code
Perceived use-fulness (X1)	I obtain fast and up-to-date information.	A1
	UT website enables me to gain information without leaving home or workplace, which maximizes time efficiency.	A2
	All of the provided information is sufficient enough.	A3
Perceived ease of use (X2)	Learning how to access UT website is not complicated.	B1
	Universitas Terbuka always provides the latest information about tuton implementation.	B2
	The facilities at UT website are easily accessed and comprehensible.	B3
Perceived information quality (X3)	Important information about UT activities is provided well in advance before the implementation.	B21
	UT website always provides the latest information about UT activities.	B22
	UT website always announces the closing date of each academic activity.	B23
	Each information at UT website is presented in detail.	B24
Perceived system quality (X4)	UT website always provides contact-person service that enables users to obtain more detailed information.	B31
	The facilities at UT website meet my expectation and need.	B32
	The facilities at UT website always support my academic activities.	B33

3.4 Data Analysis

To gain adequate results, the instrument in this study was measured using validity and reliability test to avoid errors that might affect the accuracy of data collected. Then, multiple linear regression was run to acquire the results of model testing, the effects between the variables and the dominant variables. In terms of validity test, an item was a valid measure only to the extent that it scored above 0.40 at a significance level of 95% within a group of items representative of the variables to be measured. In terms of reliability test, Cronbach's Alpha, coefficient and item-total correlation were applied to examine whether each variable was reliable. Each variable scored above 0.60, which generated reliable variables and indicated internal consistency. To assure the effects between variables, p-value must score ≤ 0,05 to ensure the significant effects of the independent variables on the dependent variable, at a confidence level of 95% and a maximum deviation standard of 5%.

4 RESULTS

4.1 Validity And Reliability

The results of validity and reliability test are presented in Table 2:

Table 2
The Results of Validity and Reliability

Variable	Indicator		Validity	Cronbach's Alpha	Reliability
	Min.	Max.			
X1	0.701	0.908	Valid	0.760	Reliable
X2	0.540	0.754	Valid	0.787	Reliable
X3	0.539	0.832	Valid	0.786	Reliable
X4	0.445	0.788	Valid	0.888	Reliable
Y	0.417	0.988	Valid	0.792	Reliable

Source: SPSS Output, processed in 2017
Table 2 shows that the minimum value of validity is above 0.2 and the alpha is above 0.6, which indicates that the questionnaires are applicable for the respondents.

4.2 Frequency Distribution

The recapitulation of frequency distribution of respondents on web-user satisfaction based on the perceived usefulness, perceived ease of use, perceived information quality and perceived system quality is provided in Table 3:

Table 3. Recapitulation of Web-User Satisfaction Based on Perceived Usefulness, Perceived Ease of Use, Perceived Information Quality and Perceived System Quality

Variable * Cross Tabulation of Respondent Answers					
Count					
		Respondent Answers			Total
		Low	Moderate	High	
Variable	X1	1	4	55	60
	X2	0	10	50	60
	X3	0	8	52	60
	X4	0	5	55	60
	Y	0	8	52	60
Total		1	35	264	300

Source: SPSS output, processed in 2017

The table shows that overall the perceived usefulness, perceived ease of use, perceived information quality and perceived system quality are classified in high category, which leads to high-category user satisfaction of UT website.

4.3 Multiple Regression Analysis

Multiple regression was performed to model the relationships between the independent variables and dependent variable. The results are seen below:

Table 4. The Results of Multiple Regression

Independent Variable	Dependent Variable	T	Sig t
Perceived Usefulness (X1)	Web-User Satisfaction (Y)	9.674	.0.00
Perceived Ease of Use (X2)		8.897	.000
Perceived Information Quality (X3)		19.931	.000
Perceived System Quality (X4)		2.082	0.42
R^2			.961
Adjusted R^2			.959
F			341.966
Sig F			.000

Source: SPSS Output, processed in 2017

The results are interpreted as follows:

1. R^2 of 0.961 (96.1%) is the rate of the simultaneous effects of perceived usefulness, perceived ease of use, perceived information quality and perceived system quality on user satisfaction of UT website. The remaining 3.9% accounts for other factors not included in the model.
2. F_{Cal} of 341.96 with alpha of 0.00 (less than 0.05) indicates that perceived usefulness, perceived ease of use, perceived information quality and perceived system quality simultaneously have positive and significant effects on user satisfaction of UT website.
3. T_{Cal} of 9.674 with alpha of 0.000 (less than 0.05) indicates that perceived usefulness has a positive and significant effect on user satisfaction of UT website, given that the other factors which may affect the level of user satisfaction remain constant.
   Seddon (1997) defines perceived usefulness as the extent to which stakeholders belief that applying a certain system will enhance empoyee performance, and, in turn, organization productivity. Similar definition is also proposed by Raid (2009) who states that perceived usefulness refers to the degree to which a system encourages a great deal of effectiveness from which users benefit. This is aligned with prior work by Rai et. al (1992) who found a strong relationship between perceived usefulness and user satisfaction using three Information System Success Models developed by DeLone and McLean (1992) and Seddon (1997). The third model was also from Seddon (1997) which was modified by exploring the relationship between perceived usefulness and system use. Similar to prior finding by Zviran (2005) and Adams (1992), this study concludes that perceived usefulness positively affects user satisfaction. Hypothesis 1, that perceived usefulness will be positively and significantly related to user satisfaction of UT website, is accepted.
4. T_{Cal} of 8.897 with alpha of 0.000 (less than 0.05) indicates that perceived perceived ease of use has a positive and significant effect on user satisfaction of UT website, given that the other factors which may affect the level of user satisfaction remain constant.
   According to Davis (1989), perceived ease of use is defined as the extent to which an individual beliefs that a certain technology will relieve users of unnecessary tasks. Perceived ease of use is based on the degree to which a new technology enables a great deal of convenience for prospective users. Teo et al. (1999) state that perceived ease of use has both direct and indirect influence on the use of Internet service. Similarly, Nysveen et al. (2005a, b) describe the underlying factors of mobile-service consumption are perceived usefulness and perceived ease of use. Therefore, hypothesis 2, that perceived ease of use will be positively and significantly related to user satisfaction of UT website, is accepted.

5. T_{Cal} of 19.931 with alpha of 0.00 (less than 0.05) indicates that perceived information quality has a positive and significant effect on user satisfaction of UT website, given that the other factors which may affect the level of user satisfaction remain constant.

   Information is generally deemed of high quality when it adequately represents its data clarity, data accuracy and comprehensiveness. This notion is aligned with Romney and Steinbart's (2006) who categorize the dimensions of information quality into relevance, reliability, completeness, timeliness, understandability and verifiability. Information quality also has a set of economic values that fit in decision making on resource allocations which make the information content a valuable economic resource. Similarly, DeLone and Mclean (1992) claim that information quality measures the quality of an output generated from an information system.

   Prior work by Leclercqs (2007), Wixom and Todd (2007), Livari (2005), Palmer (2002) and Rai et al. (2002) concluded that improved information quality would increase the likelihood of improved user satisfaction.

   Therefore, hypothesis 3, that perceived information quality will be positively and significantly related to user satisfaction of UT website, is accepted.

6. T_{Cal} of 2.082 with alpha of 0.42 (less than 0.05) indicates that perceived system quality has a positive and significant effect on user satisfaction of UT website, given that the other factors which may affect the user satisfaction remain constant.

   Guimares et al. (2003) point out that the concept of user satisfaction of a certain information system lies in how users perceive the given information system on a practical basis, rather than on a technical basis. Melone (1990) describes that the concept, both in theory and in practice, is often used to measure the effectiveness of information system; greater information system will result in greater user satisfaction. Prior work by DeLone and McLean (1992), McKiney et al. (2002), Rai et al. (2002), McGill et al. (2003), Almutairi and Subramanian (2005) and Livari (2005) indicated that the quality of information system positively affected user satisfaction. Hypothesis 4, that perceived system quality will be positively and significantly related to user satisfaction of UT website, is accepted.

5   CONCLUSION

Based on the calculation results and analysis, the study settles on a number of conclusions as follows:

1. User intention to use UT web service is determined by user perception on its usefulness. The rate of user satisfaction goes up as the perceived usefulness of UT web improves.
2. Perceived ease of use is important in the development of UT web service in terms of how easy users access the facilities and contents of the web.
3. Information quality affects user satisfaction in a way that it is able to generate and deliver benefits for users within UT web service.
4. System quality of UT web service is built on the aim of meeting user requirements. As the system quality improves, the rate of UT web-user satisfaction becomes significant.

REFERENCES

[1] Adams, D.A., R.R. Nelson & P. A. Todd. 1992. Perceives Usefulness, Ease of Use, and Usage of Information Technology: A Replication. MIS Quarterly. Vol. 16 No. 2: Hal. 227- 247

[2] Almutairi, H. & Subramanian, Girish, H., 2005, "An Empirical of the DeLOne and McLean Model in the Kuwaiti Private Sector", The Journal of Computer Information System, Spring, 45,3, pg.113

[1] Chin, W.C. dan Todd, P.A. 1995. On the Use, Usefulness and Ease of Use of Structural Equation Modelling in MIS Research: A Note of Caution. MIS Quarterly, Vol. 19 No. 2, pp. 237-46

[2] Chiu, C. M., Chiu, C. S. & Chang, H. C. 2007. Examining the integrated influence of fairness and quality on learners' satisfaction and Webbased learning continuance intention. Information Systems Journal 17(3), 271–287

[3] Davis, F.D., 1989, "Perceived Usefulness, Perceived Ease of Use, and Acceptance of Information System Technology," MIS Quarterly, Vol.13, No.3, pp.319-339.

[4] DeLone, WH., dan McLean, ER. 1992. Information Systems Success: The Quest for the Dependent Variable. Information System Research, 3(1), 60-95

[5] Guimaraes, T., D. S. Staples, dan J. D. McKeen. 2003. Empirically Testing Some Main User-Related Factor for Systems Development Quality. Quality Management Journal 10, No. 4: 39- 54.

[6] Guimaraes, T., M. Igbaria, and M. Lu. 1992. The determinants of DSS success: An integrated model. Decision Sciences 23, no. 2: 409-430

[7] Halawi, L. A., Mccarthy, R. V. & Aronson, J. E. 2007. An empirical investigation of knowledge-management systems' success. The Journal of Computer Information Systems 48(2), 121–135.

[8] Hsieh, J. J. P. A. & Wang, W. 2007. Explaining employees' extended use of complex information systems. European Journal of Information Systems 16(3), 216–227.

[9] Irmadhani. 2005. Pengaruh Persepsi Kebermanfaatan, Persepsi Kemudahan Penggunaan Dan Computer Self Efficacy, Terhadap Penggunaan Online Banking Pada Mahasiswa S1 Fakultas Ekonomi Universitas Negeri Yogyakarta. Program Studi Akuntansi Fakultas Ekonomi Universitas Negeri Yogyakarta

[10] Jogiyanto, HM. 2003. Sistem Teknologi Informasi. Edisi 1. Andi, Yogyakarta

[11] Kartika, Shinta Eka. 2009. Analisis Proses Penerimaan Sistem Informasi Icons Dengan Menggunakan Technology Acceptance Model Pada Karyawan PT. Bank Negara Indonesia (Persero) Tbk. Di Kota Semarang. Program Studi Magister Akuntansi Program Pasca Sarjana Universitas Diponegoro

[12] Kulkarni, U. R., Ravindran, S. & Freeze, R. 2006. A knowledge management success model: theoretical development and empirical validation. Journal of Management Information Systems 23(3), 309–347

[13] Leclercq, A. 2007. The perceptual evaluation of information systems using the construct of user satisfaction: case study of a large French group. The Database for Advances in Information Systems 38(2), 27–60

[14] Livari, Juhani, 2005, "An Empirical Test of the DeLone and McLean Model of Information System Success", Database for Advances in Information Systems, Spring, 36,2. pg.8

[15] McGill, Tanya, Hobbs, Valerie, & Klobas, Jane, 2003, "User-Developed Applications and Information Systems Success: A Test of DeLone and McLean's Model", Information resource Management Journal; Jan-Mar; 16.1. pg.24

[16] McKiney, V., Yoon, K., and Zahedi, Fatemeh, 2002, "The Measurement of Web- Customer Satisfaction: An Expectation and Disconfirmation Approach", Information System Research, 13,3.

[17] Melone N.P. 1990, "A Theoretical Assessment of The User Satisfaction Construct in Information System Research", Management Science. January.

[18] Nysveen, H., Pedersen, P.E., Thorbjornsen, H. and Berthon, P. (2005), "Mobilizing the brand: the effects of mobile services on brand relationships and main channel usage", Journal of Service Research, Vol. 7 No. 3, pp. 257-76

[19] Palmer, A., 2002. Website Usability, Design and Performance Metrics. Information System Research, 13 (1), 151-167

[20] Rai, A., Lang, S.S. and Welker, R.B., 2002. "Assessing the Validity of IS Success Models: An Empirical Test and Theoretical Analysis", Information System Research, Vol.13, No.1. pp. 29-34.

[21] Raid, Moh'd Al-adaileh, 2009. An Evaluation of Information Systems Success: A User Perspective - The Case of Jordan Telecom Group. European Journal of Scientific Research, 37 (2), 226-239

[22] Romney, Marshall B., dan Paul John Steinbart. 2006. Sistem Informasi Akuntansi, Edisi 9, Salemba Empat, Jakarta

[23] Seddon.P.B. 1997. A Respecification and Extension of The DeLone and McLean's Model of IS Success. Information System Research.8 September. 240-250

[24] Teo, T. S. H.; Lim, V. K. G.: and Lai, R. Y. C. 1999. Intrinsic and extrinsic motivation in internet usage. The Internet Journal of Management Science, 27, 25-37

[25] Wixom, B. H., & Todd, P. A. 2007. A theoritical Integration of User Satisfaction and technology Acceptance. Information system research, 85-102

[26] Wu, J-H & Wang, Y-M. 2006. Measuring KMS Success: A Respecification of the DoLone and McLean's Model. Information and Management. pp: 728-739

[27] Zviran, M., Plskin, N., dan Levin, R., 2005. Measuring User Satisfaction and Perceived Usefulness in The ERP Context. The Journal of Computer Information Systems, Spring 2005, 45 (3)