Scientific Journal of Informatics
Vol. 7, No. 2, November 2020
p-ISSN 2407-7658 http://journal.unnes.ac.id/nju/index.php/sji e-ISSN 2460-0040

The Evaluation of Final Assignment System Using the USE Questionnaire Approach

Aji Purwinarko[1], Mona Subagja[2], Alfath Yanuarto[3]

[1]Computer Science Department, Faculty of Mathematics and Natural Sciences,
Universitas Negeri Semarang, Indonesia
[2,3] Information and Communication Technology,
Universitas Negeri Semarang, Indonesia
Email: [1]aji.purwinarko@mail.unnes.ac.id

Abstract

Universitas Negeri Semarang has utilized information system technology to facilitate the assessment of final student assignments. So it is necessary to test this information system to determine user satisfaction and the success of the information system in providing services. One way to test the information system is to analyze the usability aspect, using the Usefulness, Satisfaction, and Ease of use (USE) Questionnaire. Data collection involved 75 respondents from users of the final assignment system. The reliability test results on 30 questions resulted in a Cronbach's alpha value of 0.97, which means that the questionnaire's reliability was excellent. Whereas for Usability measurement, the percentage value of Usefulness is 86.7%, Ease of Use is 84.4%, Ease of learning is 86.6%, and Satisfaction is 83.0%, which shows that the final assignment system is very worthy of being used.

Keywords: Usability, USE Questionnaire, final assignment system

1. INTRODUCTION

The use of information systems in the management and decision-making process has influenced organizations in providing services to end-users [1]. Universitas Negeri Semarang has developed and implemented an information system to support business processes and operations as an organization engaged in education. One of the information systems used is the information system to facilitate the assessment of final student assignments. One of the information systems used is the information system to facilitate the assessment of final student assignments. This information system is hoped to help students consult their thesis, either in the form of a draft or a product to be made. Moreover, this activity is related to the research process carried out by students, which must be kept confidential, so there is a need for a system that can handle this matter. However, an information system requires testing, and this is to ensure that the information system can work appropriately according to user needs [2].

Information systems research on theoretical perspectives can be found in several papers [1, 3-10]. One of the information system evaluation methods is the Usefulness, Satisfaction, and Ease of use (USE) questionnaire, where this method consists of 30 question items [11]. The advantage of the questionnaire is that this technique saves budget, does not require special equipment, and the measurement

results are based on user opinions. Besides, questionnaires can provide information about the strengths and weaknesses of a product or service [5]. Therefore, this study intends to evaluate the final assignment system by applying a USE questionnaire.

2. METHODS

The method used in this study was adapted from the research method used by Kusuma [12]. Figure 1 shows the research method in this study.

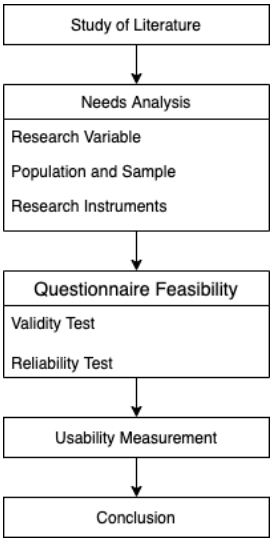

Figure 1. Research method

2.1. Study of Literature

Literature studies are carried out by looking for various written sources, in the form of books, articles, and journals, or documents that are relevant to the problem being studied.

2.2. Research Variable

The variables in this study consist of independent variables and dependent variables. The independent variable is the Usefulness variable, the Ease of use variable, and the Ease of learning variable, while the Satisfaction variable as the dependent variable [12].

2.3. Population and Sample

This study's population were final student assignments users, which were 300 Universitas Negeri Semarang postgraduate lecturers. Then, several samples were taken to become respondents. Sampling is done randomly so that all population members have the same opportunity to be sampled using the simple random sampling method [13].

While the sample size is determined using the Slovin formula, as shown by equation (1)[14].

$$n = \frac{N}{1 + Ne^2} \quad (1)$$

Information:

n = Number of respondents
N = Sample size
e The error rate (10% = 0.10)

Based on equation (1), the sample size (n) with the total population (N) is 300 people, and the error rate (10%) is 75 people, as shown by equation (2).

$$n = \frac{300}{1 + (300)(0.1)^2} = 75 \quad (2)$$

Table 1 shows the gender distribution of the respondents. Respondents of male gender were 40 people with a 53.3% percentage, and with the female gender were 35 people, with 46.7% of the total number of respondents as many as 75 people.

Table 1. The gender distribution of the respondents.

Gender	Number of respondents	Percentage of respondents (%)
Male	40	53.3
Female	35	46.7
Total	75	100.0

2.4. Research Instruments

This study used the USE questionnaire instrument, as shown in Table 2 [15]. The questionnaire used in measuring usability includes questionnaires related to effectiveness, efficiency, and satisfaction using an information system. The thing that underlies the questionnaire's use is that it can make it easy for respondents to understand and answer the questions appropriately posed.

Table 2. The USE questionnaire instrument

Instrument Code	Items
	Usefulness
U1	It helps me be more effective
U2	It helps me be more productive
U3	It is useful
U4	It gives me more control over the activities in my life
U5	It makes the things I want to accomplish easier to get done
U6	It saves me time when I use it
U7	It meets my needs
U8	It does everything I would expect it to do
	Ease of Use
EU1	It is easy to use
EU2	It is simple to use
EU3	It is user friendly
EU4	It requires the fewest steps possible to accomplish what I want to do with it
EU5	It is flexible

EU6	Using it is effortless
EU7	I can use it without written instructions
EU8	I don't notice any inconsistencies as I use it
EU9	Both occasional and regular users would like it
EU10	I can recover from mistakes quickly and easily
EU11	I can use it successfully every time
	Ease of Learning
EL1	I learned to use it quickly
EL2	I easily remember how to use it
EL3	It is easy to learn to use it
EL4	I quickly became skillfull with it
	Satisfaction
S1	I am satisfied with it
S2	I would recommend it to a friend
S3	It is fun to use
S4	It works the way I want it to work
S5	It is wonderful
S6	I feel I need to have it
S7	It is pleasant to use

In quantitative analysis, the respondent will be given five alternative answers for each instrument item using a Likert scale of measurement, as shown in Table 3.

Table 3. Likert scale criteria

Score	Criteria
1	Very Unsatisfied
2	Satisfied
3	Neutral
4	Satisfied
5	Very Satisfied

2.5. Validity Test

The validity test aims to measure the feasibility level of each question item in a research instrument [16]. This study used the Pearson bivariate correlation analysis to test the validity, and a significant r table is 5%.

2.6. Reliability Test

The reliability test is carried out to determine the consistency of measuring instruments, is reliable, and remains consistent if the measurement is carried out repeatedly [16]. An instrument is considered reliable if the instrument can be trusted as a measuring tool for research data. This study uses Cronbach's Alpha measure to test reliability. Table 4 shows the categories used to determine the level of instrument reliability [17].

Table 4. Cronbach's alpha reliability level

Cronbach's alpha	Internal consistency
$\propto > 0.9$	Excellent
$0.9 > \propto \geq 0.8$	Good
$0.8 > \propto \geq 0.7$	Acceptable
$0.7 > \propto \geq 0.6$	Questionable
$0.6 > \propto \geq 0.5$	Poor
$0.5 > \propto$	Unacceptable

2.7. Usability Measurement

Formula (3) shows the usability measurement by calculating using the average Usefulness, Satisfaction, Ease of use, and Ease of learning [18].

$$usability\ (\%) = \frac{Usefulness + Ease\ of\ Use + Ease\ of\ Learning + Satisfaction}{4} \text{ x } 100\% \quad (3)$$

The equation (3) results are converted into a feasibility category table, as shown in Table 5 [19, 20].

Table 5. The feasibility category table

s	Categories
< 21	Very Unworthy
21 – 40	Not Worthy
41 – 60	Enough
61 – 80	Worthy
81 – 100	Very Worthy

3. RESULT AND DISCUSSION

Based on the Pearson correlation bivariate from 75 respondents, the r-table value is 0.19. The measuring instrument can be declared valid if the r-count is greater than the r table, and vice versa. The value of r-table is calculated from the statistical table r with degrees of freedom. The results of the questionnaire validity test are shown in Table 6. Table 6 shows that all instruments' validity is valid so that all instruments are suitable for use in research.

Table 6. The results of the questionnaire validity test

Instrument Code	r-count Value	Validity
U1	0.75	valid
U2	0.77	valid
U3	0.77	valid
U4	0.81	valid
U5	0.67	valid
U6	0.70	valid
U7	0.77	valid
U8	0.78	valid
EU1	0.76	valid
EU2	0.89	valid
EU3	0.72	valid
EU4	0.74	valid
EU5	0.78	valid
EU6	0.89	valid
EU7	0.57	valid
EU8	0.57	valid
EU9	0.81	valid
EU10	0.75	valid
EU11	0.55	valid
EL1	0.61	valid
EL2	0.73	valid
EL3	0.71	valid
EL4	0.74	valid

S1	0.80	valid
S2	0.77	valid
S3	0.80	valid
S4	0.89	valid
S5	0.80	valid
S6	0.84	valid
S7	0.87	valid

This reliability test was carried out by entering the answers to all valid questions totaling 30 items, and the Cronbach's Alpha value was 0.97. Based on Cronbach's Alpha's reliability level, which has been described in Table 4, Cronbach's Alpha is in the range $\propto > 0.9$, indicating that the questionnaire's reliability is excellent [21]. So, the questions and answers' components can be said to be reliable, and further data processing can be done.

Usability measurements consist of 4 aspects according to data tracing results using a questionnaire, consisting of Usefulness, Ease of Use, Ease of Learning, and Satisfaction. Measurement of the Usefulness variable produces a percentage value of 86.7%, the Ease of use variable is 84.4%, the Ease of learning is 86.6%, and the Satisfaction variable is 83.0%. So, based on equation (3), the Usability result is 85.2%. The Usability value is in the range of 80 - 100, which indicates that the final assignment system is very worthy of being used.

4. CONCLUSION

The Usability measurement results in the percentage value of the feasibility of being 85.2%, which indicates the result of the usability measurement for the final assignment system are very worthy of being used. Then, there is a significant influence between the independent variables (Usefulness, Ease of use, and Ease of learning) on the dependent variable (Satisfaction).

5. REFERENCES

[1] Hardyanto, W., Purwinarko., A, and Adhi, M. A. (2017). End-user satisfaction analysis on library management system unnes using technology acceptance model towards national standard of integrated library. *Journal of Physics: Conference Series* (Vol. 983). IOP Publishing.

[2] Soumik, M. M. J., Farhavi, S. S. M., Eva, F., Sinha, T., & Alam, M. S. (2019, December). Employing Machine Learning techniques on Sentiment Analysis of Google Play Store Bangla Reviews. In *2019 22nd International Conference on Computer and Information Technology (ICCIT)* (pp. 1-5). IEEE.

[3] Lu, H. K., Lin, P. C., Lo, C. H., & Wu, M. Y. (2012). A review of information system evaluation methods. IPCSIT, Volume 41. In 2012 *International Conference on Software and Computer Applications (ICSCA 2012)*. Singapore: IACSIT Press.

[4] Santarek, K., & Obłuska, I. (2012). Process approach to the evaluation of information systems effectiveness. *Information Systems in Management, 1*.
[5] Dantas, C., Jegundo, A. L., Quintas, J., Martins, A. I., Queirós, A., & Rocha, N. P. (2017, April). European portuguese validation of usefulness, satisfaction and ease of use questionnaire (USE). In *World Conference on Information Systems and Technologies (pp. 561-570) 11 April 2017*. Cham: Springer.
[6] Lawson-Body, A., Willoughby, L., Lawson-Body, L., & Logossah, K. (2017). Developing and validating a cultural user satisfaction instrument in developing Countries. *Journal of Computer Information Systems, 57*(4), 319-329.
[7] Puspitasari, N., Lestari, R., Taruk, M., & Maria, E. (2019, October). Website Testing Analysis Using PIECES and EUCS Method. In *2019 International Conference on Electrical, Electronics and Information Engineering (ICEEIE)* (Vol. 6, pp. 298-302). IEEE.
[8] Hardyanto, W., Sugiyanto, S., Purwinarko, A., & Adhi, A. (2019). Research on Academic Information System Unnes Using Technology Acceptance Model (TAM). *UNNES International Conference on Research Innovation and Commercialization 2018*, 21–28. Semarang: KnE Social Sciences.
[9] Soumik, M. M. J., Farhavi, S. S. M., Eva, F., Sinha, T., & Alam, M. S. (2019, December). Employing Machine Learning techniques on Sentiment Analysis of Google Play Store Bangla Reviews. In *2019 22nd International Conference on Computer and Information Technology (ICCIT)* (pp. 1-5). IEEE.
[10] Almarashdeh, I. (2016). Sharing instructors experience of learning management system: A technology perspective of user satisfaction in distance learning course. *Computers in Human Behavior, 63*, 249-255.
[11] Gao, M., Kortum, P., & Oswald, F. (2018). Psychometric evaluation of the use (usefulness, satisfaction, and ease of use) questionnaire for reliability and validity. In *Proceedings of the human factors and ergonomics society annual meeting* (Vol. 62, No. 1, pp. 1414-1418). Sage CA: Los Angeles, CA: SAGE Publications.
[12] Kusuma, W. A., Noviasari, V., & Marthasari, G. I. (2016). Analisis Usability dalam User Experience pada sistem KRS online UMM menggunakan USE Questionnaire. *Jurnal Nasional Teknik Elektro dan Teknologi Informasi (JNTETI), 5(4), 294-301*.
[13] Cai, S., Qin, Y., Rao, J. N. K., & Winiszewska, M. (2019). Empirical likelihood confidence intervals under imputation for missing survey data from stratified simple random sampling. *Canadian Journal of Statistics, 47*(2), 281-301.
[14] Sahid, N., Rahim, R., Hamzah, B., & Mulyadi, R. (2019). Analysis of Indoor Thermal Comfort of Room Space in the International Standard Hotel Building. *Advances in Social Sciences Research Journal, 6*(2), 504-527.
[15] Jegundo, A. L., Dantas, C., Quintas, J., Dutra, J., Almeida, A. L., Caravau, H., Pacheco R, N. (2020). Perceived Usefulness, Satisfaction, Ease of Use

and Potential of a Virtual Companion to Support the Care Provision for Older Adults. *Technologies*, *8*(3), 42.
[16] Suwargiani, A. A., Pribadi, I. M. S., Hidayat, W., & Yasrin, T. A. (2016). Validation and reliability of Oral Health Impact Profile-14 questionnaire among pregnant woman. *Padjadjaran Journal of Dentistry*, *28*(2).
[17] Jain, S., & Angural, V. (2017). Use of Cronbach's alpha in dental research. *Medico Research Chronicles*, *4*(03), 285-291.
[18] Jubaedah, Y., Yulia, C., Muktiarni, M., & Maosul, A. (2020). Usability testing electronic rubric of performance assessment. *Journal of Physics: Conference Series* (Vol. 1456, No. 1, p. 012016). IOP Publishing.
[19] Hasan, K., Zainal, Z., & Suhadjerah, S. (2020). The Development of Learning Media of Pakakala Boardgame. *Journal of Educational Science and Technology (EST)*, *6*(1), 48-55.
[20] Lue, H. C., Su, Y. C., Lin, S. J. S., Huang, Y. C., Chang, Y. H., Lin, I. H., & Yang, S. P. (2020). Taipei consensus on integrative traditional Chinese and Western Medicine. *Journal of the Formosan Medical Association*.
[21] Hertel-Joergensen, M., Abrahamsen, C., & Jensen, C. (2018). Translation, adaptation and psychometric validation of the Good Perioperative Nursing Care Scale (GPNCS) with surgical patients in perioperative care. *International journal of orthopaedic and trauma nursing*, *29*, 41-48.