Analysis of E-learning implementation using Human Organization Technology approach (HOT) Fit Models

Alfina[1], Rahmatul Irfan[2]

[1] S2 Pendidikan Teknik Elektronika & Informatika, PPs, UNY, finaa636@gmail.com

[2] Dosen Pendidikan Teknik Elektronika & Informatika, PPs, UNY, irfan@uny.ac.id

Abstract. B-Smart E-Learning system is used to support the learning process in educational institutions to improve the quality of learning. The analysis conducted on the implementation of the UNY B-Smart E-Learning aims to measure the benefits gained from the use of E-Leraning. Previously, B-Smart E-Learning has not been known to provide good analysis inof bo term of Human, Organisation, Technology and users. This study aims to deepen, prove again and give meaning to the results of quantitative and quantitative research on the analysis of elearning implementation using the Human Organisation Technology approach. This research is a combination of research (mixed methods) with sequential explanatory research type. The measure of elearning implementation at UNY uses a questionnaire arranged according to the Likert scale model with a population of 25,273 people and a sample of 100 people. Based on research that has been done, the overall reliability value obtained is 0.820 with a very strong reliable interpretation.

1. Introduction

Current technological developments and advancements are remarkable, which can result in positive and negative impacts. One of the positive impacts is utilizing the media and information can be accessed from various places that have an Internet connection. Information Technology (IT) has grown very rapidly. This brings influence on the development of many areas of human life, covering trade economics/business, social, health, education, transportation, banking, etc. The field of education is one affected by of IT development. The impact of IT development is one of the building of electronic learning system (e-learning) to improve the effectiveness and efficiency of learning so as to improve the competence and quality of human resources. Improving the quality of education is an important thing that every educational institution should do. Utilization of science and technology advances need to be done in order to be able to achieve organizational objectives effectively and efficiently. .

Technology has become part of the lifestyle of Indonesian people, the progress is remarkable especially in the field of computers both its designer and software. Almost every month, designers, manufacturers, computer technology experts continuously conduct research and technological development. To optimize the utilization of information technology in the learning activities, the Yogyakarta State University has built a learning system online by using the B-Smart E-Learning. Be-Smart is a Moodle-based elearning. Be-Smart is implemented with the Learning Management System (LMS).

The Be-Smart was first developed using Moodle 1.9 which was modified and adapted to the needs of UNY's academic civitas. The application used to develop e-learning is open source Moodle. It is located at http://besmart.uny.ac.id. In 2014 UNY did the e-learning development of Be-Smart using the latest Moodle version 2.9, accessible via http://besmart.uny.ac.id/v2. Be-Smart V2 has been using Single Sign On (SSO), so students and lecturers only use 1 username and password. With e-learning, students can access the lecture materials, conduct discussions on the forum, and also send them files for lecture purposes.

 Implementation analysis of the B-Smart E-Learning at Yogyakarta State University can be measured by one of the theoretical approaches that will describe the level of technology acceptance of Human

Organization Technology (HOT) fit Models. Analysis by using this HOT model will generate great influence for users in utilizing technology for learning. HOT models are applied in various fields of science, one of which is technology and education. Hope for the organization to e-learning related organizations can facilitate students and lecturers in learning Limited time distance. How ever, at present in implementation, learning system is not yet well-run and in accordance with university expectations. Therefore, this research is very good for the advancement of elearning implementation in the future.

Based on the preliminary study through observation using interview techniques on May 9th, 2018 with Mr. Dr. Priyanto, M. Kom. As head of the center and Father Dr. Rahmatul Irfan as the head of education and training in center UNY said that during the implementation of e-learning at UNY has never done evaluation based on Human Organization Technology but so far E-Learning implementation has reached 42% of lecturers who use and received several awards, namely from the Ministry of Education in the year 2009, the Minister of National training in the year 2010, Education Festival in 2010 and INACTA in the year 2012. And through continued observation using interview techniques on November 6, 2018 with Prof. Dr. Margana, M. Hum., M.A. as Vice Rector 1 said that the utilization of learning has been long from the year 2014/2015 so that lecturers can utilize elearning for 4 times face-to-face of 16 meetings, based on academic rules and rector No. 14 of 2018 published in the year 2015. In 2014/2015 already 300 from 1040 UNY lecturers from various faculties based on proportions have participated in e-learning training to develop the use of elearning in learning to achieve academic goals, and expectations from the college In the next 3 or 4 years, already all lecturers utilize elearning in learning. Policies on lecturers and students in terms of human needs to conform to academic and developmental regulations, while in terms of policy organizations from UNY based on academic regulations and in terms of the technology of the institution Provides WiFi facilities from several points.

The problem in this research is how the influence of user factors, especially human, organization and technology to the development and analysis of e-Learning at the Yogyakarta State University. So that from the results of the analysis can be used as a reference to improve or improve UNY e-learning and develop the potential that still exists, to be better, perfect, and can support the purpose, vision, and mission Yogyakarta State University.

This research focuses on the development and analysis of e-learning implementation in the Yogyakarta State University as a whole, where the analysis of the success rate will be using Human Organization Technology Fit Model. This method is used because the component in a technology includes human resources (Human) namely that the assessment of the implementation of e-learning is the user (System use), where the user is intended in the study focuses Human resources that are lecturers and students. The next important component is the organization in which this analysis is conducted by assessing the organizational structure and organizational environment that is closely related to planning, management, system control and financing. Third component is technology, where the analysis aims to measure whether e-learning used has a quality system and quality benefits or there is a shortage so that e-learning does not run with maximum.

2. Basic Theory

This type of research is combination research (Mixed Methods). A combination research method (Mixed Methods) according to Sugiyono (2013:19) is a research method combining or combining quantitative research methods and qualitative methods to be used jointly in an activity Research, thereby obtaining more comprehensive, valid, reliable and objective data. According to Sugiyono (2013:282) The research model used is sequential explanatory (proof order). This method is used when researchers want to deepen, reprove and give meaning to the results of quantitative research obtained in the first phase of research with qualitative data obtained from phase two research.

The research was conducted in March 2019 to April 2019. The study population is all UNY students and lecturers active in period 2018/2019. Sampling of research is done by random sampling technique. The

samples used in this study were 100 students and 30 lecturers, consisting of: FIP with a total of 14 student respondents and 4 lecturers, FMIPA with a total of 12 students and 3 lecturers, FBS with 16 respondents Students and 5 lecturers, FIS with a total of 12 students and 3 lecturers, FT with a total of 16 students and 7 lecturers, FO with the number of 9 students and 3 lecturers, FE with the number of 9 students and 4 lecturers, and post with the number of 12 respondents Students and 3 lecturers.

The collection of data in this study used structured interview techniques and questionnaires with 4 answers "highly agreed", "agreed", "disagreed", and "highly disagree". Questionnaire technique to know the percentage level of elearning implementation analysis. Interviews are used for the data amplifier percentage of elearning implementation analysis. A questionnaire data analysis technique uses quantitative analysis and analysis of data interviews using qualitative analysis. Questionnaire scoring method is based on the Likert scale with the answer "highly agree worth 4", "agreed worth 3", "disagreed worth 2", and "very disagree" is worth 1.

2.1 Implementasi

According to Alwi in Kamus Besar Bahasa Indonesia (2005:427), implementatio in each formulation of a policy whether it concerns programs or activities is always accompanied by an implementing action or implementation. Because no matter how good a policy is without implementation, it will not be much meaningful. The word implementation stems from the activity, action, or mechanism of a system. Simple implementation can be meaningless implementation. Implementation of a process of interaction between a device and a goal that can be able to achieve it.

2.2 E - learning

According to Waller and Wilson (2002; 91) e-Learning studies have begun in the 1970 's, but according to Kamarga (2002:55) began to be commercial and thriving since the 1990 's period. E-Learning is an implementation of technology that is relatively New to Indonesia, became commercially known in 1995 when IndoInternet opened its services as the first Internet service provider. E-Learning consists of two parts, according to the abbreviation "E" on the term E-learning which means electronic and learning which means learning. So according to Soekartawi (2003:72) e-learning means learning by using services or assistance of electronic devices, especially computer devices or often called on-line courses.

According to Dian and Rakhmat, (2017:3) the first e-learning definition was presented by Gilbert & Jones (2001:7) and Michael (2013:32) explaining that e-learning is all about learning activities that utilize electronic media to Learn. This definition emphasizes the use of electronic tools to help people learn. The second definition was put forward by Hartley (2001:7), Rosenberg (2001:15), and Kamarga (2002:61) explaining that e-learning is the use of Internet technology and networked computers to help the human learning process. E-Learning was created to facilitate the execution of distance learning or distance learning. Distance learning is a form of learning where learners and educators are separated by distance and time. E-Learning was first introduced by the Illonist University at Urbana-Champaign by using computer-Assisted Instruction and a computer called PLATO.

2.3. *Human Organization Technology* (HOT)

According to Nugroho (2008:180) There are several models that are often used for information systems evaluation, among them the Human Organization Technology (HOT) Fit Model. This Model is critical components in information system human, organization and technology.
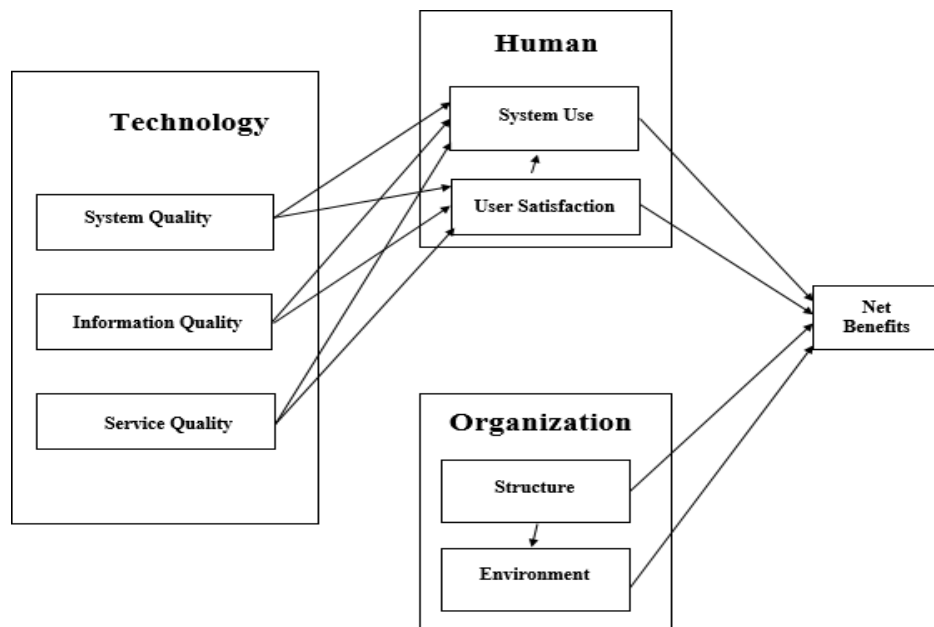
Figure 1. HOT Fit Model (Yusof et al 2006)

Based on the description of theories and skeletal thinking, hypotheses on this research can be formulated as follows:

H1   :   There is a significant relationship between system quality and system usage at the Be-Smart e-Learning of Yogyakarta State University.

H2   :   There is a significant relationship between system quality to user satisfaction in the Be-Smart e-Learning of Yogyakarta State University..

H3   :   There is a significant relationship between the quality of information to system users on the Be-Smart e-Learning of Yogyakarta State University.

H4   :   There is a significant relationship between quality information on user satisfaction at the Be-Smart e-Learning of Yogyakarta State University.

H5   :   There is a significant relationship between the quality of service to system users on the Be-Smart e-Learning of Yogyakarta State University.

H6   :   There is a significant relationship between quality of service to user satisfaction at the Be-Smart e-Learning of Yogyakarta State University.

H7   :   There is a significant relationship between user satisfaction to system users in the Be-Smart e-Learning of Yogyakarta State University..

H8   :   There is a significant relationship between system users to Net Benefit at the Be-Smart e-Learning of Yogyakarta State University.

H9   :   There is a significant relationship between user satisfaction to Net Benefit at the Be-Smart e-Learning of Yogyakarta State University.

H10   :   There is a significant link between organizational structure to the organizational environment at the Be-Smart e-Learning of Yogyakarta State University.

H11   :   There is a significant link between the organizational structure of Net Benefit at the Be-Smart e-Learning of Yogyakarta State University.

H12   :   There is a significant relationship between the organization environment on Net Benefit at the Be-Smart e-Learning of Yogyakarta State University.

a. Human

According to Husen and Wibowo (2006:136), man as a provider and user of information is an integral part of the information system. An understanding of the human element helps understand why a system is not suitable for everyone. Human components assess the information system from the System use and user satisfaction. The system use also relates to who uses it (who use it), expectations, the attitude of receiving (acceptance) or rejecting (resistance) systems, and training. This component also assesses the system from user satisfaction aspect. User satisfaction can be attributed to the perception of benefits (usefulness) and user satisfaction of information systems influenced by personal characteristics.

b. Organization

According to Husen and Wibowo (2006:43), the organization is a formal and stable structure that requires the resources of the environment and processes it to produce the output. Organizational components assess the system from aspects of structure and environment. The structure consists of management, communication and support.

c. Technology

According to Kadir (2003:13), information technology is all forms of technology applied to process and transmit information in electronic form. The technology component assesses the information system from the system quality, information quality, and service quality.

3. Data Analisis

Analysis of the implementation of the B-Smart E-Learning UNY system using the primary data obtained from the distribution of questionnaires to respondents using E-Learning. The process of data analysis will be carried out in the following phases, namely the validity testing, reliability and correlation analysis.

3.1 Validity testing

The following table results in testing the validity of research instruments.

Tabel 1. Validity test Results

VALIDITY TEST QUESTIONNAIRE			
NO	R_{hitung}	R_{tabel}	Information
1	0.485	0.195	Valid
2	0.385	0.195	Valid
3	0.452	0.195	Valid
4	0.473	0.195	Valid
5	0.407	0.195	Valid
6	0.269	0.195	Valid
7	0.266	0.195	Valid
8	0.402	0.195	Valid

9	0.397	0.195	Valid
10	0.290	0.195	Valid
11	0.283	0.195	Valid
12	0.431	0.195	Valid
13	0.501	0.195	Valid
14	0.412	0.195	Valid
15	0.497	0.195	Valid
16	0.450	0.195	Valid
17	0.288	0.195	Valid
18	0.286	0.195	Valid
19	0.485	0.195	Valid
20	0.385	0.195	Valid
21	0.462	0.195	Valid
22	0.473	0.195	Valid
23	0.462	0.195	Valid
24	0.385	0.195	Valid
25	0.452	0.195	Valid
26	0.445	0.195	Valid
27	0.407	0.195	Valid
28	0.431	0.195	Valid
29	0.520	0.195	Valid
30	0.412	0.195	Valid

Based on table 1, all statement items in the questionnaire are valid so that they can be used in research.

3.2 Reliability Testing

The following table results in testing the reliability of research instruments.

Tabel 2. Variable Reliability test Results

Sub Variabel	Question Item	Cronbach's Alpa	Reliability Information
System Use	5	0.611	Strong
User satisfaction	3	0.313	Low
Structure	3	0.426	Strong enough
Environment	3	0.528	Strong enough
System Quality	4	0.403	Strong enough
Information Quality	5	0.492	Strong enough
Service Quality	4	0.484	Strong enough
Net Benefit	3	0.532	Strong enough

Based on table 2, all sub variables with a total of 30 item statements, have Cronbach's Alpha above 0.4. Of the 8 sub variables there are 5 sub variables with Cronbach's Alpha value of more than 0.7 which indicates the sub-variables have strong reliability. Then the measuring instrument can be concluded in this research is reliable.

Tabel 3. Overall reliability test Results

Reliability Statistics

Cronbach's Alpha	N of Items
.820	30

According to table 3, the overall variable is worth Cronbach's Alpha above 0.8 with very strong interachievements, which means the variables in this research are reliable.

3.3 Analysis Coefficient of correlation

The following are the results of the correlation analysis.

Tabel 4. HOT-Fit Sub-Variable analysis

No	Sub variables	Correlation value	Relationship level
1	KS – PS	0.323	Low
2	KS – KP	0.329	Low
3	KI – PS	0.544	Strong enough
4	KI – KP	0.054	Very low
5	KL – PS	0.954	Very strong
6	KL – KP	0.183	Very low
7	KP – PS	0.160	Very low
8	PS – NB	0.028	Very low
9	KP – NB	0.174	Very low
10	SO – LO	0.101	Very low
11	SO – NB	0.115	Very low
12	LO – NB	0.992	Very strong

The relationship of each sub-variable found in numbers 4, 6, 7, 8, 9, 10 and 11 shows very low interachievements. The numbers 1 and 2 show Low interachievements. Number 3 Indicates the interachievement is quite strong. The numbers 5 and 12 show very strong interachievements. Which means there needs to be an upgrade of each sub variable.

3.4 Analysis of significance test

Here are the results of the significance test analysis.

Tabel 5. HOT-Fit Sub-Variable analysis

No	Sub Variabel	Uji t $T_{hitung} >/< t_{tabel}$	Ket
1	KS – PS	3,375 > 1,661	Significant
2	KS - KP	3,444 > 1,661	Significant
3	KI – PS	6,422 > 1,661	Significant
4	KI – KP	0,532 < 1,661	Not significant
5	KL – PS	31,520 > 1,661	Significant
6	KL – KP	1,844 > 1,661	Significant
7	PS – KP	1,608 < 1,661	Not significant
8	PS – NB	0,276 < 1,661	Not significant
9	KP – NB	1,784 > 1,661	Significant
10	SO – LO	1,009 < 1,661	Not significant
11	SO – NB	1,143 < 1,661	Not significant
12	SO – NB	79,736 > 1,661	Significant

The corelation of each sub variable in numbers 4, 7, 8, 10, and 11 not significant results. While the numbers 1, 2, 3, 5, 6, 9 and 12 significant results.

4. Clonclusion

The conclusion of the study is:

1. Sub variable System Quality There is a low value corelation with the system use of 0323. Test of significant using the test obtained T_{hitung} of 3,375 is greater than a this of 1,661 at a significant level of 5%. Which means there is a significant corelation between system quality on of system use..

2. Sub variable System Quality There is a corelation that is low value to user satisfaction of 0329. Test of significance using the test obtained T_{hitung} of 3,444 is greater than a this of 1,661 at a significant level of 5%. Which means there is a significant corelation between the system quality on of user satisfaction.

3. Sub variable information quality there is a corelation that is strong enough to system use of 0544. Test of significance using the test obtained T_{hitung} of 6,422 is greater than a this of 1,661 at a significant level of 5%. Which means there is a significant corelation between information quality on of system use.

4. Sub variable information quality There is a very low value relation to user satisfaction of 0054. Test of significance using the test obtained T_{hitung} of 0532 is smaller than a this of 1,661 at a significant level of 5%. Which means there is no significant corelation between information quality on of user satisfaction.

5. Sub variable service quality there is a very strong corelation with the system use of 0954. Test of significance using the test obtained T_{hitung} of 31,520 is greater than a this of 1,661 at a significant level of 5%. Which means there is a significant corelation between service quality on of system use.

6. Sub variable service quality there is a very low value corelation to user satisfaction of 0183. Test of significance using the test obtained T_{hitung} of 1,844 is greater than a this of 1,661 at a significant level of 5%. Which means there is a significant corelation between service quality on of user satisfaction.

7. Sub User Satisfaction variables There is a very low value corelation to the system use of 0160. Test of significance using the test obtained T_{hitung} of 1,608 is smaller than a this of 1,661 at a significant level of 5%. That means there is no significant corelation between user satisfaction on of system use.

8. Sub variable system usage there is a very low value relation to net benefit of 0.028. Test of significance using the test obtained T_{hitung} of 0276 is smaller than a this of 1,661 at a significant level of 5%. That means there is no significant corelation between system use on of net benefit.

9. Sub User Satisfaction variables There is a corelation that is very low value to the net benefit is the equivalent of 0.174 test significance using T-Test obtained T_{hitung} amounting to 1,748 greater than this of 1,661 at a significant level of 5%. That means there is a significant corelation between the satisfaction on of net benefit.

10. Sub variables Structure There is a very low-value corelation to the environment of 0101. Test of significance using the test obtained T_{hitung} of 1,009 is smaller than a this of 1,661 at a significant level of 5%. That means there is no significant corelation between structure on of environment.

11. Sub variables Structure There is a very low value corelation to net benefit of 0115. Test of significance using the test obtained T_{hitung} of 1,143 is smaller than a this of 1,661 at a significant level of 5%. That means there is no significant corelation between structure on of net benefit.

12. Sub variables environment there is a very strong corelation to the net benefit of 0992. Test of significance using the test obtained T_{hitung} of 79,736 is greater than a this of 1,661 at a significant level of 5%. That means there is a significant corelation between environment on of net benefit.

Advice:

1. B-Smart E-Learning UNY as a service provider, it is advisable to further improve the socialization of B-Smart E-Learning to users, in order to increase the use and leverage of B-Smart's E-Learning in learning.

2. In the implementation of the Be-Smart e-Learning need to add notification features directly connected to the Gmail that has been registered in the university account, so that students and lecturers get faster notice regarding information about Lecture.

5. References

[1] Alwi, Hasan. 2005. *Kamus Besar Bahasa Indonesia*. Jakarta: Balai Pustaka.

[2] Dwi Krisbiantoro. (2015). Evaluasi Keberhasilan Implementasi Sistem Informasi Dengan Pendekatan Hot Fit Model (hal. 6). Yogyakarta: Dwi Krisbiantoro1.

[3] Frincy Poluan, dkk. (2014). Evaluasi Implementasi Sistem E-Learning Menggunakan Model Evaluasi Hot Fit Studi Kasus Universitas Sam Ratulangi (hal. 6). Yogyakarta: Frincy Poluan1.

[4] Kadir, Abdul. 2003. *Pengenalan Sistem Informasi.* Yogyakarta: Andi.

[5] Musrifah. (2017). *Implementasi Teknologi Informasi Menggunakan Human Organisation Technology (HOT) Fit Model di Perpustakaan Perguruan Tinggi* (hal. 21). JIPI.

[6] Priyanto, D. (2017). E-learning sebagai Sistem Sosio-Teknis : Strategi pengembangan E-learning di Pendidikan Vokasi untuk Meningkatkan Penerimaan pengguna. Prosiding Seminar Nasional Pendidikan Vokasional (hal. 8). Yogyakarta: Priyanto.

[7] Sarjono, Hariadi dan Julianita, winda. 2011. *SPSS vs LISREL Sebuah Pengantar Aplikasi Untuk Riset*. Jakarta : Salemba Empat.

[8] Sugiyono. 2013. *Metode Penelitian Pendidikan*. Bandung : Alfabeta.

[9] Sugiyono. 2013.*Metote Penelitian Kombinasi (Mixed Method)*. Bandung: Alfabeta.

[10] Yusof, 2006. M.M ., Paul R.J., & Stergioulas, L.K, *Towards a Framework for Health Information Systems Evaluation*, Proceedings of the 39th Hawaii International Conference on System Sciences. Hal 1-10.