PalArch's Journal of Archaeology of Egypt / Egyptology

ASSESSMENT OF E-LEARNING IMPLEMENTATION SUCCESS

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Rima Rachmawati, Shinta Dewi Herawati. Assessment of E-Learning Implementation Success-- Palarch's Journal of Archaeology Of Egypt/Egyptology 17(10), 1499-1510. ISSN 1567-214x

Keywords: e-learning, instructor characteristic, student characteristic, technology, institution support, accounting program, CFA.

ABSTRACT

The purpose of this research is to study the success factors of e-learning learning in the Widyatama University accounting study program. The number of samples 265, data analysis with confirmatory factor analysis, latent variables consist of instructor characteristics, student characteristics, technology, university support. The results of the study stated that the strongest relationship was students' characteristics and technology. The results of this study are important for self-evaluation material for accounting programs for distance education programs.

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INTRODUCTION

Indonesian Minister of Education Regulation Number 44 the Year 2015 set learning standards including group discussions, simulations, case studies, collaborative learning, cooperative learning, project-based learning, problem-based learning, and other learning methods that can facilitate the achievement of graduate profiles.

The era of the industrial revolution 4.0 was marked by the presence of digitalization in the life of human civilization, forcing humans to be able to adapt to new literacy. The new literacy unites data literacy, technology literacy and human literacy (Rozak, 2018). Data literacy is an understanding of reading, analyzing, using data and information in the digital world. Technology literacy is understanding the workings of machines, and the application of technology

(coding, artificial intelligence, and engineering principle), and human literacy is an understanding of humanities, communication and design (Panduan Penyusunan Kurikulum Pendidikan Tinggi di Era Industri 4.0, 2018).

Higher education must be able to score graduates with literacy, namely by applying a combination of traditional learning methods, namely face-to-face in class and online learning using information technology. This online combined face-to-face learning method is referred to as blended learning.

Learning is grouped into face-to-face learning, e-learning, and a combination of them. The difference between them can be distinguished based on point of view including the focus, of course, the focus of content, form, time, place, flexibility, content, number of students, instruction preparation, distribution of materials, interaction, and range of interactivity (Eryilmaz, 2015).

Blended learning is the process of combining many different ways in which students learn through the use of virtual and physical resources that contain multiple learning activities using technology, combining face-to-face instructions with instructions available on a computer (Noh et al., 2012).

E-learning learning methods have become a trend nowadays, which allows students to learn more effectively by being able to find material doing assignments or quizzes without direct contact with other e-learning users (Luaran, Samsuri, Nadzri, & Baharen, 2014).

The Message of the Minister of Education (Nasir, n.d.-a) states that in the future the use of class will be reduced because learning the concept of e-learning can be done anywhere and anytime. With the hope that e-learning will be able to increase Indonesia's gross enrollment rate because currently, the gross enrollment rate is only 34.58. Nevertheless, the message (Nasir, n.d.-b) that learning by e-learning must be balanced by increasing the competence of lecturers.

Widyatama University since 2012 has implemented a mixed learning system. This research was conducted in the accounting study program and the aim is to find out the factors that determine the success of learning implementation using the e-learning approach.

Based on the above background, the researcher wants to know the development of the implementation of e-learning at Widyatama University today, aside from being a reference for self-evaluation as well as wanting to develop knowledge in the field of e-learning. By looking at the factors that support the success of learning with e-learning through data analysis Confirmatory Factor Analysis (CFA).

THEORETICAL REVIEW

In the era of industry 4.0 and the demands of the Indonesian government for data, technology, and a human literacy, there is a blended learning model as a way to foster interactive learning experiences in an interesting way (Garrison & Kanuka, 2004; Suherdi, 2019; Saudi, 2018) The industrial revolution has always resulted in complex changes in various fields, including education, so it is necessary to make adjustments through the use of information technology in teaching.

Blended learning is learning with a mixed approach between face to face with online (Bowyer & Chambers, 2017). For example, in the Widyatama University accounting study program applying to cost accounting courses with 14 times face-to-face 30% submitted online and the remaining 70% delivered face-to-face. This can increase the interest of students to attend these courses compared to only using face-to-face learning methods. Following the opinion (Bowyer & Chambers, 2017) that Blended learning is generally applied in tertiary institutions. E-learning is a popular mode for delivering educational material to tertiary institutions by universities around the world (Bhuasiri, Xaymoungkhoun, Zo, Jeung, & Ciganek, 2012). Blended learning research has been widely applied by utilizing the advantages of information technology because online is more readily accepted (Wright, 2017).

Learning methods with the e-learning approach can be said to be successful with the use of system design where the components and factor systems have an important role to ensure the success of the e-learning system operates as it should. The instructor is an important part of the successful implementation of e-learning. To measure the role of the instructor using the DeLone & McLane model (Yengin, Karahoca, & Karahoca, 2011).

The advantages of e-learning are that lecture assignments can be offered flexibly, reduce costs, students can study at any time as long as internet and computer access is available, the efficacy of the online use system builds student confidence and encourages students to be responsible (Bowyer & Chambers, 2017).

Besides the advantages of blended, there are also disadvantages to the use of e-learning can reduce the interaction between students and teachers, depending on the availability of computers and internet networks to carry out learning activities (Ciftci & Tabak, 2012)

Research on bladed learning has been carried out, among others (Eryilmaz, 2015) at Atilim University, Turkey. The results of the study stated that blended learning is effective learning, with the support of learning designs in the form of online material, forums, examinations, texts, images, and videos (Eryilmaz, 2015). This research will highlight e-learning learning in the Widyatama University Accounting Study Program, using indicators used by researchers (Selim, 2007).

Other research that discusses the factors supporting the success of e-learning include: (Alhomod & Shafi, 2013) using 11 success factors, namely sufficient users training, organization commitment, management support, technical support, positive attitude of users, easy to use tools, sufficient training to engineers, sufficient e-learning initiatives, sufficient manpower, availability of Info on e-learning website, support from other Departments. The same thing (Yengin et al., 2011) e-learning success models serve as a guide for e-learning design, online instructors and policymaking to understand interactions and usability outcomes related to instructor satisfaction.

In developing countries, e-learning success assessment factors consist of curriculum design to assess learning performance, technological awareness, motivation and behavior change (Bhuasiri et al., 2012). Indonesia as a developing country continues to make improvements in various aspects, with the belief that the satisfaction of users of e-learning systems will enhance e-learning learning (Tarigan, 2011). Research that links the use of e-learning with student performance has been carried out among them (Youssef & Dahmani, 2008) that information and communication technology has been able to improve student performance.

An educational environment with new literacy incorporates elements of technology, (Purnawarman & Sundayana, 2016) Technological developments contribute to creating a new learning environment. Research (Suherdi, 2019) provide alternative solutions in the face of the industrial revolution by applying the Information & Communication Technology model to learning in English, the results of the study prove that the model is able to increase student motivation in utilizing digital devices and also be able to trigger student creativity. Other researches that link instructors with students have been carried out by (Herlinakarjo, 2011) the results state there are differences of opinion between instructors and students related to learning strategies. Research result (Herlinakarjo, 2011) be a framework for researchers to formulate hypotheses.

RESEARCH METHODOLOGY

Factor analysis is a way to find or get several indicator variables that can maximize the correlation between indicator variables. Factor analysis in this study uses confirmatory type intending to find several variable indicators that form variables that are not measurable directly based on existing theories (Widarjono, 2015). While the model used is the first level confirmatory model because there is only one latent variable formed from several indicators. There are four latent variables in this study with each manifest variable. Data analysis to answer the hypothesis consists of the model feasibility test, significance test, and correlation test.

The research method uses quantitative data. Data collection techniques by distributing questionnaires to students who are taking courses with e-learning systems (Sugiyono, 2014). The sampling technique uses purposive sampling by

using considerations to find out the successful implementation of e-learning in the accounting study program at Widyatama University.

RESULTS AND DISCUSSION

The learning method referred to in this study is e-learning learning. Learning tools used e-learning, electronic books, electronic articles, video learning on the internet, virtual reality, e-learning applications.

Research instruments using instruments from (Selim, 2007), (Alhomod & Shafi, 2013), (Yengin et al., 2011). Data was given to 265 (82% respondent rate) accounting study program students who were taking an even semester of the 2018/2019 academic year at Widyatama University in Indonesia. Purposive sampling is used in this study, the number of classes held in the current semester of research is 56 classes, by eliminating the same subjects so that the total sample is 26 classes. Descriptive analysis is explained by the average value and standard deviation of each latent variable in Table 1.

Table 1. Descriptive Statistics

Variable	Average	Std. Dev.	Max.	Min.	> Average	< Average
INS	3,82	0,51	5	2,15	118	98
STD	3,70	0,49	4,95	1,36	126	90
TEC	3,68	0,52	4,85	1,62	139	77
USP	3,78	0,57	5	2	145	71

Instructors characteristic (INS) is measured using 13 indicators and based on the results of the responses of respondents obtained an average score of 3.82 and closer to a score of 4 on a scale of 1-5. This means that in general students feel the instructors who teach in class when face to face has given good appearance, enthusiastic in explaining the material, presentation style that makes students focus on the material presented. Through the questionnaire submitted also, generally assume the instructor has a friendly attitude, feel the sincerity when serving student complaints in undergoing e-learning lectures, the instructor also provides an opportunity for students to argue with each other when there are differences of opinion, and generally, the instructor provides motivation to use e-learning.

Student characteristics (STD) are measured using 22 indicators and in general, students feel the learning system with the e-learning approach can motivate to seek more knowledge than the traditional approach because with e-learning information search can be done globally, can communicate with scientists others from various countries to add insight to the two scientists in collaborating science and research, the features in e-learning facilitate the search for material/ tasks/forums, and overall of 22 indicators responded with satisfied comments in the service of e-learning systems.

Technology (TEC) was measured using 13 majorities of e-learning participants at Widyatama University assessing the technology used in e-learning was adequate.

University support (USP) was measured using 5 indicators and most E-learning participants at Widyatama University felt strong support from the University. The number of respondents who scored above the average was more than the respondents who had scores below the average.

DATA ANALYSIS

This research wants to prove the factors that can support the successful implementation of e-learning in accounting study programs. Therefore, the tool used to process data is Confirmatory Factor Analysis (CFA). According to (Hair, Hult, Ringle, & Sarstedt, 2014) CFA tests the relationship between manifest variables (indicators) with latent variables.

However, before the data is processed the model compatibility test requirements need to be done. The following explanation of the stages of data analysis:

Goodness of Fit Test

Model suitability test to ensure that this study has described a good relationship between variables (Hair et al., 2014). Table 2 presents the results of the model compatibility test. Chi-Square value of 3060.1 did not give the expected results. With a p-value of 0.005, a good Chi-square value is under 0.005. However (Hair et al., 2014) recommend looking at the size of the compatibility of other models, namely RMSEA with a value of 0.078 (smaller than 0.08) indicating there are other expectations to mention the model has a good model. In addition to the RMSEA value, the size of the other NFI, IFI, NNFI model compatibility has a value greater than the 0.08 standard. So that it can be stated that the model gives good results meaning that there is a match between empirical and theoretical models so that the CFA measurement test can proceed.

Table 2. Model Match Test Results

The Goodness of Fit Size	Value of Estimated Results	Information
Chi-Square	3060,1 (p-value 0,000)	Not Fit yet
RMSEA	0,078*	Fit already
RMR	0,071*	Fit already
GFI	0,652	Not Fit yet
NFI	0,999*	Fit already
NNFI	0,937*	Fit already
IFI	0,940*	Fit already t
RFI	0,894	Not Fit yet
CFI	0,939*	Fit already

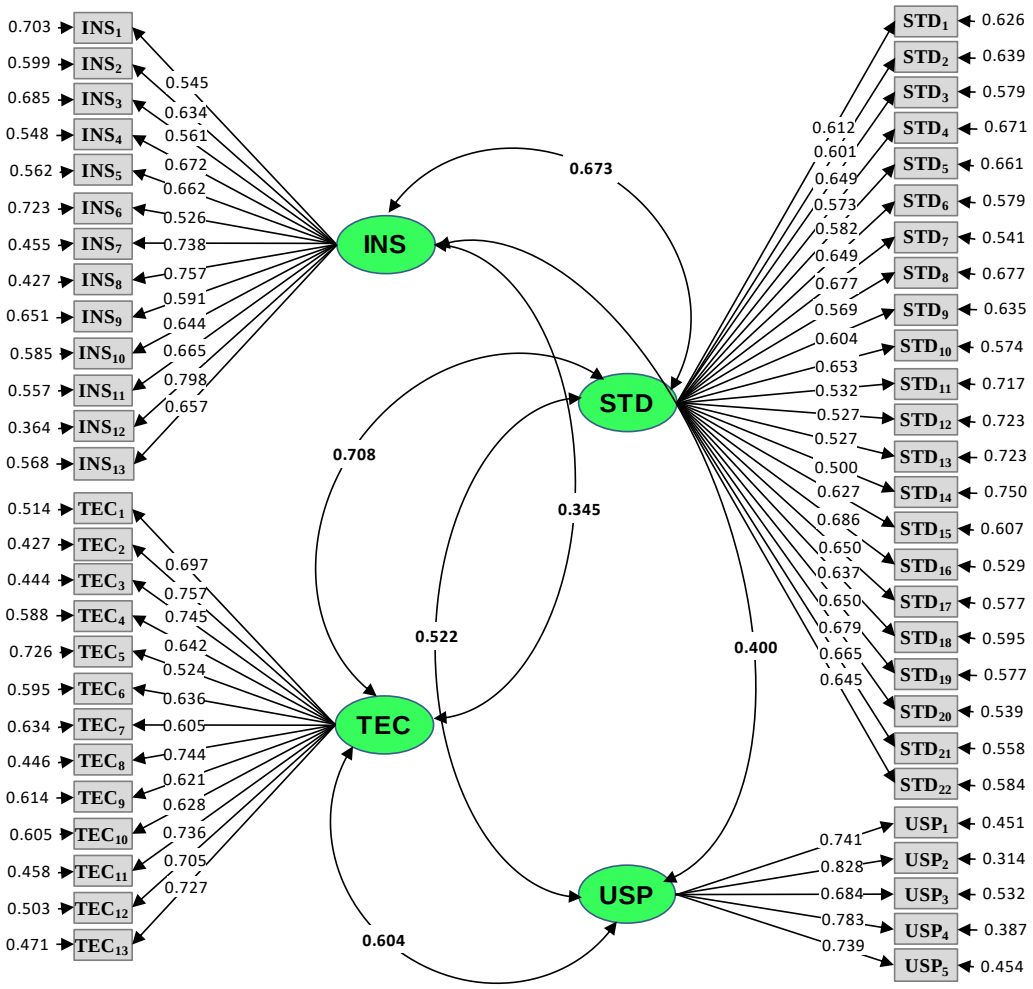
* meet good model criteria

Evaluation of the CFA Measurement Model

The CFA measurement model is a model that can confirm the model validation of indicators (Prudon, 2015). The CFA test provides a solution to determine the dominant factor in reflecting latent variables. According to (Hair et al., 2014) if

the manifest variable has a factor loading value less than 0.50 it must be removed from the model.

By using robust maximum likelihood estimation obtained a path diagram (full) model of the relationship between instructor characteristics, student characters, technology and university support in Figure 1.



The loading factor value generated is as expected by the researcher. In this case, the researchers expect a factor loading value above the standard (0.05). This indicates the manifest variable latent variables used in this study can be approached empirically so that in giving an argument approaching the reality as well. The following will explain the CFA results based on latent variables.

Through the weight of the factors in Figure 1 can be seen in the instructional characteristic latent variable (INS), INS12 indicator (Instructor encourages/motivates to use e-learning) most strongly in reflecting the instructional characteristic latent variable, whereas the INS6 indicator (Instructor provides opportunities for students to interact with each other) weakest in reflecting the latent variable Instructor characteristic. Then in the student

characteristic latent variable (STD), the STD16 indicator (Instructor uses e-learning features makes the delivery of material clear) the strongest in reflecting the student characteristic latent variable, whereas the STD14 indicator (Students mostly fill in discussion forums) is weakest in reflect latent student characteristic variables.

In the latent technology variable (TEC), the TEC2 indicator (No problems when browsing) is the strongest in reflecting the latent technology variable, whereas the TEC5 indicator (structured information is presented properly) is the weakest in reflecting the latent technology variable. Finally, the latent variable of university support (USP), the USP2 indicator (provided technical and technical support if there are obstacles) is the strongest in reflecting the latent variable of university support, whereas the USP3 indicator (perceiving Widyatama University's e-learning is good) is weakest in reflecting the latent variable of university support. Furthermore, to find out whether the indicators used to measure latent variables have a high degree of conformity, the calculation of construct reliability and variance is extracted.

Construct Reliability (CR) and Average Variance Extracted (AVE) Each Latent Variable

The Following are the results of the calculation of construct reliability and variance extracted for each latent variable.

Table 3. Construct Reliability (CR) and Average Variance Extracted (AVE) Each Latent Variable

Indicator	Loading Factor			
	INS	STD	TEC	USP
1	0,545	0,612	0,697	0,741
2	0,634	0,601	0,757	0,828
3	0,561	0,649	0,745	0,684
4	0,672	0,573	0,642	0,783
5	0,662	0,582	0,524	0,739
6	0,526	0,649	0,636	-
7	0,738	0,677	0,605	-
8	0,757	0,569	0,744	-
9	0,591	0,604	0,621	-
10	0,644	0,653	0,628	-
11	0,665	0,532	0,736	-
12	0,798	0,527	0,705	-
13	0,657	0,527	0,727	-
14	-	0,500	-	-
15	-	0,627	-	-
15	-	0,686	-	-
17	-	0,650	-	-
18	-	0,637	-	-
19	-	0,650	-	-
20	-	0,679	-	-

Indicator	Loading Factor			
	INS	STD	TEC	USP
21	-	0,665	-	-
22	-	0,645	-	-
CR	**0,906**	**0,930**	**0,916**	**0,870**
AVE	**0,429**	**0,379**	**0,459**	**0,572**

According to (Hair et al., 2014) construct reliability (CR) that is considered satisfactory is greater than 0.70 and the average variance extracted (AVE) is expected to be greater than 0.50. In the instructional characteristic latent variable, the extracted variance value of 0.429 indicates that on average 42.9% of the information contained in each indicator can be represented through the instructional characteristic latent variable. Then the construct reliability value of the instructional characteristic latent variable (0.906) is still greater than the recommended one which is 0.70.

Furthermore, in the student characteristic latent variable, the extracted variance value of 0.379 indicates that on average 37.9% of the information contained in each indicator can be represented through the student characteristic latent variable. Then the construct reliability value of the student characteristic latent variable (0.930) is still greater than the recommended value of 0.70.

In latent technology variables, the extracted variance value of 0.459 indicates that on average 45.9% of the information contained in each indicator can be represented through latent technology variables. Then the construct reliability value of the latent technology variable (0.916) is still greater than the recommended one which is 0.70. Finally, the latent variable of university support, the extracted variance value of 0.572 shows that on average 57.2% of the information contained in each indicator can be represented through the latent variable of university support. Then the construct reliability value of the university supports latent variable (0.870) is still greater than the recommended one which is 0.70.

The average variance extracted value can be seen that the relationship between indicators on the instructional characteristic latent variable and the latent technology variable is still weak. Even in latent variables, the student characteristic relationship between indicators is still too weak. While the relationship between indicators on the university support latent variables is already quite strong.

Among the four latent variables themselves, the strongest relationship is between student characteristics and technology. Instead, the weakest relationship is between instructor characteristics and technology.

CONCLUSION

The implementation of e-learning in the Widyatama University Accounting Study Program was analyzed through primary data collected with a sample of students using the e-learning method. This study produces two conclusions, namely descriptive results and CFA results. The descriptive analysis concluded that in general students felt an adequate role from instructors, technology, and university (institutional) support. The CFA results concluded the instructor's character with the strongest support from the motivational indicator from the instructor, the student's character received the strongest support from the discussion forum indicator, technology received the strongest support from the capacity indicator when browsing, institutional support received the greatest support from the satisfaction of getting e-learning services provided by the institution.

RECOMMENDATIONS

The results of this study provide recommendations for several parties, including; managers of the study program and subsequent researchers. Recommendations for managers of study programs, the results of this study can be used as a self-evaluation to submit proposals to open distance education. Distance education can provide several benefits, including people who are unable to distance because of the existence outside the city have the opportunity to experience education. So that the government hopes to create a prosperous society can be achieved. While the recommendation for future researchers is to add indicators or other factors that can be used as latent variables such as satisfaction with the quality of information systems, the role of administration at the University.

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