Sys Rev Pharm 2020;11(12):330-339
A multifaceted review journal in the field of pharmacy

PERCEIVED LEARNING ASSISTANCE AND PERCEIVED COMMUNITY BUILDING ASSISTANCE: STUDY ON E-LEARNING SYSTEM

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ABSTRACT

The study aims to examine the perception of the use e-learning in terms of outcomes for lecturers and students who were actively using E-learning. Total sample of this study were 98 respondents. The data col-lection method is carried out by a survey.

. Hypothesis' test in this study use uses smartPLS. The use of e-learning systems has a positive effect on perceived learning assistance, perceived community building, and the subsequent effect on perceived aca-demic performance between the lecturers and students group.

Keywords— E-Learning, Perceived Learning Assistance, Perceived Community Building Assistance, Per-ceived Academic Performance.

INTRODUCTION

An Internet-based learning system, known as E-learning, has become an indispen-sable tool in education. Universities which plan to implement e-learning, need to pre-pare the learning process of online models by utilizing typical facilities and infrastruc-ture in the era of the industrial revolution 4.0 (smart classrooms, augmented reality, artificial intelligence, virtual reality, data analytics, and 3D printing) which are not only focused on improving access and quality, but also the efficiency of the learning process [1].

One key to the success of e-learning activities is the existence of a learning man-agement system (LMS) that is a software that supports e-learning activities [2], [3]. LMS is an information technology that allows teachers (teachers, lecturers, instruc-tors) and students to share teaching materials, make class announcements, collect assignments, return assignments, and communicate each other online [4]. Meanwhile, LMS is also often defined as information technology that facilitates the implementa-tion of e-learning [5]. Some examples of LMS include: edmodo, blackboard, moodle, and google classroom.

Some universities and schools both in big cities and small cities have started to de-velop e-learning to facilitate the teaching and learning process for students and lec-turers. Based on KOMPAS.com, one of the faculties at Public Universities in Indone-sia, namely FISIP UI has officially had a special class for distance learning (Distance Learning Classroom). This class was originally a computer laboratory class which is later modified with some of the latest technology in collaboration with Busan Univer-sity of Foreign Studies, Republic of Korea, including Electronic Whiteboard Systems (E-Board Systems), Digital Information Display, and 3D Printers. With these technol-ogies, this is not only for face-to-face classes via connected screens, but the partici-pants in the two long-distance classes could also interact through one board that is connected in real-time. The latest technology in the field of communication and in-formation which is available in distance learning classes has become an indispensa-ble tool in the face of the Industrial Revolution 4.0.

The LMS model that is currently being implemented by LPPM Udayana Universi-ty is a moodle called E-Learning Unud. The lecturing implementation of using moo-dle e-learning at Udayana University is a combination of distance learning and face-to-face (conventional), so that the lesson materials taught are partly given through e-learning and partly through face-to-face (blended learning). Lecturers can upload lesson materials, assignments, or quizzes, as well as corrections and assessments. For discussion sessions, lecturers can hold an online forum. Thus, the interaction of lec-turers and students, students with other students can be carried out online.

The implementation of e-learning by educational institutions promises better quali-ty and student-centered education [6]. Besides facilities and infrastructure, Higher Education also needs to prepare e-learning users who understand the four compo-nents of science, namely: 1) changing the mindset and talent; 2) having an under-standing of humanity; 3) having a minimum competency of 4C who are skilled in the use of facilities and infrastructure in the era of 4.0 industrial revolution and; 4) hav-ing practical technical competencies that are facilitated through various competency improvement programs. Some advantages of LMS are expected to attract students' interest in learning effectively and efficiently. However, these advantages cannot be obtained if students are reluctant to use the provided LMS.

The total expenditure on e-learning in Indonesia has continued to increase over the past five years. Higher education will waste a lot of resources and become useless when students cannot accept the provided LMS [7]. The students' acceptance of information technology in the teaching - learning process, depends on users' satisfac-tion with the use of information technology [8]. Considering the big amount of in-

vestment in Higher Education resources in the E-Learning system, doing this research on the development of e-learning is important to do, one of them is how to keep e-learning in demand and become the main tool that is always visited by users during their education [9].

There were several studies previously that talked about the factors that influence people's satisfaction with the use of information technology. It was found that there was an influence of perceived usefulness (PU) and perceived ease of use (PEoU) towards satisfaction Reference [10]–[13] also found the effects of perceived enjoy-ment (PEJ) on satisfaction. Besides, [14]; [3] found the influence of computer self-efficacy (CSE) on the level of PEoU. [15] combined eight models of students' ac-ceptance of information technology to develop the Unified Theory of Acceptance and Use of Technology (UTAUT). The level of users' acceptance towards the appli-cation of e-learning systems at Udayana University can be measured by one theoret-ical approach that can describe the level of acceptance technologies, namely the Technology Acceptance Model (TAM).

Through TAM, it can be understood that the user's reaction and three perceptions of technology can influence his/her attitude in accepting the use of technology. The research on TAM has been carried out previously by several researchers on the appli-cation of different technologies to test the accuracy of TAM. The research was con-ducted by [16] concerning investigating e-learning system usage outcomes in the university context, [15], [17].

Based on the TAM model approach it can be said that the perceived e-learning system / perceived ease of use/fun is expected to engage students in a user-friendly environment and hence, offer opportunities for more effective learning and the col-laborative community building. Reference [5] found that the use of e-learning sys-tems affects the perception of the impact (perceived impact) on learning. Reference [18] revealed that a number of variables related to the quality of the e-learning envi-ronment affect satisfaction with e-learning, which in turn affects satisfaction aca-demic achievement. Reference [19] found a high correlation between intention to use e-learning and e-learning effectiveness. In connection with the explanation above, this study aims to measure the results of the adoption of e-learning systems with the variable perceived usefulness, perceived ease of use, e-learning system use, perceived learning assistance, perceiving community building assistance, and perceived aca-demic performance.

In our opinion, this research is important to be done due to several reasons. First, there have been many studies in Indonesia which have examined the determinants of the use of LMS, such as the research of [3], [20], [21] but only a small proportion examine the results (outcome). It is important to know satisfaction in terms of out-comes that can be used to evaluate the success of the e-learning system at Udayana University, and plan for its development in the future and achieve better learning outcomes. Second, this research focuses on the information technology object in the form of Moodle called E-Learning as an LMS that is being developed at Udayana University. Moodle is believed to have more advantages than other LMS such as easy to use, has a variety of features and learning content, and facilitates communi-cation like Facebook. Third, this research differs from research from [16] where this study compares the research subjects, namely student groups and lecturer groups. The reason for this selection is because the subjects who use the e-learning system at the University are lecturers and students so it is important to know the acceptance of this system not only from the recipient of learning material but also from the lecturer side as a learning facilitator.

Perceived usefulness is how far someone believes that by using a special system, he/she will improve his/her performance at work. Based on these definitions, it can be interpreted that utilizing an information technology system can improve the perfor-mance of its user. Users will utilize the information technology system if it proves useful in their work. According to [22], perceived usefulness (perceived usefulness) is the most significant and important construct that affects attitudes, behavioral inten-tions, and behavior in using technology compared to other constructs.

In addition to the expediency factor, the ease of using information technology sys-tems is also a factor for users to accept an information technology system. [15] said that perceived ease of use shows the impact on intention to behave through two causes, namely the direct impact on intention to behave (intention) and the indirect effect on interest in intention (intention) through perception perceived usefulness. The direct impact on intention to behave is that easy to use will mean potentially easy to increase technology acceptance. Indirect impacts explain the consequences of a situation, where something else is the same, easier to use technology will be more useful.

H_1: Perceived usefulness has a positive effect on the e-learning system used on the groups of lecturers and students

H_2: Perceived usefulness has a positive effect on perceived learning assistance on the groups of lecturers and students

H_3: Perceived usefulness has a positive effect on perceived community building assistance on the groups of lecturers and students

Perceived ease (perceived ease of use) is defined as the extent to which a person believes that using technology will be free of effort [23]. Research on individ-ual level technology adoption shows that trust, perceived benefits have a direct influ-ence on the use of the system [15], [23]. The perceived usefulness captures the in-strumental value of the e-learning system. An e-learning system can provide many useful features that can enhance student learning. If students believe that the e-learning system they use, enhances their learning, they are more likely to use the sys-tem as part of their course to read and download learning material and interact with other participants (participating in discussions, chatting, sending emails, etc.). The relationship between perceived benefits and e-learning system usage is supported by many previous studies [24], [25].

A useful e-learning system can help students to manage and control their learning process. For

example, students can download and read learning content at the ap-propriate time and speed. Even if students miss the lectures, they can catch up with others by taking online course pages. Previous studies have argued that when stu-dents have greater learning control, they achieve better learning outcomes [26]. This implies that a useful e-learning system can help students in learning by increasing their control of the learning process

Building social communities can be considered as part of the development of so-cial capital which broadly refers to resources that have accumulated through human relationships [27]. The e-learning system is seen as a collaborative information sys-tem because it contains many features that help participants to develop productive relationships through interactions with others [28]. Such a productive relationship is expected to develop a sense of belonging to the individual [29]. In the e-learning environment, educators play important roles such as encouraging participation and motivating collaboration among students. This activity is expected to increase stu-dents' knowledge sharing. Previous studies have argued that both ownership and sharing of knowledge are important criteria that can be met by a well-designed e-learning environment for community building [29].

Research on individual-level technology adoption further suggests that per-ceived ease of use influences system use [15], [23]. The effect of perceived ease of use on system use is not consistent in previous studies, especially for experienced users. Many studies show that when users become more experienced and more com-fortable with new systems, the effect of using convenience is felt to be reduced [15]. However, the relationship between perceived ease of use and system use has been confirmed by many studies in the context of the use of e-learning systems for in-stance [24].

Reference [30] suggested that the technical design and format of e-learning systems determine how effectively students collaborate and share content with each other. In other words, an easy-to-use e-learning system can help learning and build student communities. Students need minimal effort to manage and learn the func-tions needed from an easy-to-use e-learning system. As such, they can place more emphasis on content and learning activities rather than on system functionality.

H_4: Perceived ease of use has a positive effect on e-learning system use on the groups of lecturers and students

H_5: Perceived ease of use has a positive effect on perceived learning assistance on the groups of lecturers and students

H_6: Perceived ease of use has a positive effect on perceived community building assistance on the groups of lecturers and students

Previous research has shown that e-learning systems can help students in their learning in three ways: enhanced involvement [19], independent learning oppor-tunities [31], and faster information dissemination [32]. First, [30] argue that stu-dents' involvement can be greatly enhanced in an online learning environment if it is designed correctly. Previous research has also shown that the increasing student in-volvement can improve student problem solving and critical thinking skills [19]. This implies that the use of e-learning systems can improve student learning through in-creased involvement. Second, previous research has shown that the use of e-learning systems gives students the opportunity to learn independently [33]. Research by [31] argue that students are assumed to learn better when they find something themselves and when they control the pace of learning. This implies that the use of e-learning systems in the course can lead to increased learning effectiveness among students by giving them opportunities for independent learning

Reference [33] suggested that a well-designed and well-managed online course can increase social interaction, and thus create a collaborative community. Face-to-face activities between educators and students first give them the opportuni-ty to find out about each other and begin the process of building a collaborative community. Online activities then give students the opportunity to get to know and discuss their mutual interests on a particular topic. Many students might prefer to participate more in online discussions rather than face-to-face [34]. These students play a more active role in online discussions than they are in face-to-face class dis-cussions. Together, active online participation by students who use the e-learning system is expected to create a collaborative community. Previous literature found a strong relationship between the use of systems and social capital in different contexts such as the research of [35].

H_7: E-learning system use has a positive effect on perceived learning assistance on the groups of lecturers and students

H_8: E-learning system use has a positive effect on perceived community building assistance on the groups of lecturers and students

Collaborative social learning groups have been suggested to be important in face-to-face and online environments to achieve better learning outcomes by [25]. Stu-dents feel like insiders in the learning environment when they form social groups. Social groups can contribute to motivation, student involvement and learning satis-faction. E-learning researchers argue that social learning groups in the online envi-ronment can help students explain the same confusion on certain topics, resulting in higher course scores according [5].

H_9: Perceived community building assistance has a positive effect on perceived learning assistance on the groups of lecturers and students

H_{10}: Perceived community building assistance has a positive effect on perceived academic performance on groups of lecturers and students

The information system success model assumes that information systems effectively influence individual performance [11], [36] empirically found a strong relationship between satisfaction and e-learning outcomes. If the e-learning system provides learning content in a timely manner and facilitates effective online discus-sion, students can learn better than they should. Better learning is expected to con-tribute to improving their academic performance.

H_{11}: Perceived learning assistance has a positive effect on perceived academic per-formance on the groups of lecturers and students

H_{12}: There are differences in perceived usefulness, perceived ease of use, e-learning system use, Perceived learning assistance, Perceived community building assistance, and perceived academic performance between lecturers and student

The success of e-learning information systems is also closely related to the use of information systems. Information systems success models argue that the use of in-formation systems affects individuals and organizations positively [36]. This model proposes that the adoption of e-learning behavior will positively influence the learn-ing process of individuals. Individual learning can be said to be successful if the indi-vidual feels easy (perceived ease of use) and understands the system used and feels the benefits (perceived usefulness) after using the e-learning system.

The research model was built by replicating the research model [16] and making some adjustments to suit the respondents (lecturer or student) and the conditions for implementing e-learning in the Udayana University environment. Furthermore, the results of the study will compare perceptions of the two groups of respondents name-ly lecturers and students. This research illustrated by a research model that can be seen in Figure 1.

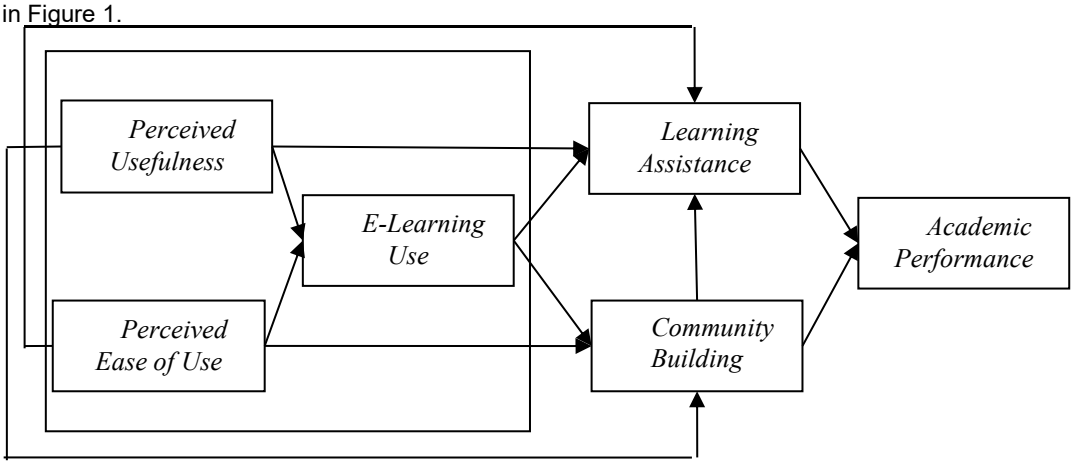

Fig. 1. Research Model

RESEARCH METHOD

The study was conducted at the University of Udayana (Unud). The object of this research is the distance learning system developed by Udayana University, as e-learning (https://elearning.unud.ac.id). This system was built as one of open sources learning management and has become very popular among Udayana University environmental educators. E-learning can be used to add lesson materials, tasks and discussions that cannot be done face to face.

The population in this study was lecturers and students who were actively using the Unud moodle E-learning (referred to as participants of distance learning clinics). A total of 42 courses that are taught by lecturers participating in distance learning regis-tered in the even semester will be used as respondents. Students who were selected as respondents were drawn from the number of students who participated in lecturers and actively using e-learning.

The data collection method is carried out by a survey method which is by distrib-uting questionnaires. So the questionnaire is no longer done manually, but it is directly carried out on the e-learning system. Only 10 lecturers of the 42 lecturers who actively use E-Learning answered the questionnaire with a total number of student partici-pants of 249 people.

Only 98 of 249 students were chosen as respondents answered the research ques-tionnaire. The questionnaire has three parts: demographic questions, questions relat-ed to the construct of the research model, and open questions that ask to report the level of satisfaction of lecturers and students with the e-learning system. Each item that corresponds to the construct has been measured using a five-point Likert scale ranging from "Strongly disagree (1)" to "Strongly agree (5)".

The variables in this study were taken from the TAM Model and the research model from [24]. The measure of perceived usefulness and the use of e-learning sys-tems was adapted from [37] which consisted of six statements. Perceived ease (per-ceived ease of use) adapted from [38] consists of six statement items. The e-learning system use variable is the user's perception of the amount of e-learning system usage, that was adapted from research of [24]

consisting of two statements. Perceived learn-ing assistance was developed from a study conducted by[19] consisting of four statement items. The perceived community building assistance was measured by developing a research questionnaire from [39] which consisted of 3 statements. The variable perceived academic performance is the user's perception of academic achievement adapted from [24] research consisting of two statements. Hypothesis test in this study is partial least squares (PLS) test that uses smartPLS. PLS allows researchers to take measurements and structural models simultaneously.

RESULT AND DISCUSSION

RESULTS

Descriptive statistical analysis aims to find out the data of research results. De-scriptive statistical analysis will be presented based on the minimum, maximum, standard deviation, and average values for each study variable. Table 1 shows the result of descriptive statistics.

Table 1. Example table

	N	Minimum	Maximum	Mean	Std. Deviation
PU	108	2.500	5.000	4.049	0.539
PEOU	108	2.600	5.000	3.813	0.576
USE	108	1.000	5.000	3.532	0.765
PCB	108	2.000	5.000	4.189	0.703
PLA	108	1.500	5.000	3.842	0.713
ACP	108	2.500	5.000	4.076	0.609
Valid N (listwise)	108				

Notes: PU=Perceived Usefulness ; PEOU=Perceived Ease of Use; USE=E-Learning Use; PCB=Perceived Community Building; PLA=Perceived Learning Assistance; ACP=Perceived Academic Performance.

Based on Table 1. it obtained information that perceived usefulness, perceived ease of use, e-learning system use, perceived community building, perceived learning assistance, and perceived academic performance variables have an average value close to 4 which means that the average respondent's answer agrees with the state-ment given on that variables.

ANOVA test analysis is used to prove whether there are differences in the results of the variables perceived usefulness, perceived ease of use, e-learning system use, perceived learning assistance, perceived community building assistance, and per-ceived academic performance between lecturers and students. Stated there is a real difference if the significance value of p <α = 0.05 and vice versa.

Table 2. ANOVA Test Results

		Mean	Std. Deviation	F	Sig.
PU	Lecturers	4.350	0.487	3.507	0.064
	Students	4.019	0.537		
PEOU	Lecturers	3.560	0.735	2.146	0.146
	Students	3.838	0.556		
USE	Lecturers	3.100	0.966	3.606	0.060
	Students	3.576	0.733		
PCB	Lecturers	3.450	0.725	13.654	0.000
	Students	4.265	0.659		
PLA	Lecturers	3.750	0.920	0.185	0.668
	Students	3.852	0.693		
ACP	Lecturers	4.450	0.468	4.275	0.041
	Students	4.038	0.611		

Notes: PU=Perceived Usefulness ; PEOU=Perceived Ease of Use; USE=E-Learning Use; PCB=Perceived Community Building; PLA=Perceived Learning Assistance; ACP=Perceived Academic Performance.

Based on Table 2. the obtained perceived usefulness (0.064); perceived ease of use (0.146), The e-learning system use (0.06); and perceived learning assistance (0.668) are bigger than 0.05, so it can be concluded that there is no difference in those variables between students and lecturers. Meanwhile, the significance value of the variable perceived community building (0.000), and perceived academic performance are less than 0.05, it can be concluded that there are differences in those variables of both groups.

Hypothesis testing is seen from the results of the inner model or structural model carried out to see the relationship between variables, the value of t statistics and the coefficient of determination as measured by the R-square of the research model. Data analysis method used for testing the model in this study is Partial Least Square (PLS).

Hypothesis testing is done by using the Student test (t-test) on each path of influence between the independent variable with the dependent variable. There is a significant influence if the p-value <0.05. Table 3 shows the results of hypothesis test.

Table 3, shows that all the t-statistic value is more than t-table of 1.96 and the p value is smaller than the significance level of 0.05, so all the hypothesis is accepted. Meanwhile, perceived usefulness effect on e-learning system use has a value of 0.076 and t-statistics of 1.111, which is the t-statistic value is less than the critic value of 1.96 and the value of p value 0.377 is greater than the significance level of 0.05, then the hypothesis is rejected. The results of the path coefficient marked positive, it can be concluded that the relationship between the two is unidirectional, it means that the better the perceived usefulness, the better the e-learning system use.

Table 3. Hypothesis t-Test

	Coefision Regression coefficient	T Statistics (|O/STERR|)	P value	Notes
PU -> USE	0.076	1.111	0.377	H1 rejected
PU -> PLA	0.232	4.322	0.015	H2 accepted
PU -> PCB	0.124	2.066	0.024	H3 accepted
PEOU -> USE	0.578	9.664	0.000	H4 accepted
PEOU -> PLA	0.308	4.500	0.006	H5 accepted
PEOU -> PCB	0.270	3.972	0.016	H6 accepted
USE -> PLA	0.136	2.278	0.023	H7 accepted
USE -> PCB	0.182	3.340	0.017	H8 accepted
PCB -> PLA	0.131	3.159	0.021	H9 accepted
PCB -> ACP	0.262	6.495	0.002	H10 accepted
PLA -> ACP	0.481	8.654	0.000	H11 accepted

Notes: PU=Perceived Usefulness ; PEOU=Perceived Ease of Use; USE=E-Learning Use; PCB=Perceived

Community Building; PLA=Perceived Learning Assistance; ACP=Perceived Academic Performance.

The coefficient of determination of the R^2 value is used to find out how much influence the independent variable has on the dependent variable. R-Square values can be seen in Table 4.

Table 4. Determination Coefficient Results (R^2)

Variables	R Square	R Square (%)
Perceived Academic Performance	0.4023	40.23
Perceived Community Building Assistance	0.2395	23.95
Perceived Learning Assistance	0.4177	41.77
E-Learning Use	0.3905	39.05

The obtained information that the magnitude of the influence or contribution of the variable perceived community building assistance and perceived learning assistance to the perceived academic performance of 40.23 percent, while the rest, 59.77 percent is influenced by other variables outside the research variable. Likewise the magnitude of the effect of perceived usefulness, perceived ease of use and e-learning use on perceived community building assistance was 23.95 percent, while the remaining 76.05 percent was influenced by other variables outside the research variable. Perceived usefulness, perceived ease of use and e-learning use influence the perceived learning assistance of 41.77 percent, and 58.23 percent are influenced by other variables outside the research variable. The magnitude of the effect of perceived usefulness and perceived ease of use on e-learning use was 39.05 percent, and the remaining 60.95 percent was influenced by other variables outside the research variable.

DISCUSSION

The variable of perceived usefulness showed a t-statistic value of 1.111, the value is less than the critic value (1.96) so it can be concluded that perceived usefulness has no effect on e-learning system use for lecturers and students. This could be due to the user experience of a system. [15] states that when users become more experienced and more comfortable with the new system, the effect of using convenience is felt to be reduced.

Perceived usefulness (perceived usefulness) is how far a person believes that using a certain system will improve the performance of his work [23]. TAM theory states that perceived usefulness (perceived usefulness) is one of the factors that influence a person in accepting an information technology. If the user of information technology has high confidence that the use of a system will provide maximum benefits, then the intention to use the technology will be even higher. Perceived usefulness (perceived usefulness) is considered as the most significant factor in influencing attitude (atti-tude), behavioral interest, and behavior in using technology compared to other fac-tors [22]. The results of this study are not in line with [15], [23], [40] research which show that trust in perceived benefits has a direct influence on system use.

An e-learning system can provide many useful features that can enhance student learning. But at Udayana University, online-based learning has been carried out using an LMS platform called ElseU (E-learning smart and elegant of UNUD). This LMS is built on a web-based integrated with SIMAK Lecturers and SIMAK Students. ElseU presents learning features which are similar to e-learning, such as 1) Uploading and downloading Materials 2). Making and working assignments in the form of Essays, Multiple Choice, both groups and individuals; 3) Making and viewing special an-nouncements per course; 4) Having special lecture-discussion; and 5) Sending mes-sages. The difference between elseU and e-learning is in terms of the form of LMS used and the additional features and concepts of visual presentation that are very different. Eud Learning is a moodle-based LMS where lecturers can upload material in the form of ppt, pdfm links, websites and interactive videos. In the evaluation feature, similarities to the functions contained in the e-learning and elseU features make the use of e-learning systems for new moodle E-Learning Unud is not influenced by the perception of the benefits of users both lecturers and students, because it has been used ElseU has the same benefits and goals.

The perceived usefulness affected the perceived learning assistance of the groups of lecturers and students which path coefficient value is 0.232, the value is positive which means the better perceived usefulness, the better perceived learning assistance. Research of [15] found that perceived ease of use shows the impact on intention to behave through two causes, namely the direct impact on intention to behave (inten-tion) and the indirect effect on the intention to behave (intention) through perception perceived usefulness.

Technology Acceptance Model Theory in its concept clearly states that per-ceived usefulness is one of the factors that can influence one's intention to use tech-nology. Through perceived usefulness (perceived usefulness), it will encourage the user's intention to use a system optimally. The optimal use of the system will provide maximum impact or benefits to the user. One of the perceived benefits in the form of assistance in the learning process (perceived learning assistance) so that both students and lecturers can run the learning process better. A useful e-learning system can help students to manage and control their learning process. For example, students can download and read learning content at the appropriate time and speed. Even if students miss the lecture, they can catch up with others by taking online course pages. Previous studies have argued that when students have greater learning control, they achieve better learning outcomes [26]. This implies that a useful e-learning system can help students in learning by increasing their control of the learning process.

Perceived community building assistance is the user's perception of the extent to which they believe an e-learning system will really help them in building a social community. The path coefficient value is 0.124, the value is positive which means the better perceived

usefulness, the better perceived community building assistance. The higher the user's trust in the benefits derived from the use of a system, the higher the intention to use the system. The use of a system will certainly provide reciprocity in the form of benefits for users, one of which is in the formation of a social commu-nity. The e-learning system can be seen as a collaborative information system be-cause it contains many features that help participants develop productive relation-ships through interactions with others [28]. In the e-learning environment, educators play important roles such as encouraging participation and motivating collaboration among students. This activity is expected to increase student knowledge sharing. Previous research has argued that both ownership and sharing of knowledge are im-portant criteria that can be met by a well-designed e-learning environment for com-munity building (Teo et al., 2003). Other studies that are in line with our research [5] and [18] explain that perceived e-learning systems can involve students in a user-friendly environment and hence, offer opportunities to learn more effective and build collaborative communities.

Perceived ease (perceived ease of use) is one of two factors that exist in the con-cept of Technology Acceptance Model Theory (TAM). Path coefficient value of 0.578, the value is positive which means the better perceived ease of use, the better the e-learning system use. The results of this study are in line with [15], [23] who find that perceived ease of use affects system use. In addition, [24] also show the rela-tionship between perceived ease of use and the use of e-learning systems. The TAM theory states that if a system user has a belief that the system is easy to use, there will be an intention to use the system. The intention to use a system will create the actual-ization of the use of a system. The higher the level of students and lecturers' confi-dence in the ease they feel when using the e-learning system, the higher the intention to use the system which makes the e-learning system more optimal in its implementa-tion.

The perceived ease of use affects the perceived learning assistance on the groups of lecturers and students, which is the path coefficient value is 0.308, the val-ue is positive which means the better-perceived ease of use, the better-perceived learning assistance. The use of a system will certainly provide reciprocity in the form of benefits that can be felt by users of the system in the form of assistance in improv-ing performance. Trust in the ease of use of e-learning systems that are owned by lecturers and students, will provide motivation for them to operationalize e-learning systems better. The use of e-learning will provide benefits in the form of convenience or assistance in the learning process (perceived learning assistance).

The e-learning system is able to facilitate the communication of educators to stu-dents, track student progress, and share secure educational content online. This indi-rectly provides convenience or assistance in the learning process (perceived learning assistance) so that the learning process can be carried out more effectively and effi-ciently.

Perceived ease of use has a positive effect on perceived community building assis-tance for lecturer and student groups. The path coefficient value is 0.270, the value is positive which means the better perceived ease of use, the better the perceived com-munity building assistance. Technology Acceptance Model Theory (TAM) states that the perception of ease has a significant effect on the intention to use a system that can provide reciprocity in the form of benefits to users after the system is operational. Through the e-learning system students are given the opportunity to form a collabo-rative learning group online. Students need a minimum effort to manage and learn the functions required from an easy-to-use e-learning system. As such, they can place more emphasis on content and learning activities rather than system functionality. [30] suggested that the technical design and format of e-learning systems determine how effectively students collaborate and share content with each other. In other words, an easy-to-use e-learning system can help learning and build student commu-nities.

The use of e-learning systems has a positive effect on perceived learning assis-tance for lecturer and student groups with path coefficient value of 0.270, the value is positive which means the better the use of e-learning system, the better the per-ceived learning assistance. E-learning is able to facilitate the communication of edu-cators to students, track student progress, and share secure educational content online. At present, e-learning has become an indispensable tool in education [41], [42]. Implementation of e-learning in the world of higher education can improve the quality of education for the better. Previous research has shown that e-learning sys-tems can help students in their learning in three ways: enhanced involvement [19], independent learning opportunities [31], and faster information dissemination [32]. This implies that the use of e-learning systems gives students the opportunity to learn independently [43]. Reference [31] argue that students are assumed to learn better when they find something themselves and when they control the pace of learning. This implies that the use of e-learning systems in the course can lead to increased learning effectiveness among students by giving them opportunities to learn inde-pendently and learn to build a community of fellow students.

The use of e-learning systems has a positive effect on perceived community build-ing assistance for the groups of lecturers and students. The path coefficient value is 0.182, the value is positive which means the better the use of e-learning system, the better the perceived community building assistance. [44] suggested that a well-designed and well-managed online course can increase social interaction, and thus create collaborative communities. Face-to-face activities between educators and students first give them an opportunity to find out about each other and begin the process of building a collaborative community.

E-learning activities can give students the opportunity to become more acquainted with and discuss their common interests on certain topics through online sites. Many students might prefer to participate more in online discussions rather than face-to-face [45]. E-learning provides convenience for students to conduct discussions online in a study group. This proves that the application of e-learning

systems can help stu-dents in the process of forming a social group to assist the learning process.

Perceived community building assistance has a positive effect on perceived learn-ing assistance for lecturer and student groups, which is the t-statistic value of 3.159, the value is bigger than the critical value = 1.96 so it can be concluded that perceived community building assistance has an effect on perceived learning assistance for the groups of lecturers and students. The path coefficient value is 0.131, the value is positive which means the better the perceived community building assistance, the better the perceived learning assistance. The formation of a social community in this case is a learning group certainly has a very good impact on the smooth learning process. E-learning activities provide opportunities for students to have online study groups. The formation of online study groups gives students the opportunity to dis-cuss various kinds of learning topics more easily and can increase social interaction between students. This shows that the formation of social communities (learning groups) provides assistance in facilitating the learning process.

Perceived community building assistance has a positive effect on perceived aca-demic performance on the groups of lecturers and students which path coefficient value of 0.262, the value is positive which means the better perceived community building assistance, the better the perceived academic performance. Students who establish contact with others in the learning environment and work together on cer-tain problems, their learning is greatly enhanced in certain topics. Collaborative social learning groups have been suggested to be important in face-to-face and online envi-ronments to achieve better learning outcomes by [25],[46]. Students feel like insiders in the learning environment when they form social groups. Some research on e-learning shows that social learning groups in the online environment can help students explain the same confusion on certain topics, resulting in higher course scores [5], [46]. If the e-learning system provides learning content in a timely manner and facili-tates effective online discussion, students can learn better than they should. Better learning is expected to contribute to improving student academic performance

Perceived learning assistance has a positive effect on perceived academic perfor-mance in groups of lecturers and students. The path coefficient value is 0.481, the value is positive which means the better perceived learning assistance, the better the perceived academic performance. E-learning is able to facilitate the communication of educators to students, track student progress, and share secure educational content online. The e-learning method gives the lecturer the freedom to provide access to students to obtain scientific references related to the course which may not be ob-tained during lectures or practicum. All references in the form of scientific papers, popular articles or electronic journals can be given through e-learning. This is very useful for students, to strengthen students' understanding of each subject of the lec-ture. The ease of assistance in the learning process provided by e-learning through all its facilities will certainly give a good influence on improving academic performance (perceived academic performance) both felt by lecturers and students as e-learning users.

CONCLUSIONS, LIMITATION, AND RECOMMENDATION

Based on the results of the study, it is concluded that the perceived usefulness var-iable has a positive effect on perceived learning assistance, perceived community building assistance to the group of lecturers and students. Likewise, the Perceived ease of use variable has a positive effect on e-learning system use, perceived learning assistance, perceived community building assistance to the group of lecturers and students. The use of e-learning systems has a positive effect on perceived learning assistance, perceived community building assistance on lecturer and student groups. Perceived community building assistance and perceived learning assistance have a positive effect on perceived academic performance in groups of lecturers and stu-dents.

Based on the research results, it is suggested that the use of e-learning facilities is increasingly becoming a necessity in the world of education, especially in higher edu-cation. The quality and sustainability of the use of e-learning must always be main-tained and improved so that educational goals are still achieved. This can be done by continuing socialization, monitoring the successes and constraints of the use of the system, and facilitating facilities and infrastructure that can support the smooth use of the Unud E-learning system. For the next researchers, they can continue the analy-sis that affects perceived academic performance, perceived community building by using different research methods to better reflect the real situation. For example, researchers can use experimental methods to determine academic performance in groups that get treatment (using E-Learning) and not use E-Learning.

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