

Self-Efficacy and Use of E-learning: A Theoretical Review Technology Acceptance Model (TAM)

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ABSTRACT:The purpose of this study is to obtain empirical evidence related to actual usage of the use of e-learning with self-efficacy as a mediation variable at Airlangga University. Data from this research are 135 questionnaires distributed to students of Airlangga University. Data analysis techniques use PLS Warp program. The results of this study indicate that perceived usefulness has no significant positive relationship to actual usage. Meanwhile perceived usefulness has a significant positive effect on self-efficacy and actual usage mediated by self-efficacy. Perceived ease of use has a significant positive effect on actual usage and self-efficacy and when actual usage is mediated by self-efficacy. Self-efficacy has a significant positive effect on actual usage. Data from questionnaire results may provide biased results. With the same kind of research, further research can add another variable.

Keywords –Actual Usage, Perceived Ease of Use, Perceived Usefulness, Self-Efficacy, Technology Acceptance Model (TAM)

I. INTRODUCTION

Rapid technological developments have an impact on various sectors of community life. The development of information technology is changing paradigm of society in finding and obtaining information that is no longer limited to information newspapers, audio and electronic, but also other sources of information such as through internet network. The changing aspects of life driven by complex factors raises the demand that quality in standards-based education is no longer adequate in response to growing demands. Quality is absolutely necessary but does not stop until quality alone. Therefore components such as high performance, efficiency, effectiveness and productivity supported by ICT (Information Communication Technology) and strong values are unity that must be neatly integrated and well into the learning system (Setiawan & Hana, 2014). Information and communication technology has been widely used in teaching and learning process so that the quality of education along with the development of technology (Folden, 2012).

The development of multimedia technology has promised great potential in changing one's way of learning, obtaining information, adjusting information and so on. Multimedia also provides opportunities for educators to develop learning techniques so as to obtain maximum results. Likewise for learners, with multimedia it is expected they will find it easier to get information, so that it not only focuses on the text of the book (Hussein, 2017). The ability of multimedia technology that has been connected internet will further increase the ease in obtaining information for learning purposes (Al-Azawei, Parslow, & Lundqvist, 2017). This kind of learning system is called modern system based on information and communication technology. This change also provides benefits in education (Baleghi-Zadeh, Ayub, Mahmud, & Daud, 2017). E-learning facilities provide benefits for lecturers to organize learning process without face to face with students in class (Hussein, 2017). For students, e-learning facilities will provide easy access to learning materials and forums for frequently asked questions to improve learning effectiveness.

E-learning is one form of development of information technology that can be utilized by educational institutions to improve the effectiveness and flexibility of learning (Chao & Chen, 2009). The development of e-learning that is still relatively new cause definition and implementation of e-learning system is very varied and there is no standard implementation. The development of e-learning is also a tendency and choice because of changes in life. Therefore, the need for interactive multimedia is increasingly felt, given the rapidly growing development of Information Technology (Q. Wang, 2009). So far there are a variety of e-learning implementations ranging from simple models that are just a collection of learning materials that are placed on web server with additional communication forum via e-mail or milist separately up to the integrated model, which is an e-learning portal that contains various objects multimedia-enriched learning combined with links to libraries, academic information, courses followed, discussion communications and other educational tools (Silva, Silva, & Chan, 2019).

E-learning consists of two parts, 'e' which stands for electronic, and learning which means learning (Wu et al., 2012). E-learning in principle is a learning process (learning) based on electronics (Ho & Dzeng, 2010). In this case, refers to the use of various electronic devices (mainly computers) as a medium of learning. This technology is also used in distance education, which is intended for communication between teachers and students can happen (Ozkan & Koseler, 2009). In order for e-learning portal that is available to be utilized optimally, lecturer as the main actor must understand the way to operate it (Šumak, Heričko, Pušnik, & Polančič, 2011). Relating to the nature of education, it is seen that all students of Airlangga University are learners who have good computer literacy skills and have high self-efficacy towards computer technology especially. However, not all learning process (learning and teaching) done by lecturers and students using the portal that has been provided.

Technology Acceptance Model (TAM) was developed by Davis in 1985 to explain and predict the use of a system (Chuttur, 2009). This model is an adaptation of Theory of Reasoned Action (TRA) model by Fishbein and Ajzen. In TAM, there are two main constructs, namely perceived usefulness and perceived ease of use. Usability constructs are defined as degree to which a person believes that using a particular system will maximize their performance. While perceived ease of use is the degree to which a person believes that in using a system without need for hard effort (Fred D Davis, 1985). Technology Acceptance Model (TAM) is a theory that most researchers deem appropriate to identify readiness of a community, in applying computer-based technology to its work activities (Chuttur, 2009; Alomary & Woollard, 2015; Baziad, 2015; Venkatesh & Bala, 2008).

Perceived usefulness encourages individual students to better understand usefulness of e-learning products made by campus. Perceived usefulness has been one of dominant factors that shape the desire behavior to use technology with better expectations in using a particular application system will improve the quality (performance) work and quality of life of a person (Chen, Li, & Li, 2011). Usability perceptions will further encourage students to better use e-learning products as a product required by each student. Because e-learning itself can be accessed anywhere and anytime as long as connected to the Internet network. Ease of access amid the busyness will further increase the perception of individual user use. So for the usage (actual usage) e-learning products become more often done by students. In addition, perceptions of perceived ease of use become a boost for students to use e-learning products made by universities more often. The ease (flexibility) of using e-learning, eliminates reluctance of every student to access e-learning content more frequently. This causes the level of use of e-learning to be frequently performed by students (I. C. Chang, Li, Hung, & Hwang, 2005; Fred D. Davis, 1989; Szajna, 1996).

In addition to internal factors created in e-learning products, then it takes other factors that can encourage students to more and more using e-learning products. Human factors that use to be one element to encourage students in using e-learning products. Self-efficacy is a factor in students who can encourage the use of e-learning products. Self-efficacy is a belief in one's ability to move, motivate cognitive sources and set of actions necessary to meet demands of the situation at hand (Bandura, 1989). Growing belief in students will encourage students to be more confident in using e-learning products as a source of additional information in course. Students who have good self efficacy will be more motivated to be more active in using e-learning products, so that the intensity of e-learning will be higher. Individual self-efficacy of a product can be grown by the identity attached to the product.

Perceived ease of use, will encourage individual confidence to use the product (De Smet, Bourgonjon, De Wever, Schellens, & Valcke, 2012). Easier e-learning products will increase students' confidence sources that the product has a great advantage for students in searching for additional sources of information in lectures (Aggelidis & Chatzoglou, 2012; Shao Yeh & Li, 2009; Hong, Thong, & Tam, 2006). In addition, perceived usefulness of the product will contribute to the enhancement of self-efficacy in students. Students will grow in their confidence to use e-learning products. This can happen if students can see e-learning products have a great use in lectures run by students. Based on background description, it will be conducted research on Technology Acceptance Model (TAM) with self-efficacy as a mediation variable at Airlangga University.

II. LITERATURE REVIEW

2.1 Theory of Reasoned Action (TRA)

Theory of Reasoned Action (TRA) indicates that a person's behavior is determined by him or his intention to conduct behavior, and that this intention is in turn, a function of one's attitude and subjective norms toward behavior (Fishbein & Ajzen, 1977). Theory of Reasoned Action (TRA) model is based on premise that human beings are rational and that the behavior that is explored is under control of will (Fishbein & Middlestadt, 1997). According to this theory, certain behavior is determined by a combination of four components, including: goals, actions, context and time (wisdom) (Ajzen, 2002). Subjective attitudes and norms shape a person's intention to perform a behavior. Finally, a person's intentions determine the desired behavior.

Fishbein and Ajzen (1977) mentions that TRA assumes that behavior is based on intention of individuals to engage in a particular action. Intention is determined by two factors, namely the individual's attitude toward the results of actions and opinions of individual's social environment. This theory shows that people often act on their perceptions of what others think they should do. Theory of Reasoned Action (TRA) provides a framework for connecting each of the above variables together. Due to remarkable achievements in developing behavioral predictive models, Theory of Reasoned Action (TRA) has been applied to a wide range of research areas including: psychology, management, marketing, and health areas (M. K. Chang, 1998; Fortin, 2000; Sheppard, Hartwick, & Warshaw, 1988; Wilson, Zenda, McMaster, & Lavelle, 1992).

2.2 Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) is one of theories about the use of information technology systems that are considered very influential and commonly used to explain individual acceptance of the use of information technology systems (Jogiyanto, 2008, p. 111). TAM was first developed by Fred D Davis (1985) based on Theory of Reasoned Action (TRA) model. Excess TAM is a model parsimony, which is a simple but valid model. In addition, TAM has also been tested with many studies which result TAM is a good model especially when compared with the model of TRA and Theory of Planned Behavior (TPB). In TAM, user acceptance in the use of information systems is affected by two constructs, namely perceived usefulness and perceived ease of use. Both constructs are the most striking differences that exist in TAM when compared with Theory of Reasoned Action (TRA) and TPB.

TAM theory continues to be modified up to three times. In 2000 TAM 2 was published, by removing attitude towards usage construct, where perceived usefulness and perceived ease of use constructs directly influence behavioral intention to use (Alomary & Woollard, 2015). The next development of TAM was modified again in 2008 called TAM 3. On the latest developments TAM3 added a new dimension to perceived ease of use (PEU). The development of TAM aims to form basic assumptions that are able to predict, and explain behavior that encourages the use of evergrowing technology (Alomary & Woollard, 2015; Venkatesh & Bala, 2008; Surendran, 2013; Sung Youl, 2009). In addition to innovations based on existing developments, TAM's theory has always been the basis for development of empirical studies on readiness of technology utilization. Until now TAM is the theory that is considered most relevant in predicting the desire and readiness to adopt technology (Chuttur, 2009; Md Johar & Akmar Ahmad Awalluddin, 2011).

2.3 Perceived Usefulness

Perceived usefulness, hereinafter called utility, is defined as the extent to which a person believes that using a technology will improve performance of work (Fred D Davis, 1985). This construct is influenced by the construct of ease of use. Previous research has shown that usability is the most significant and important construct that influences attitudes, intentions and behavior (Jogiyanto, 2008, p. 114). There are 6 indicators to measure usability constructs: faster job completion (work more quickly), performance improvement (job performance), increase productivity (increase productivity), increase work effectiveness (effectiveness), make job easier and useful (Fred D. Davis, 1989). Perceived ease of use, hereinafter referred to as ease of use. Ease of use is defined as the extent to which people believe that using a technology will be free of effort (Fred D Davis, 1985).

2.4 Perceived Ease of Use

Perceived ease of use influences the construct of usefulness, attitudes, intentions and actual use of technology. But the most significant is influence to the construct of usefulness, while against other construct influence is not significant (Jogiyanto, 2008, p. 115). Perceived ease of use is defined as the extent to which potential users expect the target system to be easy to implement. In other words the user does not expect the high difficulty to learn and apply the use of such technology (Chuttur, 2009; Surendran, 2013). There are 6 indicators to measure the construct ease of use is the ease of system to learn (easy to learn), ease of the system to be controlled (controllable), clear and understandable interaction, flexibility, easy to become easy to be able to use (Fred D. Davis, 1989).

2.5 Actual Usage

Actual technology use hereinafter referred to as actual technology usage. In TAM, the use of technology is actually equivalent to the behavioral term in Theory of Reasoned Action (TRA) but for use in technological context. This construct is directly influenced by intensity and usability. The use of e-learning depends on user attitudes and level of confidence that e-learning systems will improve learning achievement (Harris, 2017). The interest of these users leads to use of e-learning that is considered to provide benefits to learning process and ease of use (Tao, 2009). Actual usage here actually uses e-learning in real terms because it feels the benefits. There are 3 indicators of construct measurement of the use of technology, namely: actual use, actual frequency and user satisfaction (Muntianah, Astuti, & Azizah, 2012).

2.6 Self-Efficacy

Several years after the emergence of TAM, many studies have examined this model. TAM is expanding by adding external variables into original TAM model. In this research, in TAM model will be added external variable that is self-efficacy. The concept of self-efficacy was first proposed by Bandura in 1977. Self-efficacy is defined as a belief that one has ability to perform certain behaviors (Bandura, 1989). Basically, self-efficacy is the result of a process of decision, belief, or reward in performing a particular task or behavior required to achieve the desired result by estimating extent of its ability. Self-efficacy is not related to how competent a person is, but rather relates to how certain someone is doing his or her job with skills that a person possesses no matter how great. Self-efficacy can grow through four things: experience of success, experience of others, verbal persuasion, physiological conditions.

According to Mu'arofah (2013), although it can be grown through these four things, self-efficacy between one person and another will be based on three dimensions: dimension of the level, power dimension and generalization dimension. Level dimension relates to difficulty level of task when one is able to work. If there are tasks that have been arranged according to the level of difficulty then one's self-efficacy will be limited, and will result in selection of behavior that is perceived to be able to do and tend to avoid behavior beyond the limits of ability. The power dimension relates to level of strength of the beliefs about its abilities. If the person is unsure of his or her own ability it will be easier to give up in his efforts, but otherwise if one is convinced of his or her ability to eat will give encouragement to stay afloat. Usually power dimension is directly related to dimension of the level, the higher difficulty level the weaker resulting confidence.

Dimension of generalization is concerned with the field, one is convinced of its ability to be limited in certain activities or varies. Based on concept can be said that self-efficacy able to describe the psychological state of individuals completely and mutually exclusive and able to influence patterns of individual behavior. A person's high self-efficacy triggers a high desire for a task, enabling one to maximize effort to accomplish the task well. Relating to TAM theory, self efficacy is one of external factors in the expansion of TAM. Lee, Kozar, and Larsen (2003) states that self-efficacy is a factor that affects usage, usability and ease of use. There are two indicators for measuring self-efficacy, belief in finding information on e-learning systems and level of capability required to use e-learning (Sung Youl, 2009). In this study, self-efficacy is predicted to affect the usage factor.

2.7 e-Learning

E-learning is a method of learning that uses electronic media as an intermediary to deliver learning materials. The e-learning understanding is most commonly proposed by Gilbert and Jones (2001), which is a way of delivering learning materials through an electronic media such as internet, intranet / extranet, satellite broadcast, audio / video tape, interactive TV, CD-ROM, and computer-based training (CBT). According to Clark and Mayer (2011), e-learning is an instruction delivered in digital devices such as computers or mobile devices that aim to support learning. From some expert opinions above, can be summarized that e-learning is a way of sending learning materials using electronic media; such as: internet, intranet / extranet, satellite broadcast, audio / video tape, interactive TV, CD-ROM, computer-based training (CBT) and mobile devices to support teaching and learning activities (Hussein, 2017). E-learning is a model that most of learning process is done online using computer and network support (Y.-S. Wang, 2003).

E-learning is generally in form of website applications where users or users of their systems interact with each other like social media sites. The learning process includes the delivery of learning materials, learning interaction and learning evaluation (Priyadi et al., 2013, p. 141). It says most of the process because there are processes that are not done online, such as face-to-face activities to learn to use computers for communication. E-learning in learning functions as an additional learning (supplement), partial replacement of learning (complementary) and replacement of all learning (replacement). Meanwhile, Wahono (2008) stated that there are 3 main components in e-learning, namely: (1) e-learning infrastructure, (2) e-learning system, and (3) e-learning content. E-learning system is a useful software to make learning process virtually. The system includes various features related to teaching and learning process management including classroom management, material or content creation, discussion forums, assessment systems (rapor) and online examination systems (Wahono, 2008).

E-learning is an implementation of Computer-Supported Collaborative Learning (CSCL) method in form of a computer application (Salovaara, 2005). Philosophically, the implementation of e-learning has consequences, such as demanding implementation of independent learning systems to students and optimized communication media, especially telecommunications technology in a manner appropriate and in accordance with needs. The most important thing in process of self-learning is increasing the willingness and skills of students as users in learning, so it is not dependent on others. Independent students will be able to find source of learning they need. According to Kusmana (2017), although the use of internet for teaching and learning through e-learning is very much and gives more flexibility, there are some shortcomings. Lack of direct interaction between students and lecturers as teachers can slow the formation of values in learning process. In addition, this

tends to ignore academic aspect or social aspect. Access issues to be able to open e-learning, such as the availability of internet networks, electricity or other infrastructure.

III. MODEL AND HYPOTHESIS

This study aims to analyze online learning system or e-learning. To analyze acceptance of e-learning technology for students required a special method commonly used in analyzing system. The method used is Technology Acceptance Model (TAM). Technology Acceptance Model (TAM) is one of models built to analyze and understand factors influencing acceptance of the use of computer technology first introduced by Fred Davis in 1985. TAM is the result of the development of Theory of Reasoned Action (TRA), which first developed by Fishbein and Ajzen in 1980. TAM aims to explain and estimate acceptance (acceptance) of users of an information system. TAM describes a causal relationship between beliefs (the benefits of an information system and its ease of use) and the behavior, purposes, and actual use of the users of an information system. The research model used in this research can be seen in the following figure:

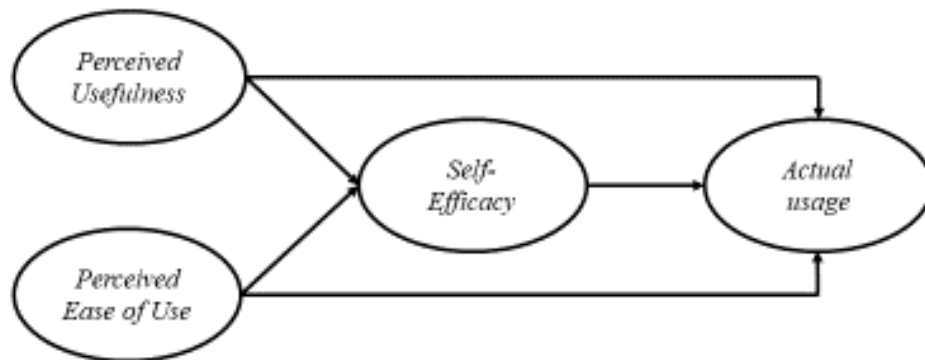


Figure 1: Conceptual Framework

Perceived usefulness, hereinafter called utility, is defined as extent to which a person believes that using a technology will improve performance of his work (Fred D Davis, 1985). This construct is influenced by the construct of ease of use. Actual technology use hereinafter referred to as actual technology usage or usage. The presence of PU directly affects behavioral intentions to use. PU has a direct impact on behavioral intentions to use technology (Fadare, 2015). Perceived usefulness has been one of dominant factors that shape the desire behavior to use technology with better expectations in using a particular application system will improve the quality (performance) work and quality of life of a person (Chen et al., 2011).

Perceived usefulness encourages individual students to better understand the usefulness of e-learning products made by campus. Usability perceptions will further encourage students to better use e-learning products as a product required by each student. Because e-learning itself can be accessed anywhere and anytime as long as connected to internet network. Ease of access amid the busyness will further increase perception of individual user use. So for the usage (actual usage) e-learning products become more often done by students. In addition to internal factors created in e-learning products, then it takes other factors that can encourage students to more and more using e-learning products.

H1: Perceived usefulness has a significant positive effect on actual usage

According to Surendran (2013), perceived usefulness is defined as assessment of a prospective (good expectation) derived from a personal view, which by using a particular application system will improve quality of work and quality of life, confidence by using application will improve his performance. Fadare (2015) point out that people tend to use or not to use depending on degree of confidence that the app can help them do the job better or not. Perceived usefulness encourages individual students to better understand the usefulness of e-learning products made by campus. Usability perceptions will further encourage students to better use e-learning products as a product required by each student.

Self-efficacy is a factor in students who can encourage use of e-learning products. Self-efficacy is a belief in one's ability to move, motivate cognitive sources and set of actions necessary to meet the demands of situation at hand (Bandura, 1989). Growing belief in students will encourage students to be more confident in using e-learning products as a source of additional information in course. Students who have good self-efficacy will be more motivated to be more active in using e-learning products, so that the intensity of e-learning will be higher.

H2: Perceived usefulness has a significant positive effect on self-efficacy

Perceived usefulness has been one of the dominant factors that shape the desire behavior to use technology. According to Surendran (2013) perceived usefulness is defined as assessment of the prospective (good hope) that comes from personal view, which by using a particular application system will improve quality of work and quality of life. Fadare (2015) point out that people tend to use or not to use depending on degree of confidence that the app can help them do the job better or not. PU has a direct impact on behavioral intentions to use technology (Fadare, 2015). Usability perceptions will further encourage students to better use e-learning products as a product required by each student. Because e-learning itself can be accessed anywhere and anytime as long as connected to internet network. Ease of access amid the busyness will further increase perception of individual user use.

Human factors that use to be one element to encourage students in using e-learning products. Self-efficacy is a factor in students who can encourage the use of e-learning products. Self-efficacy is a belief in one's ability to move, motivate cognitive sources and set of actions necessary to meet demands of situation at hand (Bandura, 1989). Growing belief in students will encourage students to be more confident in using e-learning products as a source of additional information in course. Students who have good self-efficacy will be more motivated to be more active in using e-learning products, so the intensity of usage (actual usage) e-learning will be higher.

H3: Perceived usefulness has a significant positive effect on actual usage mediated by self-efficacy

Perceived ease of use is the level at which a person believes in using a system without need for hard work (Fred D Davis, 1985). Perception of ease of use influences the perception of usefulness of technology. When an individual judges if technology is easy to use, then he will know its utilization on work activities. Further consideration of the desire to apply technology or not, will depend on level of ease in studying its use. The easier technology is used it will be high interest invidu to use (Barhoumi, 2016; Khan, Professor, & Woosley, 2019). More difficult technology is used, lower individual interest will be to use it, and more slower individual and community will adopt (Venkatesh & Bala, 2008). In addition, perceptions of perceived ease of use become a boost for students to use e-learning products made by universities more often.

H4: Perceived ease of use has a significant positive effect on actual usage

Perceived ease of use is defined as the extent to which potential users expect target system to be easy to implement. In other words user does not expect the high difficulty to learn and apply the use of such technology (Chuttur, 2009; Surendran, 2013). When an individual judges if the technology is easy to use, then he will know its utilization on work activities. In other words, the perceived level of ease of using technology will affect his / her confidence to use e-learning. Human factors that use to be one element to encourage students in using e-learning products. Self-efficacy is a factor in students who can encourage use of e-learning products. Self-efficacy is a belief in one's ability to move, motivate cognitive sources and set of actions necessary to meet the demands of situation at hand (Bandura, 1989). The more difficult it is to use new technology, the less desire to use it (Alomary & Woollard, 2015).

H5: Perceived ease of use has a significant positive effect on self-efficacy

Ease of use is defined as individual perception that use of new technology will be free from hardship and endeavor. Applying this to research context, ease of use is a consumer perception that shopping on internet will involve only minimal effort (Md Johar & Akmar Ahmad Awalluddin, 2011). Venkatesh and Bala (2008) gives definition of PEU more emphasis on utilization of information technology systems and their applications. PEU is defined as level of trust in use of Information Technology (TI), the level of confidence that to apply technology requires no great effort in its use or application and does not require great effort in its users. The perception of ease of use influences the perception of usefulness of technology. When an individual judges if the technology is easy to use, then he will know its utilization on work activities.

Further consideration of desire to apply the technology or not, will depend on the level of ease in studying its use. The easier technology is used it will be high interest invidu to use (Barhoumi, 2016; Khan et al., 2019). Growing belief in students will encourage students to be more confident in using e-learning products as a source of additional information in course. Students who have good self-efficacy will be more motivated to be more active in using e-learning products, so that the intensity of e-learning will be higher. Individual self-efficacy of a product can be grown by identity attached to the product. Ease of access amid the busyness will further increase perception of individual user use. So for the usage (actual usage) e-learning products become more often done by students. In addition, perception of perceived ease of use becomes a boost for students to use e-learning products made by universities more often.

H6: Perceived ease of use has a significant positive effect on actual usage mediated by self-efficacy

Human factors that use to be one element to encourage students in using e-learning products. Self-efficacy is a factor in students who can encourage the use of e-learning products. Self-efficacy is a belief in

one's ability to move, motivate cognitive sources and the set of actions necessary to meet the demands of situation at hand (Bandura, 1989). Confidence that grows in students will encourage students to be more confident in using e-learning products as a source of additional information in lecture. Students who have good self-efficacy will be more motivated to be more active in using e-learning products, so that the intensity of the use of e-learning will be higher. Ease of access amid the busyness will further increase perception of individual user use. So for the use (actual usage) e-learning products become more often done by students. In addition to internal factors created in e-learning products, then it takes other factors that can encourage students to more and more using these e-learning products.

H7: Self-efficacy has a significant positive effect on actual usage

IV. RESEARCH METHODOLOGY

Sample of the study using students who apply electronic-based learning at Airlangga University. Airlangga University was chosen because it already has an e-learning portal in learning process. Although not all lecturers/ lecturers apply to students, but already there are some subjects that use e-learning as a medium of learning and doing exams online. Population in this study are students of Airlangga University who are active or have used/ follow AULA (Airlangga University e-Learning Application), which can be accessed through aula.unair.ac.id. Data used from this research are 135 distributed questionnaires to students of Airlangga University. Data analysis techniques use PLS Warp program. This research focuses on the use of e-learning by students of Airlangga University. There are no studies or literatu who examine self-efficacy as a mediation variable of actual usage in Indonesia, especially at Airlangga University related to the use of AULA (Airlangga University e-Learning Application).

In this study have two independent variables, namely: perceived usefulness and perceived ease of use. Both of these variables are measured by using questionnaires questionnaire likert5 points, ranging from strongly disagree (1) to strongly agree (5). Perceived usefulness and perceived ease of use variables were measured by a questionnaire developed by (Q. Wang, 2009); Fred D Davis (1985); Venkatesh and Davis (1996). Mediation variable used in this study is self-efficacy. Self-efficacy variable as mediation is measured by using 5-point likert questionnaire question, ranging from strongly disagree (1) to strongly agree (5). Self-efficacy was measured by a questionnaire developed by Q. Wang (2009). Actual usage as a dependent variable was measured by a questionnaire developed by Q. Wang (2009); Fred D. Davis (1989); (Venkatesh & Davis, 1996). This variable is measured by using a 5-point likert questionnaire question, ranging from strongly disagreeing (1) to strongly agreeing (5).

V. RESULT AND ANALYSIS

Regarding the acceptance of e-learning technology, researchers examined the influence of factors outside TAM model perceived at reception. This means that in terms of acceptance methodology, researcher wants to build its influence on intent of the user to use system. In this case, researchers want to see whether self-efficacy makes students more willing to use e-learning. In addition, researchers wanted to find out whether perceived usefulness and perceived ease of use can actually predict the number of users of this type of system by students as users.

Demographics of Respondents

The results of this study found that female respondents as many as 91 people (67.41%) and men as many as 44 people (32.59%). For educational background of respondents vary, ranging from D3 level, S1, S2 and S3. Majority of respondents are dominated by undergraduate students as much as 99 people (73.33%). Experience using internet is required for ease in Airlangga University e-Learning Application (AULA). Based on data of respondents, as many as 58 people (42.96%) has had experience in using internet alone between 7-10 years. This shows that internet technology has become a very common thing nowadays. The various sectors of life are almost inseparable. The use of internet / computer is not only limited to internet access for social media or playing games, but also can be used as a learning tool through e-learning. Majority of respondents as many as 48 people (35.56%) spent time using computer/ internet for more than 9 hours a day. Without realizing it almost dominates time in daily activities. Among the users, as many as 55 people (40.74%) spent between 1-3 hours of use to learn. The following is demographic data of respondents:

Table I. Demographics of Respondents

Demographics	Category	N	Percentage
Gender	Male	44	32,59%
	Female	91	67,41%
Age	≤ 19 years	3	2,22%
	20-25 years	122	90,37%
	26-30 years	3	2,22%
	> 30 years	7	5,19%
Educational	D3	7	5,19%
	S1	99	73,33%
	S2	28	20,74%
	S3	1	0,74%
Internet access at home	No	17	12,59%
	Yes	118	87,41%
Experience using internet	1-3 years	6	4,44%
	4-6 years	23	17,04%
	7-10 years	58	42,96%
	> 10 years	48	35,56%
Computer usage (per day)			
Spend time using your computer / internet (per day)	< 1 hours	1	0,74%
	between 1-3 hours	19	14,07%
	between 3-5 hours	28	20,74%
	between 5-7 hours	22	16,30%
	between 7-9 hours	17	12,59%
	>9 hours	48	35,56%
Spend time using computer / internet to learn (per day)	< 1 hours	15	11,11%
	between 1-3 hours	55	40,74%
	between 3-5 hours	39	28,89%
	between 5-7 hours	14	10,37%
	between 7-9 hours	7	5,19%
	>9 hours	5	3,70%

Outer Loading, Reliability Coefficient and Average Variances Extracted

Tabel II. Outer Loading, Reliability Coefficient and Average Variances Extracted

		Outer Loading	Reliability	AVE	Conclusion
PU1	I find Airlangga University e-Learning Application (AULA) very useful for learning process.	0,682	0,815	0,526	Significant
PU2	Using Airlangga University e-Learning Application (AULA) allows me to complete tasks faster.	0,696			Significant

		Outer Loading	Reliability	AVE	Conclusion
PU3	Airlangga University e-Learning Application (AULA) made it easier for me to study at the university.	0,753			Significant
PU4	Airlangga University e-Learning Application (AULA) helps me learn more efficiently.	0,765			Significant
PEU1	My interaction with Airlangga University e-Learning Application (AULA) is clear and understandable.	0,799	0,913	0,725	Significant
PEU2	It would be easy for me to be skilled in using the system.	0,876			Significant
PEU3	I found Airlangga University e-Learning Application (AULA) easy to use.	0,873			Significant
PEU4	Learning to operate Airlangga University e-Learning Application (AULA) is easy for me.	0,856			Significant
AU1	I will personally use Airlangga University e-Learning Application (AULA) during learning process.	0,836	0,897	0,686	Significant
AU2	I will personally use Airlangga University e-Learning Application (AULA) as a reference for learning activities.	0,817			Significant
SE1	I can access content from Airlangga University e-Learning Application (AULA)	0,802	0,902	0,698	Significant
SE2	I can freely navigate content from Airlangga University e-Learning Application (AULA)	0,862			Significant
SE3	I can use Airlangga University e-Learning Application (AULA) without being told how it functions	0,818			Significant
SE4	I can solve the problems that appear on Airlangga University e-Learning Application (AULA)	0,858			Significant

According to Table II, the outer loading value for the largest perceived usefulness variable is PU4 (0.765). Perceived ease of use variable also has the largest outer loading value of PEU2 (0.876). Outer loading value for the actual largest usage variable is at AU1 (0.836). Meanwhile, for self-efficacy variable, the largest outer loading value is SE2 (0.862). The results from table II show that all indicators have outer loading factor value > 0.5. This indicates that the indicator is eligible to reference variable, indicators have met the convergent validity. The measurement of discriminant validity is to compare average of Average Variance Extracted (AVE) square value of each construct with the correlation between other constructs in the model. Based on Average Variances Extracted (AVE) table, AVE value for each variable of construct > 0.5. It can be concluded that every variable of this research has fulfilled discriminant validity. When viewed from the value of composite reliability

coefficient, shows that from each variable perceived usefulness (0,815), perceived ease of use (0,913), actual usage (0,897) and self-efficacy (0,902) used in this research have fulfilled rule of thumb.

To see whether or not a reliable tool gauge is done through the coefficient of reliability with the value of reliability coefficient should be > 0.7 . It can be concluded that each variable has a high reliability, which can be seen from all values of composite reliability is > 0.7 . These results indicate that the model in this study has been reliable. In some cases, loading requirements above 0.70 are often not met especially for newly developed questionnaires. Nunnally (1978) states that cut-off loading used is 0.40. Therefore, the loading factor between 0.40-0.70 should still be considered to be maintained. Furthermore it is also explained that indicator with loading factor < 0.40 should be removed from the model. Deletion of indicator by loading between 0.40-0.70 is performed if indicator can improve AVE and Composite reliability above its limit value. In this study, self-efficacy variables with SE5 and SE6 indicators should be eliminated from the model. Limit value for AVE > 0.50 and composite reliability is > 0.70 . In this study, SE5 and SE6 indicators should be eliminated since their loading values are 0.053 and 0.351. Therefore, the result of composite reliability measurement in this research shows that all variables have composite reliability value greater than 0.70. It can be concluded that all the variables in this study are reliable and reliable for use in further analysis.

Hypothesis testing

The following is output of the mediation test. In this mediation test, researchers divide two groups, namely: (1) direct effect and (2) indirect effect. Direct effect test is to examine the effect of perceived usefulness on actual usage, perceived usefulness to self-efficacy, perceived ease of use to actual usage, perceived ease of use to self-efficacy and the last is self-efficacy against actual usage. While indirect effect test is to test mediation variable in the form of self-efficacy test to mediate perceived usefulness toward actual usage and self-efficacy test to mediate perceived ease of use to actual usage.

Table III. Direct hypothesis influence testing

Hypothesis		Path Coefficient	P Values	Conclusion
H1	PU \rightarrow AU	0,030	0,363	Reject
H2	PU \rightarrow SE	0,246	0,001	Accept
H4	PEU \rightarrow AU	0,119	0,078	Accept
H5	PEU \rightarrow SE	0,205	0,007	Accept
H7	SE \rightarrow AU	0,478	$< 0,001$	Accept

The results of hypothesis test table of direct influence on table III, when viewed from path coefficient shows that the direct influence between perceived usefulness of actual usage has a weak effect. This is indicated by result of p-value of 0.363, so it can be said is not significant. However, path coefficient value of perceived usefulness is a positive result of 0.030 to actual usage. This coefficient path number indicates that if there is an increase in perceived usefulness, actual usage will increase by 0.030. Vice versa, every time a decrease in value perceived usefulness of one unit, assessment of actual usage will decrease by 0,030. Thus it can be concluded hypothesis (H1) is unacceptable. The result of hypothesis 1 (H1) test shows that perceived usefulness has no significant positive relationship to actual usage.

The results for hypothesis 1 (H1) test show that perceived usefulness perception toward e-learning, will not affect usage level. This may be caused by other factors that influence, other factors such as role of teachers / lecturers. There are students who think that the use of e-learning just to fulfill task of lecturer only. The rest of students will not use e-learning. The existence of demands from lecturers to use e-learning as a medium of learning to make students would not want to have to use e-learning in the course he took. It can also be attributed to student experience or the nature of learning technology. The results of hypothesis 1 (H1) testing are not in line with Tao (2009) study, where perceived usefulness has a significant impact on both intentions to use and actual use of e-resources while the effect of ease of use on intent to use and actual use is mediated by perceived usefulness. Fred D Davis (1985); I. C. Chang et al. (2005); Szajna (1996) found that when users had little or no prior experience using the system, they usually paid more attention to the ease of use of the system than its usefulness, but once familiar with the system, the system's usefulness was the primary concern for whether or not to continue using system. Therefore, user's first impression of ease of use of the system will open the door to explore the system further, and if the system can also provide useful information, it is easier for users to receive the system in the end.

The direct relationship between perceived usefulness to self-efficacy shows a p-value of 0.001, which is smaller than 0.05 to indicate a significant relationship. Path coefficient of relationship is 0.246, which means there is a positive relationship between perceived usefulness and self-efficacy. This coefficient path number

indicates that if there is an increase in perceived usefulness, self-efficacy will increase by 0.246. Vice versa, any impairment of perceived usefulness of one unit, then self-efficacy assessment will decrease by 0.246. Thus hypothesis (H2) is acceptable. The result of hypothesis 2 (H2) test shows that perceived usefulness has a significant positive effect on self-efficacy.

The results of hypothesis 2 (H2) testing are in line with some studies that have been done before. In another study revealed that the desire to apply technology or not, will depend on the level of ease in studying its use. The easier technology is used the higher individual's interest to use it (Khan et al., 2019). The more difficult technology is used, the lower individual interest will be to use it, and slower individual and community will adopt (Venkatesh & Bala, 2008). Fred D Davis (1985); I. C. Chang et al. (2005); Szajna (1996) found that when users had little or no prior experience using the system, they usually paid more attention to ease of use of the system than its usefulness, but once familiar with the system, the system's usefulness was the primary concern for whether or not to continue using the system. Therefore, the user's first impression of ease of use of the system will open the door to explore the system further, and if the system can also provide useful information, it is easier for users to receive the system in the end. Self-efficacy as a consideration of its abilities to organize and perform set of activities required to obtain planned performance. Attitudes do not fully mediate as a result of usability perceptions and perceptions of ease of use. Computer self-efficacy becomes one of the antecedent perceptions of ease of use.

The direct relationship between perceived ease of use towards actual usage shows a p-value of 0.078, which is less than 0.1 to indicate a significant relationship. Path coefficients of relationship is 0.119 which means there is a positive relationship between perceived ease of use with actual usage. This coefficient path number indicates that if there is an increase in perceived ease of use, the actual usage will increase by 0.119. Vice versa, there is a decrease in value perceived ease of use by one unit, then the assessment of actual usage will decrease by 0.119. Thus hypothesis (H4) is unacceptable. The result of hypothesis 4 (H4) test shows that perceived ease of use has a significant positive correlation to actual usage.

The results of hypothesis 4 (H4) testing are in line with Tao (2009) study, where perceived ease of use is perceived to have a significant impact on both intentions to use and actual use of e-resources while the effect of ease of use on intent to use and actual use mediated by perceived usefulness. Fred D Davis (1985); I. C. Chang et al. (2005); Szajna (1996) found that when users had little or no prior experience using system, they usually paid more attention to ease of use of the system than its usefulness, but once familiar with the system, the system's usefulness was the primary concern for whether or not to continue using the system. Therefore, the user's first impression of the ease of use of the system will open the door to explore the system further, and if the system can also provide useful information, it is easier for users to receive the system in the end. Therefore, emphasizing the ease of use of the system should be the focus in initial training during the system implementation process. Both usefulness and ease of use of factors serve to drive the adoption of ultimate technology while ease of use plays a very important role in early acceptance and usability is an important factor that affects the continuation of acceptance.

The direct relationship between perceived ease of use against self-efficacy shows a p-value of 0.007, which is smaller than 0.05 to indicate a significant relationship. Path coefficients of relationship is 0.205 which means there is a positive relationship between perceived ease of use with self-efficacy. This coefficient path number indicates that if there is an increase in perceived ease of use, then self-efficacy will increase by 0.205. Vice versa, any impairment of perceived ease of use by one unit, then the self-efficacy assessment will decrease by 0.205. Thus hypothesis (H5) is acceptable. The result of hypothesis testing 5 (H5) shows that perceived ease of use has a significant positive effect on self-efficacy.

The results of hypothesis testing 5 (H5) show that the perceptual state of ease of use of technology is driven by the first level of individual confidence that they have ability to use technology. The higher their level of confidence in ability they have, the higher perception of ease of using technology. So it can be concluded if the perception of ease of using technology to encourage increased perceptions of usefulness that implicate intention to use technology to implement e-learning.

The direct relationship between self-efficacy against actual usage shows a p-value of <0.001, which is smaller than 0.05 to indicate a significant relationship. Path coefficients of relationship is 0.478 which means there is a positive relationship between self-efficacy with actual usage. Thus hypothesis (H7) is acceptable. This suggests that increasing self-efficacy will improve actual usage as well. The result of hypothesis 7 (H7) test shows that self-efficacy has a significant positive effect on actual usage.

Table IV. Indirect hypothesis influence testing

Hypothesis				Path Coefficient	VAF	
H3	PU	→	→	SE	0,13407	81,715%
	AU					
H6	PEU	→	→	SE	0,111725	48,423%
	AU					

To conduct SEM-PLS mediation testing used with Variance AccountedFor (VAF) method the following models and formulas:

$$VAF = \frac{\text{Indirect effect}}{\text{Total Effect}}$$

Result of hypothesis 3 (H3) test in table IV about hypothesis test of indirect effect, seen that value of VAF equal to 81,715%. Then it can be concluded by referring to criteria: (1) if VAF value > 70% of full mediation role, (2) if VAF has a value > 20% - <70%, then it can be categorized as partial mediator. VAF value in hypothesis 3 (H3) of 81,715% included in full mediation category.

The results of this hypothesis 3 (H3) test are in line with Alomary and Woollard (2015); Venkatesh and Bala (2008) studies, which expressly affirm PU has an influence on intention to use. The presence of PU directly affects behavioral intentions to use. PU has a direct impact on behavioral intentions to use technology (ITU) (Fadare, 2015). Furthermore, from the results of research Ducey and Coovert (2016) note that the intention or desire to behave for adoption of new technology more strongly determined by attitude of a person such as PEU and PU compared with subjective norms.

Result of hypothesis test 6 (H6) in table VII about hypothesis test of indirect effect, seen that value of VAF equal to 48,423%. Then it can be concluded by referring to criteria: (1) if VAF value > 70% of full mediation role, (2) if VAF has a value > 20% - <70%, then it can be categorized as partial mediator. VAF value of hypothesis 6 (H6) of 48.423% belongs to category of partial mediation.

Test results from hypothesis 6 (H6), in line with the results of Ducey and Coovert (2016) study, it is known that the intention or willingness to behave for adoption of new technologies is stronger determined by one's attitude such as PEOU and PU compared with subjective norm. Ducey and Coovert (2016) indicates that intention to use is positively influenced by PEU and PU. Self-efficacy as a consideration of its abilities to organize and perform the set of activities required to achieve planned performance. Attitudes do not fully mediate as a result of usability perceptions and perceptions of ease of use. Computer self-efficacy becomes one of antecedent perceptions of ease of use. So it can be concluded if the perception of ease of using technology encourages increased perceptions of usefulness that implicate intention to use technology to use e-learning.

VI. CONCLUSION

E-learning is part of learning method of Computer Supported Collaborative Learning (CSCL) method in information age which focuses on use of computer as a tool. In addition to the perceived usefulness of using e-learning, it will not be an obstacle if learners have a strong desire to utilize this technology. All things can be learned quickly and easily if learners have a very strong desire to use e-learning. The purpose of this study is to obtain empirical evidence related to actual usage of the use of e-learning with self-efficacy as a mediation variable at Airlangga University. Data used from this research are 135 questionnaires distributed to students of Airlangga University. Data analysis techniques use PLS Warp program. Based on the results of data analysis that has been done before, it can be concluded that perceived usefulness has no significant positive relationship to actual usage. Meanwhile perceived usefulness has a significant positive effect on self-efficacy and actual usage mediated by self-efficacy. Self-efficacy as a mediator between perceived usefulness with actual usage belongs to full mediation category. Perceived ease of use has a significant positive effect on actual usage, but has a significant positive effect on self-efficacy and when actual usage is mediated by self-efficacy. Self-efficacy has a significant positive effect on actual usage.

This clearly proves that perceived usefulness and perceived ease of use do not directly ensure that users will use e-learning significantly. This fact explains that there are other factors that can explain acceptability of e-learning that has not been proven in this study that might improve quality of cognitive domain and affective domain relationships against actual usage in domain behavior in TAM. This study proves that in explaining user's desire to use e-learning can be influenced by external factors from TAM. While user's desire can not be

said to illustrate that students will use the system more often or not. The more difficult technology is used, the lower interest of individual to use it, and the slower individual and community will adopt (Venkatesh & Bala, 2008). In addition, perceptions of perceived ease of use become a boost for students to use e-learning products made by universities more often.

As a final conclusion, acceptance and adoption of new technologies to be real use is a very complex thing. This study provides some implications for the phenomenon in educational context, but many more leave unanswered questions. While studying technology within an organization is not enough just to concentrate on technology alone but also must focus on overall factors that influence it. The habit of using technology can not be defined simply by knowing desires of users. As well as according to Bashir and Madhavaiah (2014) stating that individuals who feel new technologies such as internet banking are trustworthy, it is generally better to believe in using internet and thus expected to be able to use it. Because user's desire does not necessarily make it will use the technology significantly.

This study has limitations, where the study was conducted in only one university. So this research only get related empirical evidence only, can not be done comparison with other universities that also use e-learning. In addition, the number of respondents is small, so the possibility of making the results of analysis is less significant. Time to do is very limited research, making the time span in questionnaire collection only briefly. So the amount obtained from filling questionnaire less than maximum. Research conducted through questionnaires, data from the results of questionnaire may be providing results that are biased and provide less real answers.

For further research can be done research in other universities that use e-learning so that can be compared. Because not every university has implemented an online learning system with e-learning. There is also a university that already has e-learning facilities, but not yet well utilized. Not necessarily every lesson that is given can be accessed via e-learning. Subsequent research can also be done in similar studies but with different variables or by adding other variables. In this study, goodness of fit (GOF) is 40.2%, which means total ability of all variables to explain has a reliability level of 40.2%. In other words there is still an opportunity of about 59.8% for other variables beyond this research model that can refine explanation in the study. In further research, it should involve the lecturer or lecturer as one type of user. Because indirectly student will use e-learning if there is an encouragement from the teacher / lecturer.

The habit of using technology can not be defined simply by knowing the desires of users. Implications of this research can be used as an evaluation of the use of e-learning at Airlangga University in order to be used properly. In addition, the use of Airlangga University e-Learning Application (AULA) has not been fully used in all courses. For the future, it can be socialized to Airlangga University e-Learning Application (AULA), so that students and lecturers know and understand e-learning in order to maximize their use.

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