

Predicting Factors Influencing Usage Intention of E-Learning

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Abstract

Through the help of the internet, a large number of higher education institutions encourage faculty and students to adopt e-learning. The objective of this paper is to discuss the factors that might influence the usage intention of e-learning among students at the tertiary level by using a theoretical model of the extended technology acceptance model (TAM). Based on literature reviews, several factors are considered to be very influential on the e-learning usage intention, which will be the discussion of this paper including aspects of an organization, culture, and technology. These will cover the importance of considering organizational support and values belong to a social group. These factors will be integrated with the determinants of technology, namely perceived ease of use, and perceived usefulness as determinants of e-learning usage intention of students.

Keywords: Technology Acceptance Model (TAM), the Internet, e-learning, organizational support, organizational culture, perceived ease of use, perceived usefulness, usage intention.

1. Introduction

Information and communication technology (ICT) devices, especially micro-electronic revolution has been proven since the 80's brought a tremendous change in the life of the organization, i.e., with the expansion of computers and computer-based process. This period led to a millennium that is associated with the web 1.0, the web 2.0 and the cloud (web 3.0) consecutively where rapid development of web technology has affected nearly every aspect of our life.

After experiencing many changes and developments in functionality and ease over time, the technological equipments are easily adopted because they have been through the process of downsizing and down pricing so that much more portable and affordable. The capacity of the host computer (mainframe) with large size and high price now may be substituted with a smaller unit that is easy to carry with a very affordable price. With the cloud, an institution does not necessarily spend a huge investment in network infrastructure such as data storage and maintenance. This has encouraged many institutions or organizations adopt and use it to facilitate the achievement of organizational objectives, including efforts to improve the management of learning in an agency or organization to become a learning organization as a very important asset to gain competitive advantage.

The use of computers, web technology and a variety of other services through internet forms provide great opportunities for an organization with employees and clients who are in it. Success in adopting and utilizing technology requires not only the changes in the design structure of an organization or a college to facilitate the application of computers and or internet technology but also the changes of the behaviour of the employees and clients.

In practice, adoption of these technologies has not been able to ensure the implementation of a more strategic teaching at local college institutions. For that reason, in depth discussion is required not only limited to the implementation issues of the technology, but also related to the cultural values belong to the recipients and potential users. Employees and clients such as faculty members and students, administrative staff of a college require adjustments towards knowledge and new technologies, so that the procurement and its use is increasingly contributing to the achievement of the dissemination of knowledge and the transfer of knowledge through e-learning.

2. Literature review

2.1. E-learning and technology acceptance models

E-Learning is a term for all the mechanisms that are used to assist the process of learning and the dissemination of information through electronic media. The term e-learning in this study is related to the use of the Internet as an instructional medium. This medium has been used extensively in the higher education sector in Indonesia, helping to narrow the gaps of teaching and learning resources and at the same time helping educational institutions in terms of distance barriers and geographical differences. E-Learning offers alternative methods to the stake education holders to not only utilize the existing resources, but also offers a potential resource that is cheap and can be forwarded to the student community. E-learning offers the flexibility of place and time of the presentation and reception of information learning in higher education institutions and students. Online learning can be and involves more flexible technologies, such as audio, chat, video conferencing and online discussion. These technologies provide opportunities for learners to interact with instructors and other learners effectively

and flexibly ^[1].

Development of the theory of constructivism in the socio-cultural conception of culture as a dimension puts a very important thing in learning the norms, values and beliefs emphasize the social context and interaction. Constructivism is rooted in cognitive psychology, biology and approaches to learning that emphasizes the need for the ways knowledge is built to match the real world. This theory underpins and inspires the use of e-learning that enables learners to interact easily with their peers, groups, instructors and parents

E-learning can be classified into three categories. First, *asynchronous e-learning*, i.e. learning which is presented in the form of self-study and allows learners to follow their time and schedule. Therefore, learners are given the freedom of time, the learning model is not done by the learner and instructor interaction in the form of real time ^[5]. Second, *synchronous e-learning* allows learners and instructors to interact in real time and get a response just in time, but with this platform learners and instructors must participate simultaneously even from several locations. So in this way, the interaction between the learner and the instrument are inflexible ^[5]. *Last, blended e-learning* combines e-learning with asynchronous and synchronous e-learning.

2.2. Theory and Model of Technology Acceptance

In 1980 Ajzen and Fishbein developed a theory and model which they called theory of Reasoned Action (TRA). This model forms the foundation of the framework of studies related to the attitude - behaviour relationship. This model has been adapted for use in a variety of fields and is commonly used in academics and businesses. TRA ^[2] postulated that the beliefs influence on attitude and social norms which in turn shape the behavioural intention that directs and even dictate individual's behaviour. Derived from TRA, ^[11] developed TAM to explain the causal relationship between the two main beliefs: perceived usefulness and perceived ease of use as well as user's attitude, interest and actual computer usage behaviour. As a result, ^[10] proposes that users are influenced by the attitudes of the two beliefs, namely through perceived usefulness and perceived ease of use. Perceived usefulness, according to ^[10] as the degree to which a user believes that using a particular system would affect work performance and productivity in a positive way. Meanwhile, perceived ease of use of a system is the degree to which a person believes that using a particular technology is easy, free from difficulty or great effort ^[11]. The following year, ^[37] tested positive relationship between users' perceptions regarding the benefits (perceived usefulness) and the desire to use the system (behavioural intention to use).

2.3. Culture and Organizational Culture

^[16] describes culture as a collection of programs for the human mind that distinguishes each person from a group or a group to another group. According him, culture is a collective phenomenon, because it is at least partly culturally experienced and adopted along with the people who live in the same social environment. He assists, culture contains the rules of unwritten social behaviour. According ^[20] corporate culture is closely linked to the strategy formulated by the top leadership position by linking the institutions with its environment. In this discussion, the acceptance of technology is considered much influenced by the culture shown by the organization that describes how an organization displays its activities. In the context of e-learning, adaptability, mission, and leadership selected as most relevant cultural dimensions to be considered as affecting the behaviour of acceptance of e-learning technologies.

2.4. Perceived Organizational Support

The concept of perceived organizational support (POS) is derived from the theory of organizational support. In this study, it is defined as the level of effort in promoting the college students to use e-learning. In relation to the perception of benefits, ^[12] proposed that organizational support is an important factor affecting perceived usefulness. Similarly, the existence of a number of other studies suggests that organizational support is positively related to perceived ease of use, perceptions of pleasure, and subjective norm.

2.5. Self-efficacy

In the context of e-learning, self-efficacy represents the dimensions of perceived behavioural control construct in the theory of planned behaviour (TPB) ^[14]. According to ^[14] a person who has a task-specific self-efficacy has a strong tendency to complete the e-learning programs because this form of self-efficacy affects the effort, persistence, and hard work to overcome barriers to training. In online environmental training, computer self-efficacy is also an important characteristic of the trainees to e-learning situations. It is also found that self efficacy has a positive impact on learning achievement with e-learning.

2.6. Anxiety to Computer

Anxiety is an emotional state that does not have a specific object described by a feeling of uncertainty and helplessness. According to ^[7,36] anxiety is a situation that is perceived by the individual feelings of discomfort that might might bring impact on perceived ease of use of a system user, particularly during the early period of

adopting the system. Hence, students from disadvantaged learning environments will likely suffer from higher levels of nervous system activity as their lack of experience in using E-learning or computerized system as a whole.

2.7. Usage Intention

Intention is the subjective probability that a person has to show something of behaviour [13]. According to them, an intention of an individual shows something that is a function of both attitudes toward the realization of behaviour in certain situations as personal factors or attitudes and norms that influence the realization of one's behaviour and motivation to comply with these norms as social factors or norms. Both of them are a combination of reference-group perception or significant-person to the realization of the behaviour [13].

3. Conceptual framework and hypotheses

3.1. Conceptual Framework

In this model, there are four determinants associated with organizational culture, i.e. adaptability, autonomy, mission, and leadership. In addition, the latent variable of organizational support becomes a determinant of perceived usefulness, usage intention and perceived ease of use. In addition, the proposed model shows perceived ease of use and organizational culture are the important determinants of perceived usefulness and usage intention. The relationship among the variables shown in the Figure 1 below:

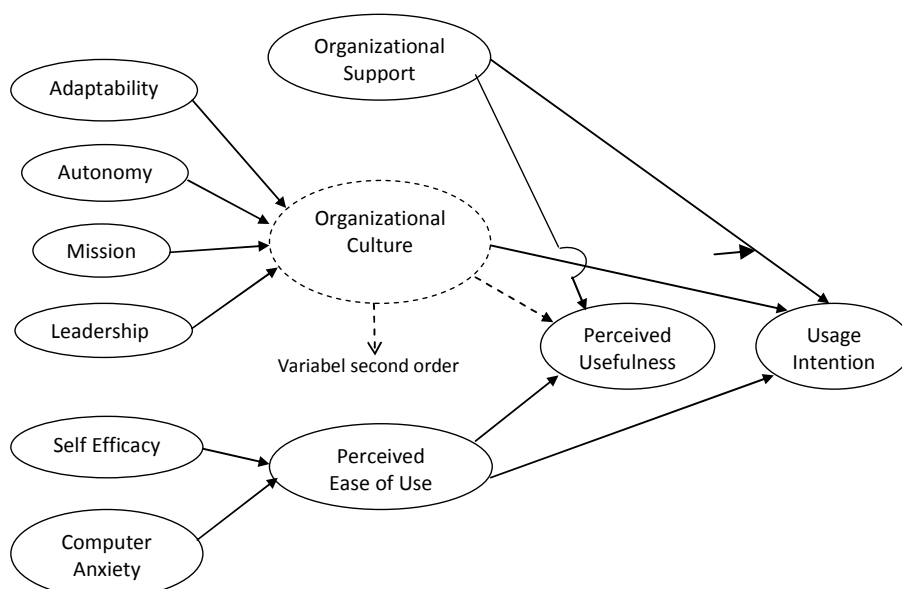


Fig 1. Planed Technology Acceptance Model of E-Learning

3.2 Hypothesis

The Effect of Self-Efficacy on Perceived Ease of Use

A number of previous studies show a relationship between self-efficacy with perceived ease of use, among others, are performed by [7, 11, 23, 34, 18]. In contrast, computer self-efficacy has no significant effect on the perceived usefulness, but very positive effect on perceived ease of use on the adoption of e-learning research students who netted through online surveys [22]. Therefore the following hypothetical statement is formulated.

H 1. There is a positive and significant relationship between Self Efficacy with Perceived ease of use of e-learning

The Effect of Computer Anxiety on Perceived Ease of Use

Positive relationship between anxiety with perceived ease of use and perceived usefulness is proposed by [18, 31, 4, 7]. However, a negative relationship was found between anxiety with perceived ease of use and perceived usefulness proposed by [3]. Therefore, these contradicted findings drive the following hypothesis.

H 2. There is a positive and significant relationship between computer anxiety and perceived ease of use.

The Effect of Perceived Organizational Support on Usage Intention

Previous studies regarding the relationship between organizational support and perceived usefulness, such as [7] who found a positive effect in the use of e-learning system in a hospital. In addition, [18] found perceived organizational support has direct influence (but less powerful) on the perceived ease of use of the computer

users in Finland. Therefore, the following hypotheses are formulated.

H 3. There is a positive and significant relationship between the organizational support and the usage intention of e-learning.

H4. There is a positive and significant relationship between the organizational support and the usage intention through perceived usefulness.

Adaptability influence on Usage Intention

Based on organization theory, the main elements for an organization to achieve success are innovation, creativity, risk-taking, flexibility and change, ^[8]. In relation to the acceptance of information technology, ^[26] also proposes if an organization is perceived as an adaptive organization and is constantly looking for improvements, then it will generate a positive attitude toward the use of information technology to improve its operations. Therefore, the following proposition is proposed:

H/P5. There is a positive and significant relationship between adaptability of organizational culture and usage intention of e-learning.

The Effect of Autonomy on Usage Intention

With the availability of a variety learning facilities and services, students can do and look for new innovations and thus increase the quality of student achievement.

H / P 6. There is a positive and significant relationship between autonomy of organizational culture and usage intention of e-learning.

Mission influence on Usage Intention

In this culture type, according to the theory of ^[8] executives and managers tend to aggressively communicate its strategic plan to gain productivity and high profit. In this context, a clear explanation of the organization's objectives can help students understand why using e-learning in an organization is important.

H / P 7. There is a positive and significant relationship between the mission of organizational culture and usage intention.

Leadership influence on Intention Usage.

According to ^[23] leadership is the ability to influence a group of people to achieve goals. Further, it is said that the source of these effects can be derived from the power of formal and informal power possessed by a leader. Power can be used to influence people to do things, including motivating the group to use e-learning technologies. Therefore the following proposition is proposed. In educational research, effort has been made to study the factors that influence technology integration into educational institutions. It is found that school leaders play an important role in the provision of school infrastructure that is conducive to the use of educational technology, ^[34]. H / P 8. There is a positive and significant relationship between the leadership and the organizational culture.

The Effect of Perceived Ease of Use on Perceived Usefulness

Positive relationship between perceived ease of use and perceived usefulness raised by several researchers, like ^[32,3,6,9,29,17,38]. Therefore the following hypothetical statement is formulated.

H9. There is a positive and significant relationship between perceived ease of use and usage intention through perceived usefulness.

The Effect of Perceived Usefulness and Perceived Ease of use on Usage Intention

Relationships of perceived ease of use and perceived usefulness with intention are still being debated among researchers of technology acceptance. Positive relationship is expressed by a number of researchers ^[9,6,29,24,22]. Instead, there are a number of findings that did not find a significant relationship between perceived usefulness and perceived ease of use on behavioural intention in technology acceptance studies among Korean students ^[25]. With these contradictions the following hypotheses are proposed:

H 10. There is a positive and significant relationship between perceived usefulness and usage intention of e-learning.

H 11. There is a positive and significant relationship between perceived ease of use with the usage intention of e-learning.

H12. There is a positive and significant relationship between perceived ease of use with usage intention through perceived usefulness.

4. Data Analysis and Model Development

Data analysis will be divided into two phases. The first stage includes reliability testing (inter-item consistency,

reliability) and validity of the measurements (convergent validity), descriptive statistics, maximum, frequency, percent, mean, standard deviation, skewness, kurtosis, Pearson correlation, T-test using SPSS. The next stage is testing the validity of the model by testing the measurement of discriminant validity and data analysis with Structural Equation Modelling (SEM). To obtain an overview regarding the condition of e-learning as well as the condition of population demographics, descriptive statistical analysis is to be used. Moreover, statistical techniques that will be used in this study were categorized into two groups, to look for differences between groups using t-test^[30] and the Structural Equation Modelling (Structural Equation Model = SEM) that will cover the analysis both of the outer and the inner models. SEM will become the dominant technique that will be used to estimate a series of interdependent relationships simultaneously^[15].

The main analysis of the data of this plan research proposal using structural equation modelling (SEM) as the primary technique in data analysis because this technique has more advantages over the conventional regression analysis. Further, the complex relationship that can be established between one or more independent variables and the dependent with the form factor or construct can be built from several indicator variables. In addition, SEM also integrates other techniques such as recursive path analysis, non-recursive econometric modelling, ANOVA, analysis of covariance, principal component analysis and classical test theory in^[21].

SEM technique with Partial Least Square (PLS) can also be used to analyse the measurement and structural models with multi-item constructs that include the direct effect, and indirect interactions^[36]. This technique makes it possible to analyse multiple relationships simultaneously and at the same time has the ability to estimate the error for variables defined^[35]. In addition, with this technique, the relationships between latent variables and observed variables and between the first and the second order variables for the development of new structures can be established in order to obtain new models^[33].

5. Conclusion

There has not been adequate discussion and empirical tested determinants of organizational culture and organizational support. Many of these studies which have been done in Europe and America just focused on technological factors and social psychological factors of the origin of discovery and development of these technologies. Very few discussions on the social and cultural contexts of different user communities in developing countries such as Indonesia. This proposal is expected to come up with an integrated and holistic view on e-learning acceptance prediction. The results of the study will highlight the influence of organizational support, organizational culture, perceived ease of use and perceived usefulness as the key predictors of *e-learning* usage intention.

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