

Study of Technology Adoption for E-Learning Development Model as a Foreign Language Learning Media

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Abstract- Use of information technology can provide better performance, because it can help in solving the problems faced by the community. In the education sector use of information technology has also become a part of the learning process. However, because the system of online learning such as e-learning and m-learning is still relatively new, it is highly susceptible to rejection, and a reluctance to use them. So the system should be run well and help the learning process, cannot be used properly or simply become tools that are never used. This research includes explanatory research that tries to describe the factors adoption of information technology, test the measurement model of innovation adoption and developing e-learning design model that complies with the needs of users, both as learners and trainers. This research was conducted using a quantitative approach with survey and interview methods.

Keywords- *Technology Adaptation, User Acceptance Model, Learning System*

I. INTRODUCTION

The development of information and communication technologies is one thing that cannot be avoided by all aspects of society. Today information technology is already widely used to support business processes in various institutions. Over the last twenty years the changes to the implementation of information systems in organizations has increased (Oudahi, 2008). Modernization of information and communication technology to support business processes also have an impact on the progress of an organization. However, in practice, the implementation and updating of information technology does not mean proceeded without problems.

Many studies have been done to look at the diffusion and adoption of IT by businesses. In the meantime, the development of information and communication technology in education is increasing. The role of ICT as a medium itself is supporting learning, as well as on e-learning system which is now popular in front of the public. But in this system the learner (student) is not free in terms of access, where he faces a computer somewhere to learn. The emergence of mobile technologies such as smartphones make students begin switching to mobile learning (m-learning) which gives the freedom to access information. M-learning has the sole use of

mobile technology to assist in learning, exploration reference or useful information at that time or in the context of a particular use. Through m-learning makes learning more and more focused and environmentally friendly. In addition m-learning is not only to provide information in the form of interactive material such as text, images, animations, but also the results of the evaluation of mastery of the material (Fuel & Bidin, 2014).

However, not many studies on the diffusion and adoption of IT to do with the case of education, given the many policies in government that require the use of IT, but less balanced on the aspects of readiness and capability of use of the system to be implemented. Often there is resistance from the school either in utilization or implementation of IT systems that will be implemented.

Furthermore the main drawback of the application of learning technology is a new technology is often not able to be absorbed effectively in teaching and learning in schools, this is because the resistance is high enough from lecturers or teachers in implementing a new teaching methods this is in line with what has been put forward by Acarli (Acarli & Sağlam, 2015). Furthermore the cultural differences between educators with learners make further hampered acceptance process technology

Adoption of information technology is expected to support the creation of organizational performance improvement. However, in practice, the implementation and updating of information technology does not mean proceeded without problems. In the field of information technology education has been widely used one of them for education data collection. The application of information technology to education data collection is expected to achieve the strategic development plans of national education. (Slamet, 2013) On the other hand the implementation of the education system logging information adversely affect the user. The difficulty of the user in the process of adaptation to the implementation of new information systems led to the data collection process becomes complicated because of the education that was originally done manually today conducted an internet based. Besides the difficulty operators to adapt to the new information system also led to a consistent level of education data collection is uneven. So often the information system of education that has been good, even considered burdensome and slow down the performance of the organization.

The main skills in foreign languages, according to Tarin (2008), covers four areas, namely: listening (hearing), speaking, reading and writing. In this case the role of information technology, especially E-Learning or M-Learning, has not been able to accommodate all of these requirements. So until now the use of E-learning to support foreign language learning process is relatively limited and in general but has not been able to fully change the teaching and learning process.

On the other hand, educational background, human resources, personal characteristics of the user, the system changes and the introduction / training information system is an important thing to consider in the process of adaptation of technological innovation, so as to direct the user's perception of the use of information technology to be used optimally. Adoption of information technology will be quickly accepted by the social sphere if it has a characteristic of the level of ease of use, benefits and add value to individuals and organizations.

Therefore, based on the explanation above, as for the purpose of this study is: Assessing the level of technology adoption, particularly educational technology for learning foreign languages, so as to provide design recommendations E-Learning development model that is appropriate.

II. LITERATURE REVIEW

In this section will be described literature review or theoretical approach that was able to become the basis of this research.

A. Diffusion of Innovation

Information technology can be seen as an innovation diffusion process involves two sides: the supply-side (supply side) and the demand side (demand side) (Tshabalala, et al., 2013). The supply side associated with the creation, production and diffusion of innovation, while the demand side focuses on the adoption and application of innovation. Diffusion and adoption is a second arbitrator this side. Rogers (1995) defines diffusion as the process by which an innovation is communicated through certain channels within a given time period among the members of a social system. In addition, the diffusion can also be considered as a kind of social change that is a process of changes in the structure and function of the social system.

Innovation is an idea, practice, or object that is considered / new perceived by individuals or groups of people. The phrase is considered / felt new to an idea, practice or object by some people, not necessarily in others. It all depends what is perceived by the individual or group to new ideas, practices or the object.

From the second synonym above, the diffusion of innovation is a process spreader uptake ideas or things that are new in an attempt to change a society that occurs continuously from one place to another, from one period to period this one, from a certain field to another field to a group of members of the social system. The main purpose of the diffusion of innovation is the adoption of an innovation (science,

technology, community development) by a member of a particular social system. The social system may be individuals, informal groups, organizations to the community.

The bigger and more complex innovations, the longer the time needed to diffusion. For example, the diffusion of the Internet in a society requires a longer time than the diffusion of baby bottles is much simpler than the Internet. In this case, Rogers, based on the results of a meta-analysis of the thousands of studies on innovation adoption concluded there are five common characteristics that affect the rate of diffusion of innovation, the relative advantage, compatibility, complexity, observe ability, and trial ability

Element-element on the diffusion of innovation

1. Innovation (ideas, actions or objects) that's new to someone. In this case, the novelty of innovation measured subjectively in the view of the individual who receives it.

2. The communication channel is a tool to convey messages of innovation from the source to the recipient. If the communication is intended to introduce an innovation to the audience that many and widespread, then the communication channels more precise, fast and efficient, is the mass media. But if the communication is meant to change attitudes or behavior of the recipient in person, then the most appropriate communication channels are interpersonal channels.

3. Timed, namely innovation decision process from starting one knows until it decides to accept or reject it. Inauguration of the decision is very related to the dimension of time. At least visible in the time dimension (a) the decision making process of innovation, (b) Innovation adoption (relative or earlier slow to accept innovation), and (c) the adoption rate of innovation in the social system.

4. The social system is a collection of different functional units and is bound in cooperation to solve problems in order to achieve a common goal.

B. Characteristic of Mandarin Language

Mandarin is a tone language, listening and speaking skills should pay attention to intonation and pronunciation. Because if the intonation is pronounced wrong, can lead to misinterpretation.

The following four tones in Chinese according to Zhou (2005).

第一声	第二声	第三声	第四声
yī (一 One)	yí (姨 aunty)	yǐ (椅 chair)	yì (艺 art)

In addition to paying attention to the tone, the learner should also pay attention to the pronunciation. Hànyī pīnyīn is the phonetic used in China, which is the International standard of Mandarin pronunciation Hànyī pīnyīn has been recognized and used throughout the country, both in Asia, America, and Europe. Hànyī pīnyīn is more effective in helping the teaching of hanzi script pronunciation for learners with a language background that uses alphabet letters (Zhou, 2005).

In Mandarin, there are similarities in pronunciation, but different intonations that the learners must pay attention to. Examples of similarity of pronunciation and difference intonation in Mandarin: 这是十四狮子,不是四十狮子 (zhè shì shí sì shī zi, bú shì sì shí shī zi.), Which means: there is fourteen lion, not forty lion' s. In the example the sentence consists of words 是(shì), 十 (shí), 四(sì) dan 狮(shī). Among the four words is almost identical pronunciation, ie shi and si, but with different intonation and pronunciation. In addition we also need to know that there are some hanzi characters that have two ways of reading with different meanings, for example: 落 can be read lào (means: wear of) and luò (means: fall), 给 can be read gěi (means: give) and jǐ (means: supply). The character of hanzi is a symbol language, as well as Japanese, Korean, and Arabic. In the case of writing, the hanzi character has a basic scratch and a standard stroke sequence (bùshùn) sequence as presented in table 1. As follows:

TABLE I. STROKE SEQUENCE IN MANDARIN LANGUAGE

No.	Stroke sequence	Stroke sequence	example
1.		横(héng)	“十” first stroke
2.		竖(shù)	“中” fourth stroke
3.		撇(piě)	“人” first stroke
4.		捺(nà)	“大” third stroke
5.		点(diǎn)	“主” first stroke
6.		提(tí)	“冷” second stroke
7.		héngzhé	“日” second stroke
8.		héngpié	“又” first stroke

III. RESEARCH METHODOLOGY

This study was designed as an explanatory study, as it aims to explain the effect of causal relationships among variables in clearly identified research problems (Zigmund, 2000: 39-41). This study aims to explain the relationship between hypothesized variables, namely between the ease of use to the value of benefits, satisfaction and motivation, on the use of Mobile learning system for learning Mandarin. The type of data in this study is cross-section data that is taking data at a certain time not long term (longitudinal).

Objects used are teachers and high school students or vocational high schools that have local Chinese content in Surabaya. This study emphasizes testing using numbers and performs data analysis with statistical procedures. In this study test and analyze the influence of exogenous variables ease of use to endogenous variables are: value of benefits, satisfaction and motivation.

A. Sample and Data retrieval Technique

The sample is part of the population elements to be studied, Sun (2006) states that the sample survey is a procedure in which only a portion of the population is taken and used to determine the nature and desired characteristics of the population. The sample research should be able to represent the state of the population, which means the data obtained is sample data. Sun (2006) says the sample is part of the number and characteristics possessed by the population. What is learned from the sample, the conclusion will be applied to the population. For that sample to be applied must be truly representative (representing).

There are two things that must be considered in the sampling that is about the number of samples and sampling techniques. Because using SEM then the sampling must also follow the SEM rule that the number of samples taken ranged from 50-100. With criteria:

1. Sample of this system is a direct user of an application that is educators and students of high school or vocational high school who have Mandarin subjects.
2. Sample using this Mobile Learning system in teaching and learning process.
3. The sample uses this system more than once and within the specified time period.

The sampling technique used in this study is proportional random sampling. Samples taken on the basis of teacher population groups as educators and students, in this case are also grouped on the level of their educational stratum, ie public high schools as general and vocational high schools of learning as the level of learning in the vocational model.

B. Research Instrument

The research instrument used in this study is a questionnaire. The questionnaire consists of a number of structured questions from indicators of each research variable, adopted from various theories and previous studies that are considered to have been tested for their reliability and validity.

Before the questionnaire submitted to the respondents as much as the number of research samples, it is necessary to test the questionnaire that is the test of validity and reliability. The goal is to know whether the measuring instrument (questionnaire) has the ability to measure what it wants to measure.

Scale used to measure latent variables of research is Likert scale with moving interval from range 1 to 5. In this case made the sequence as follows: Very agree once given the value 5, strongly agree given the value 4, Agreed given value 3, Disagree given the value 2, and strongly disagree is given a value of 1. The Likert scale is suitable for measuring the respondents' attitude and perception categories for the statements contained in the questionnaire (Mathieson, 1999).

C. Validity Testing

Validity means the degree of accuracy and accuracy of a measuring instrument in performing its measuring function. Ghozali (2008) states that the validity test is used to measure

the validity or validity of an indicator. An indicator is said to be valid if the indicator is able to reveal something that will be measured by construct variable.

The indicator is said to have good validity to a latent construct variable if the standardized factor loading is greater or equal to 0.5, the critical ratio value in the standardized factor loading is greater than the critical value of 1.96.

D. Reliability Testing

Reliability test aims to determine the consistency and stability of a score (measurement scale). Ghozali (Ghozali, 2008) states that reliability is a tool to measure the reliability or consistency of an indicator on a construct. A construct is said to be reliable or reliable if one's response to a statement is consistent or stable over time". Good construct reliability if:

The value of construct reliability > 0.7 with the formula,

$$\text{Construct Reliability} = \frac{(\sum \lambda_i)^2}{(\sum \lambda_i)^2 + \sum e_j} \quad (1)$$

Where:

λ = standardized loading

e = measurement error (e = 1- λ^2)

E. Data Analysis Technique

Phase data analysis is a very important stage because it requires high accuracy and accuracy, data processing using Structural Equation Modeling (SEM) model based on theory and concept, from AMOS program package (Analysis of Moment Structure)

The advantage of SEM in management research is its ability to present a comprehensive model along with its ability to confirm the dimensions of a concept or factor and its ability to measure the effect of theoretically existing relationships. SEM is usually seen as a combination of factor analysis (Confirmatory Factor Analysis) and regression analysis. (Sheng, 2007).

IV. RESULT AND DISCUSSION

Based on the results of the feedback that has been done, can be simplified into table indicator and baseline measurements as shown in table 2.

Based on the summary data from table 2, and from the calculation process it can be discussed and described some of the results of this study as follows:

At the Ease of use point (X1) of the teacher and student users have differences in understanding the use of a very diverse, and the distance of this ability is quite large especially seen from the age range between user teachers with students who use it. This is in line with the concept that Lo (Lo, Hong, Lin, & Hsu, 2012) has stated, that people born after the digital age have a much better understanding of technology than those born before the digital age. Teachers are very difficult on diverse menus so they are more likely to use the easiest way of

using them. Here the role of Human Computer Interaction (HCI) is very large. Especially in the utilization of the system to update the content or content of the learning media used for teachers experienced many difficulties. This causes the number of teachers who tend to be reluctant to update the material that has been previously included. In contrast to student outcomes, they are much more enthusiastic about the use of new learning media, their ability to use a system much faster than teachers.

Judging from the understanding of the value of benefits (Y1), how the perception of users in using this system. In terms of teachers, the system is expected to provide ease in the process of student assessment, especially in the mastery of the material. But this cannot be done automatically, because the system still requires a value entry made by the teacher supervise the lesson. As for students they tend to argue that the system is able to assist them in doing tasks or materials that exist in school and become a substitute for their textbooks, where they are often reluctant to open or study with their books.

Furthermore, Judging from Satisfaction (Y2), users of the system feel the satisfaction in which the mobile learning system being tested turned out to have features beyond their expectations, especially in auditory learning model (auditory learning) and handwriting.

Last in Motivation point (Y3), which is the tendency of behavior of users to keep using this system in the future or provide recommendations to others, give a positive value. This is also influenced by the satisfaction factor that is owned by the user of the system used. However, all these results must be based on exogenous factors namely Ease of use. Where an interesting system is a media that can be easily used and operated by users, thus minimizing the occurrence of incorrect operation and confusion of the user. This is in line with what has been pointed out in research conducted by Azar (Azar & Nasiri, 2014) and then reinforced also in research conducted by Copriady (Copriady, 2015), where user participation is essential. A successful system if all users are able to use and collaborate well using the built system.

TABLE II. INDICATOR, BASELINE AND RESULT

No	Indicator	Baseline	Avg.
X1.	Ease of use	65%	69.4%
X2.	Usage value	65%	83.5%
X3.	Satisfaction	70%	89.8%
X4.	Motivation	70%	72.6%

V. CONCLUSION

As a conclusion from the data that has been processed from the results of this study, it can be concluded some points as follows:

1. The implications of technological advances are not able to be adopted equally, especially by those born before the digital era. This is indicated by the difficulties felt by users in using information technology equipment is still relatively high.

The statement is in line with what Acarli has said, et. Al (2015). However, the results of the discussion show a positive value because it is the average value of all respondents.

2. A new and interactive learning system is needed, but readiness rather than users in using the system should be noted. Therefore a good system is a system that can be used well by users. So that the active participation of users will provide a positive improvement for future system development. This is as easy as what has been done by Azar (2014) and Copriady (2015).

3. Learning mobile learning system that has been built can be a supplemental learning alternative, and cannot replace the conventional learning activities.

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