Different Acceptance to Use E-Learning Technology among Students and Lecturers in Higher Education: a Literature Review Study

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Abstract - **This study has aim to reveal the different acceptance among students and lecturers to use e-learning technology through reviewing several studies in user's acceptance of the technology and the barrier to adopt it. Students and lecturers have similar and different factors that affect their acceptance and barrier to adopt. Performance expectancy / perceived usefulness, effort expectancy / perceived ease of use, social influence, and facilitating conditions are the similar factors. Regarding to different acceptance, attitude and the quality of work are the factors affecting students' acceptance. In the lecturer's side, they are more care to their computer knowledge and the support from management. The six barriers arising in the literature are lack of management awareness and support, poor infrastructure or technology, financial constraints, lack of e-learning knowledge, lecturers' resistance to change, and language. Both supporting factors and hindering barriers determine the successful adoption of e-learning technology. The results contribute to successful implementation of e-learning system in higher education.**

Keywords - **Adoption Technology, Barrier to Adopt, Different Acceptance, E-Learning Technology**

I. INTRODUCTION

Students and lecturers are naturally different in behavior. Student is individual with respect to their cognitive, emotional, social, and physical changes e.g. [1]. Lecturer is more established in cognition and emotion. Furthermore, students may use e-learning technology at first and more likely mandatory than voluntary. Different to students, lecturers are more independent in using or not using the technology. They are more voluntary than mandatory to use it. In addition, e-learning is a tool to deliver courses from lecturer to student via internet. In this e-learning system, they have different roles. Students are the object and lecturers are the subject in delivering courses system. These differences can induce the different acceptance. This study reveals different acceptance to use e-learning technology among students and lecturers in higher education through investigating the factors that affect the acceptance in several previous studies.

This study divided the discussion into four sections. The three sections are e-learning technology acceptance of students, lecturers, and employees and the fourth is the barrier to adopt it. In addition this study reveals the e-learning acceptance in the context of employees in organizations to give comprehension understanding of the acceptance in general.

II. THE DEFINITION OF E-LEARNING

Several studies defined e-learning as network-based learning, technology-based learning, web-based learning, distributed learning, online learning, or internet-based learning e.g. [2, 3]. Other studies defined it as a tool mainly based on the use of

telecommunication technology to deliver courses via internet e.g. [4 - 6].

According to [5], the main elements of e-learning system are technology and infrastructure, instructors / lecturers, and students.

The implementation of e-learning on educational institutions has two primary functions; face-to-face interactions between students and lecturers and student self-study e.g. [7].

Reference [8] proposes seven dimensions to analyze e-learning acceptance and framework to evaluate e-learning platforms. The dimensions are infrastructure, functions, specialization, learning activity, learning context, learning experience, and customization. The studies on the users' acceptance of e-learning technology in universities have a goal to reveal factors that affect the acceptance among students and lecturers.

III. STUDENTS' ACCEPTANCE TO USE E-LEARNING TECHNOLOGY

Many universities implement e-learning to meet the needs of students and lecturers in their educational system. Three studies have proven that the implementing of e-learning have positive correlation to the need and academic performance of students e.g. [6, 9, 10].

Reference [9] conducts study on the comparing learning outcomes of undergraduate students who attended traditional lectures with those who used the Interactive Electronic Lecture System (IELS). The finding shows that the IELS students have higher learning outcomes than the traditional group. Students satisfy with the e-learning system in their campus. The perception of students on e-learning system depends on its flexibility in knowledge management, time management and widening access to information e.g. [6]. Other study on web-based learning by [10] founds that feedback have correlation to student's self-efficacy.

Feedback can promote students' positive attitude towards learning and enhance students' academic performance, hence, lecturers can provide students with more high-quality feedback.

Several previous studies on e-learning usage conducted by researchers e.g. [2, 7, 11, 12, 13, 14] investigated the factors that affect the students' acceptance to use e-learning technology and the result are listed on Table I and II. All of the studies conduct survey on students to get the factors. The supported direct and indirect antecedents on students' acceptance to use e-learning technology are shown on Table I and II.

TABLE I
PREVIOUS STUDIES SUPPORTED DIRECT ANTECEDENT ON STUDENTS' ACCEPTANCE TO USE E-LEARNING TECHNOLOGY

Direct Antecedent	Reference
performance expectancy / perceived usefulness	[2, 7, 11, 13, 14]
effort expectancy / perceived ease of use	[2, 7, 11, 13, 14]
social influence /social norms	[2, 14]
facilitating conditions	[2, 13]
attitude	[11]
quality of Work life	[14]

There are five factors and the reference related on Table I affecting the students' acceptance: performance expectancy / perceived usefulness; effort expectancy / perceived ease of use; social influence / social norms; facilitating conditions; attitude; and quality of Work life. Factors related to performance expectancy, effort expectancy, social influence, and facilitating conditions come from the Unified Theory of Acceptance and Use of Technology (UTAUT) model by [15], meanwhile, perceived usefulness, effort expectancy, and attitude are factors come from the Technology Adoption Model (TAM) model by [16]. Some studies acknowledged the similarities among: performance expectancy and perceived usefulness; effort expectancy and perceived ease of use; and social influence and social norms.

Table II shows the previous studies supported indirect antecedent and reference related on students' acceptance to use e-learning technology e.g. [7, 11]. There are four antecedents in Table II: computer self-efficacy; internet self-efficacy; learning content; and technology accessibility. Other study on factors affecting the successful of e-learning usage e.g. [12] reveals that supportive factors, system quality, learners' perspective, instructor perspective, information quality, and service quality are support.

TABLE II
PREVIOUS STUDIES SUPPORTED INDIRECT ANTECEDENT ON STUDENTS' ACCEPTANCE TO USE E-LEARNING TECHNOLOGY

Indirect Antecedent	Note	Reference
computer self-efficacy	Indirect through perceived ease of use	[7, 11]
internet self-efficacy	Indirect through perceived usefulness and perceived ease of use	[7]
learning content	Indirect through perceived usefulness and perceived ease of use	[7]
technology accessibility	Indirect through perceived ease of use	[7]

IV. LECTURERS' ACCEPTANCE TO USE E-LEARNING TECHNOLOGY

The universities implementing e-learning system must consider the lecturers' acceptance to use e-learning technology. Lecturers are the agent to promote e-learning among students. Before the implementation of e-learning can satisfy students, it must satisfy lecturers first. So, the implementation must fulfill the needs of students and lecturers. Lecturer is the main factor contributing the successful of e-learning process.

Two studies by [3, 17] investigated the satisfactory of students and lecturers in using e-learning technology. Reference [3] conducts study on lecturers' conceptions of e-learning in Chinese higher education. It state that the traditional lecturing in classrooms is still the favored method in Chinese higher education and most lecturers believe that the mastery of theoretical materials "cannot be achieved online" and could only be accomplished satisfactorily in the setting of a face-to-face lecture. The lecturer is the main vehicle for delivering knowledge. Other study by [17] conducts an experiment in a pre-service lecturer training course and taking survey to students and lecturers in the course. It stated that ninety percent of students in the course were pleased with the course design and ninety six percent of them were pleased with the delivery of the course.

Factors affecting lecturers' acceptance to use e-learning technology are shown on Table III reviewed from several previous studies e.g. [2, 5, 13, 19]. There are six antecedents in the Table III: performance expectancy / perceived usefulness; effort expectancy / perceived ease of use; social influence; facilitating conditions; computer knowledge; and management support/management awareness.

TABLE III
PREVIOUS STUDIES SUPPORTED DIRECT ANTECEDENT ON LECTURERS' ACCEPTANCE TO USE E-LEARNING TECHNOLOGY

Direct Antecedent	Reference
performance expectancy / perceived usefulness	[5, 13, 19]
effort expectancy / perceived ease of use	[5, 13, 19]
social influence	[19]
facilitating conditions	[2, 13]
computer knowledge	[5]
management support / management awareness	[5, 19]

Other result on lecturers' acceptance to use e-learning technology comes from [5]. The result reveals that two variables (normative pressure and computer anxiety) have negative relationship to the acceptance. In addition, the study on modeling the determinants of pre-service lecturers' perceived usefulness of e-learning conducted by [20] shows that three variables course delivery, tutor attribute, and facilitating conditions are the direct antecedents on lecturers' perceived usefulness.

V. EMPLOYEES' ACCEPTANCE TO USE E-LEARNING TECHNOLOGY

Employees' acceptance to use e-learning technology was investigated by [2, 4, 13] and the results are shown on Table IV. Performance expectancy/perceived usefulness, effort expectancy / perceived ease of use, facilitating conditions, and perceived enjoyment are direct antecedents on employees' acceptance.

TABLE IV
PREVIOUS STUDIES SUPPORTED DIRECT ANTECEDENT ON EMPLOYEES' ACCEPTANCE TO USE E-LEARNING TECHNOLOGY

Direct Antecedent	Reference
performance expectancy / perceived usefulness	[4, 13]
effort expectancy/perceived ease of use	[4, 13]
facilitating conditions	[2, 13]
perceived enjoyment	[4]

The study conduct by [4] considers that eight factors (course content quality, support service quality, course design quality, system functionality, system interactivity, system response, user-interface design, and instructor attitude) are indirect antecedent on employees' acceptance to use e-learning technology as listed in Table V.

TABLE V
PREVIOUS STUDIES SUPPORTED INDIRECT ANTECEDENT ON EMPLOYEES' ACCEPTANCE TO USE E-LEARNING TECHNOLOGY

Indirect Antecedent	Note	Reference
course content quality	Indirect through perceived usefulness, perceived ease of use, and perceived enjoyment	[4]
support service quality	Indirect through perceived usefulness and perceived ease of use	[4]
course design quality	Indirect through perceived ease of use	[4]
system functionality	Indirect through perceived usefulness, perceived ease of use, and perceived enjoyment	[4]
system interactivity	Indirect through perceived usefulness, perceived ease of use, and perceived enjoyment	[4]
system response	Indirect through perceived usefulness	[4]
user-interface design	Indirect through perceived usefulness, perceived ease of use, and perceived enjoyment	[4]
instructor attitude	Indirect through perceived usefulness and perceived enjoyment	[4]

VI. BARRIERS TO ACCEPT E-LEARNING TECHNOLOGY

References [18, 21] conduct studies on the barriers that affect or prevent the adoption of e-learning in higher educational institutions. The barriers are listed on Table VI. From the interviewing some academic staff and manager as in [21], lack of management awareness and support, technological barriers, and language are the barriers. From interviewing with e-learning experts as in [18], poor infrastructure, financial constraints, inadequate support, lack of e-learning knowledge, and lecturers' resistance to change are also the barrier.

TABLE VI
PREVIOUS STUDIES ON BARRIER TO ACCEPT E-LEARNING TECHNOLOGY

Barrier	Reference
lack of management awareness and support	[18, 21]
poor infrastructure or technology	[18, 21]
financial constraints	[18]
lack of e-learning knowledge	[18]
lecturers' resistance to change	[18]
language	[21]

VII. DISCUSSION

Students and lecturers have the similar and different factors that affect their acceptance to use e-learning technology. Performance expectancy / perceived usefulness, effort expectancy / perceived ease of use, and social influence are the similar factors. The different factors are attitude and quality of work life from the students' acceptance side and computer knowledge and management support / management awareness from the lecturers' acceptance side. In addition perceived enjoyment is a factor in employees' acceptance distinguished from the acceptances of students and lecturers.

Students and lecturers have different role regarding to delivering courses. Students are the object of delivered courses and lecturers are the subject of delivering it. Regarding to this differences, student must show their performance, attitude, and quality of work in using e-learning technology to achieve the mastery of courses. Furthermore, Lecturers are more care to their computer knowledge and supporting from management for successful delivering courses. However, in common, they aware to the importance of performance, ease of use, and social influence in using e-learning.

Regarding to the role of students as the object of delivered courses; this study reveals that computer self-efficacy, internet self-efficacy, learning content, and technology accessibility are the indirect factors that affect the students' acceptance. In addition, this study reveals that employees also have indirect factors that affect their acceptance. The factors are course content quality, support service quality, course design quality, system functionality, system interactivity, system response, user-interface design, and instructor attitude. Of course, employees have the same role with students in e-learning system. They are the object of delivered courses.

The barriers to accept e-learning technology was investigated by researchers through interviewing academic staffs, managers, and e-learning experts. Six barriers reviewed in this study are lack of management awareness and support, poor infrastructure or technology, financial constraints, lack of e-learning knowledge, teachers' resistance to change, and language.

VIII. CONCLUSION

From reviewing several previous studies on users' acceptance of e-learning technology:

- Performance expectancy / perceived usefulness, effort expectancy / perceived ease of use, facilitating conditions, and social influence are the same factors that affect the acceptance among students and lecturers.

- Attitude and quality of work life are factors that specifically affect the students' acceptance.

- Computer knowledge and management support / management awareness are factors that specifically affect the lecturers' acceptance.

- Together with performance expectancy / perceived usefulness, effort expectancy / perceived ease of use, and facilitating conditions, perceived enjoyment are factors that affect the employees' acceptance.

- Computer self-efficacy, internet self-efficacy, learning content, and technology accessibility are the indirect factors that affect the students' acceptance.

- From interviewing with academic staffs, managers, and e-learning experts, lack of management awareness and support, poor infrastructure or technology, financial constraints, lack of e-learning knowledge, lecturers' resistance to change, and language are barriers to the acceptance.

From the discussion of supporting factors and hindering barriers, this study suggests the university management must provide some training and guidance to students and lecturers in using e-learning system. The management must fulfill the needs of students and lecturers

to satisfy them in using e-learning. In addition they also must provide administrator and a technician team to solve some problems arising on practice.

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(Arranged in the order of citation in the same fashion as the case of Footnotes.)

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