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Exploration of Factors Technology Acceptance of LMS Google Classroom

(A Systematic Literature Review)

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***Abstract*— The purpose of this study is to explore the methods and factors that influence the acceptance of Google Classroom technology. This study uses a Systematic Literature Review. Articles are retrieved via the application *publish or perish 7* issue of 2010-2021. Then the article is made into a logbook for easy analysis. The result show that the TAM and UTAUT models are the most widely used. Meanwhile, the most influential factors in the acceptance of Google Classroom are perceived usefulness and perceived ease of use. In addition, the factors of learning content quality, self-efficacy, user interface, performance expectancy, effort expectancy, social influence, facility condition, habit, hedonic motivation, effort expectancy, and facility condition influences the acceptance of google classroom.**

Keywords— Google Classroom, LMS, TAM

I. INTRODUCTION

During the Covid-19 pandemic, teachers and students are required to switch from face-to-face learning methods to e-learning-based learning. e-learning is information and communication technology to enable students to learn anytime and anywhere [1]. While the Learning management system (LMS) is an infrastructure that delivers and manages content, identifies, assesses, tracks progress, collects and presents data to oversee the overall learning process [2]. Meanwhile, according to another understanding LMS is a software that helps in teaching / delivery of subject matter via the internet. One example of an LMS is Google Classroom [3].

Google Classroom has recently grown rapidly and is the most widely adopted in education [4]. Google Classroom is a free web-based learning management platform that allows anyone to create and manage classes online as long as they have a Google Account [5]. Google Classroom is a mobile learning platform that is popular in learning today, commonly used to make attendance lists, provide material, give assignments, to provide assessments. Mobile learning is learning that utilizes technology and mobile devices. In this case, the device can be a cell phone, laptop, tablet PC, and so on. With mobile learning, users can access learning content anywhere and anytime, without having to visit a certain place at a certain time [6].

Understanding why people accept or reject new information or communication technologies has been one of the most challenging problems in the study of new technologies [7]. User acceptance is defined as a user's tendency to use the system [8]. User acceptance is an important factor in demonstrating the value of the system [9]. The effectiveness of the implementation of all kinds of technology still depends on the acceptance of its users [10]. No matter how good and sophisticated the technology is developed, it will be meaningless if the technology cannot be accepted or even desirable by its target users [10]. Continued use of technology is very dependent on user acceptance. This study aims to see the methods and factors most influencing the acceptance of Google Classroom.

II. METHODOLOGY

In this literature review process, the authors adopted the method used in Smet [11] , among others:

- Determine the area to be covered and literature search
- Determine inclusion and exclusion criteria
- Analysis
- Writing

A. Determining the Covered Area and Literature Search

The first step, the researcher determines the research question and some keywords. This study aims to determine the research area in the field of LMS Google Classroom technology acceptance, so the research questions to be answered include:

- What factors have had the most influence on the acceptance of Google Classroom?

- What research methods were used?

Based on these areas, researchers used keywords including Google Classroom, LMS and TAM to find relevant articles. Articles are searched using the publish or perish 7 application published in 2010-2021. The choice of the publish or perish 7 application is because it makes it easier for researchers to search for data related to articles according to keywords, and the majority of Scopus indexes. The data that appears are then opened one by one and recapitulated. The applied data were then considered according to the inclusion criteria.

B. Inclusion Criteria and Exclusion Criteria

The criteria for articles that can be included in the literature review in this article include:

- Scientific article that discusses the acceptance of Google Classroom technology
- Articles in English and published in indexed journals.
- Articles with years published between 2010-2021.
- Selected several articles as representatives of the acceptance of Google Classroom technology

III. RESULTS AND DISCUSSION

From the search results using the publish or perish 7 application, articles are selected according to keywords and processed. Articles that fall into the inclusion criteria are taken and used as research material. Other articles that fall into the exclusion criteria are not included in the discussion of the literature review in this article. Based on the predetermined criteria, there were 5 articles that discussed about acceptance of Google Classroom technology and 10 articles as supporting articles of technology acceptance.

Articles that have been entered into the summary are then summarized in the form of a logbook table containing the author's name, year of publication, research objectives, research methods, and research results. The summary results can be seen in Table 1.

TABLE I. RESULTS OF RESEARCH IDENTIFICATION OF LMS GOOGLE CLASSROOM TECHNOLOGY ACCEPTANCE

No.	Component	Author	Year	Research Purposes	Method	Research Result
1	LMS	De Smet, Cindy, et al. [12]	2012	This study aims to determine acceptance of LMS technology by middle school teachers	Quantitative Methods, using models TAM (Technological Acceptance Model)	The most influential factors in using an LMS are the Perceived Ease of Use (PEOU) and User Interface (UI) factors.
2	*E-learning*	Al-Okaily, Manaf, et al. [13]	2020	This study aims to determine acceptance of new education "e-learning" during the pandemic by students at the university. Jordan	Quantitative Methods, using models TAM.	Factor *Perceived Ease of Use*(PEOU) and Perceived Usefulness (PU) are strong factors in the acceptance of E-learning. In addition, it turns out that subjective norms such as Peer Influence (PI) and Social Influence (SI) greatly influence the use of e-learning.
3	*LMS*	Mafuna, L., and N. Wadesango. [14]	2016	This study aims to determine level of acceptance of lecturers for LMS	Quantitative Methods, using models TAM.	Factor *Perceived Ease of Use* (PEOU), Perceived Usefulness (PU), subjective (SN) Facility Condition (FC) are factors that influence the acceptance of LMS.
4	*Open Online Courses*	Al-Rahmi, Waleed Mugahed, et al.	2019	This study aims to determine the factors that influence students in using MOOC	Quantitative Methods, using a combination model TAM and IDT	The results of the research are Percevied Enjoyment (PE), Percevied Compability (PC), Trialabelity (TR), Complexity (CO), Observability (OB) Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) have an effect on the use of MOOC. However PC does not affect PU and TR does not affect PEOU
5	*Google Classroom*	Al-Maroof, Rana A. Saeed, and Mostafa Al-Emran [15]	2018	This study aims to study the factors that influence the use of Google Classroom among Al Buraimi University College students in Oman	Quantitative Methods, using models TAM	The results showed that PEOU and PU positively influenced the intention to use Google Classroom.
6	*Google Classroom*	Kumar, JA, & Bervell, B. [5]	2019	This study aims to determine the factors that influence the use of Google Classroom	Quantitative Method, using the UTAUT2 model	The results showed that the strongest factors found in the use of Google Classroom were Habit (H), Hedonic Motivation (HM) and Effort Expectancy (EE).

Table 1 cont.

7	*Google Classroom*	Ahmad, TSAS, Ramlan, ZS, & Krishnan, S. K **[16]**	2020	This study aims to determine the level of student acceptance in using Google Classroom for learning English.	Quantitative Method, using the TAM model	The results of the study, namely PEOU and PU, positively influenced students' interest in using Google Classroom
8	*Google Classroom*	Chavoshi, A., & Hamidi, H. [17]	2019	Research purposes This is for learn the factors that influence the use of Google Classroom	Quantitative method, using a combination of the TAM and UTAUT models.	The results showed that PEOU and PU were the strongest factors in influencing interest in using Google Classroom. In addition, Learning Content Quality (LCQ), Self Efficacy (SE), Facility Condition (FC) and User Interface (UI) factors influence interest in using Google Classroom.
9	*Google Classroom*	Jakkaew, P., & Hemrungrote, S. [4]	2017	The purpose of this research is to learn the factors that influence the use of Google Classroom	Quantitative Method, using UTAUT2.	The results showed that Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facility Condition (FC) influenced interest in using Google Classroom.
10	*M-Learning*	Al-Emran, M., Mezhuyev, V., & Kamaludin, A.	2020	The purpose of this study was to determine the acceptance of m-learning at Pahang University Malaysia.	Quantitative Method, using TAM	The results showed that the Knowledge Acquition (KA), PU and PEOU factors were the biggest factors affecting the interest in using (BI) m-learning.
11	Moodle	Yeou, M	2016	The purpose of this study was to determine the acceptance of the Moodle LMS by students	Quantitative Method, using TAM	The results showed that Computer Self-Efficacy and PU were the strongest factors in the interest in using Moodle.
12	*E-Learning*	Lee, YH, Hsieh, YC, & Chen, Y. H	2013	The purpose of this study was to determine employee acceptance of e-learning learning	Quantitative Method, using TAM	The results showed that PU and PEOU influenced interest in using e-learning. Organizational Support (OS), Computer Self Efficacy (CSE) also have a positive effect on PU and PEOU.
13	*LMS*	Stantchev, V., Colomo-Palacios, R., Soto-Acosta, P., & Misra, S.	2014	The purpose of this study was to determine the acceptance of LMS technology	Quantitative Method, using TAM	The results showed that PU and PEOU influenced interest (BI) in using LMS.
14	*E-Learning*	Song, Y., & Kong, SC	2017	The purpose of this study was to determine the acceptance of the statistics learning platform	Quantitative Method, using TAM	The results showed that Axienty (AN) is a strong factor in influencing the interest in using e-learning
15	*Acceptance*	Taherdoost, Hamed. [18]	2018	The purpose of this study is to determine the technology acceptance model that is most often used	Descriptive Literature Review Method.	The results show that TAM and UTAUT are the most popular and most frequently used technology acceptance models.

Five articles have discussed the acceptance of Google Classroom technology. All use quantitative methods and the model used is the Technological Acceptance Model (TAM) [15,16], Unified Theory Of Acceptance And Use Of Technology 2 (UTAUT2) [4,5], and a combination of TAM and Unified Theory Of Acceptance And Use Of Technology (UTAUT) [17]. The TAM and UTAUT models are the most popular and most frequently used models of technology acceptance [18]. Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) variables are the main features of the TAM model, while neither UTAUT nor UTAUT2 have these variables. The TAM model can be used by adding additional variables such as the Using Interface variable[14,16] Social Influence [13,17] and Facility Condition [4,14,17].

The strongest factor that affects the interest in using Google Classroom's Behavioral Intention to Use (BIU) is the variable perceived usefulness and perceived ease of use [15–17]. In addition, the factors that influence the use of Google Classroom are learning content quality, self-efficacy, user interface [17], performance expectancy, effort expectancy, social influence, facility condition [4], habit, hedonic motivation, effort expectancy [5], and facility condition [5,17].

IV. Conclusion

This article has discussed the acceptance of Google Classroom technology, the result is that the most widely used models are the TAM and UTAUT models. Meanwhile, the most influential factors in the acceptance of Google Classroom technology are perceived usefulness and perceived ease of use. in addition, the factors of learning content quality, self-efficacy, user interface, performance expectancy, effort expectancy, social influence, facility condition, habit, hedonic motivation, effort expectancy, and facility condition influences the acceptance of google classroom technology.

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