Examining Indonesian College Students' Behavioral Intention of Using Moodle App for E-Learning Platform

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ABSTRACT: The Covid-19 crisis has forced educational institutions to conduct online learning. However, the technology readiness and acceptance of the human resource to this shift towards distance education via Learning Management System (LMS) remained in question. This is where the gap lies between the govt's policy and LMS implementation reality. The current study aims to explore the Moodle LMS acceptance among undergraduate students throughout the Archipelago Indonesia during the pandemic and beyond by adopting a Unified Theory of Acceptance and Usage of Technologies (UTAUT) model to better explain the students' behavioral intentions. Data has been gathered from 510 undergraduate students via online questionnaire with the help of Google Form. We used adapted questionnaire and tried it out before being administered. Using the Partial Least Squares - Structural Equation Modelling to analyze the data, this study has found that the original UTAUT constructs, except for effort expectancy and facilitating conditions, can influence the intention of using the Moodle LMS. This study also has revealed that both computer self-efficacy and other-efficacy directly affect the intention of utilizing Moodle application for e-learning platform. Furthermore, experience positively moderated computer-self efficacy and negatively other-efficacy as hypothesized. The findings indicate that Performance Expectancy and Social Influences are confirmed to have contributed to UTAUT Model, while Effort Expectancy and Facilitating Condition are not. In addition, constructs within Social Cognitive Theory, i.e. Other Efficacy, Computer Self Efficacy and Behavioral Intention are totally confirmed both directly and indirectly. With regard to the findings, practical recommendations have also been given at the end.

keywords: Application, behavioral intention, online learning, utaut model, learning management system, moodle.

I. INTRODUCTION

A digital-based education service system that uses an electronic web and smartphone (e-learning) base emerged globally, and became a major need when COVID-19 struck several countries in the world. Many

countries support such a system as this because it creates a smart service alternative to traditional educational facilities [1-4]. As the 4th most populous country globally, Indonesia has also adopted and promoted such system, despite increasing conflict with the adaptation of students and their environment; Zenius and other e-learning services in Indonesia, such as Ruangguru and Smart Classes, have been easily adopted by Indonesians and they are becoming popular with higher education circles [5].

For online learning services, Moodle app has rapidly become popular in Indonesia. Moodle is an open-source learning management system (henceforth abbreviated as LMS) created on the basis of pedagogical principles [6]. It is designed for blended learning, distance education, reverse classrooms and other online learning activities in schools, higher education institutions, workplaces, and other sectors. With personalized management features, this application is intended to develop personal websites with online courses for educators and trainers to achieve learning goals. Additionally, Moodle makes it possible to expand and customize the learning environment by using community-sourced plugins. This is what makes this application widely used by educational institutions, especially universities in Indonesia.

The discrepancy between the government's regulation and LMS implementation reality has resulted in some challenges while at the same time compelling opportunities. LMS users (lecturers and students) should become innovative in technology based instructional systems in such a sudden way (despite COVID-19 pandemic, education had to run on). The opportunity it created is the migration progress of education in Indonesia towards digitalization. With this Moodle LMS based education innovation, educational system has not only gained an innovative e-learning model but also allowed for new programs, such as international student exchange and student mobility.

The Moodle feature variation in satisfying the need for e-learning makes this application compelling to be validated from its users' perspective. The system acceptance examination which is suitable and popular is UTAUT. Previous studies investigated the adoption of e-learning systems using this behavioral model analysis [7-10]. Most of these studies validated the model. However, no one has examined the role of relational efficacy beliefs for e-learning adoption. In a smart e-learning system, students have to interact a lot with lecturers [11]. Though some researchers have examined the interaction from users' psychological perspectives [2], yet issues of video utilization [12], and training [1, 4], and that of interaction from a relational efficacy perspective have not been properly addressed so far.

Social cognitive theory suggests that in services where the interaction between the two parties is closely related, the partners' perceived ability is also important [13]. The present study fills in the gap by examining the users' perceived efficacy of the lecturer (other-efficacy), which is very relevant due to the psychological condition of the lecturers as users of the new system. Efficacy reflects one's belief in another person's ability to perform a service. Previous findings suggest that efficacious beliefs significantly influence one's behavior [14-15]. This study contradicts the previous UTAUT findings, which ruled out computer self-efficacy as a determining factor in information technology adoption. Previous studies do not even agree that computer self-efficacy affects behavioral intention [16-18].

Students who are new to the Moodle system understand their limitations; then their self-efficacy affects their behavior [19-20], particularly their computer self-efficacy [21-22]. Self-efficacy and other-efficacious beliefs have an interdependent relationship in user service provider settings [14]. Therefore, it is predicted that the Moodle application users, especially new students, will consider both computer self-efficacy and other efficacy to be important in using Moodle applications. Instructors who use the system for the first time are influenced by the relationship between self-efficacy and cognitive behavior, including life satisfaction [20,23]. Therefore, in cases where the e-learning system is provided by and primarily used by new students, it is predicted that learnings' experience will moderate self-efficacy and other efficacious beliefs in using the Moodle e-learning system. Thus, our key question is: Will students, especially undergraduate students, adopt it smoothly?

II. LITERATURE REVIEW

Moodle, standing for Modular Object-Oriented Dynamic Learning Environment, is a platform, which is more well-known as the Learning Management System (henceforth abbreviated as LMS). It is also a free open-source Course Management System (CMS) of Virtual Learning Environment (VLE). This tool for developing compelling websites for students has become popular among educationists all over the world

[24]. The Moodle platform is designed as an outstanding supportive platform for educators to create an effective online learning environment as well as to promote the sophistication of the learning process. This e-learning platform provides with the technology that has been adapted to the needs of consumers (lecturers and students) and learning activities. The main resource for training is weekly lessons and assignments. In addition to other characteristics, this application has a feature to go page by page or move from one chapter to another by jumping or skipping. At the end of each course, the lecturer can add a quiz for learning evaluation.

1. UTAUT

Technology needs its users' readiness and acceptance lest it should not result in maximum performance. The literature on technology adoption offers a variety of models and theories that explain the process of e-learning adoption. Venkatesh et al. [25] developed the Unified Theory of Acceptance and Usage of Technologies (UTAUT) by unifying eight different behavioral theories and models of technology acceptance and they found that users' expected performance, efforts and social influences affect users' intention of adopting information technology. They also found that facilitating IT infrastructure and intention to use would determine the actual usage of IT. They also highlighted several factors that moderate the relationship between efficacious beliefs and intention to use modern technology. These factors include: age, gender, experience, and voluntariness.

Some studies remodeled UTAUT by incorporating other theories such as: (1) Theory of Reasoned Action (TRA), which was established by Ajzen and Fishbein [26] to measure behavioral intention using attitudinal and subjective norms; (2) Technology Acceptance Model (TAM), the extension of TRA. TAM was developed by Davis [27] to measure behavioral intention through perceived usefulness and perceived ease of use; (3) Motivational Model (MM) applied by Davis et al. [28] to measure behavioral intention using intrinsic and extrinsic motivations; (4) Theory of Planned Behavior (TPB), designed by Ajzen [29] to extend TRA using perceived behavioral control; (5) combined TAM and TPB (CTAM-TPB), applied by Taylor and Todd [30] by adding perceived usefulness to TPB; (6) Model of PC Utilization (MPCU), which was conceptualized by Thompson et al. (1991) to measure actual usage of IT using social factors and facilitating conditions, (7) Innovation Diffusion Theory (IDT), which was developed by Rogers [31] to promote voluntariness of use, and (8) Social Cognitive Theory (SCT), introduced by Bandura [32].

The UTAUT was extended to a consumer setting by introducing hedonic motivation, price value, and habit in addition to the original UTAUT constructs, and found that facilitating condition can also directly influence intention of using IT [33]. The UTAUT2 is the latest version and more customer-focused than the original UTAUT. However, the current study employed the original UTAUT as the base model because this study challenged one of the original UTAUT's findings rejecting self-efficacy as a direct predictor of intentions of adopting IT [25]. In addition to this, the model referred to here is modified by incorporating relational efficacy [14], and introducing disability as a moderating variable. The rest of the section is dedicated to discussing variables under study and hypotheses formulation.

The UTAUT Model has four main constructs [25]: 1) performance expectancy, which is user's belief in using system/technology that helps obtain benefit in a particular work or activity; 2) effort expectancy, which constitutes level of practicality felt by users regarding system/technology use; 3) social influence, which is influence from others in relation with system/technology use, so that users become convinced or follow to use system/technology; 4) facilitating conditions, which constitute the extent to which users believe that facilities provided will support system/technology use. The UTAUT Model gives emphasis upon these four constructs theoretically and empirically affecting behavioural intention in adopting system/technology. Behavioural intention and facilitating conditions determine system/technology use behaviour. Within this model there are four moderating variables, i.e. age, gender, experience, and voluntariness of use, that moderate the aforementioned key constructs.

One of the strong predictors of information technology adoption is Performance Expectancy (PE) - the degree to which a person believes that the usage of technology will improve their performance [25,27,33]. Various models have validated this factor, such as TAM [27], UTAUT [25], and UTAUT2 [33]. For the current study, PE refers to a student's belief that the e-learning system increases the effectiveness and efficiency of one's mobilization. In the context of e-learning, if a system does not provide benefits to its users' performance, then the system will not be interesting to try. Previous studies of e-learning systems have shown that users intend to use e-learning systems if it satisfies their educational needs [34-38]. The more they acknowledge the benefits of the e-learning system for their learning activities, the more they are willing to use it [39-40]. Thus, the hypothesis is:

H1: Performance expectancy has a positive effect on students' intention of using Moodle.

Effort Expectancy (EE) is another variable considered to be important in this study. EE is the level of individual belief about the ease of system usage [25, 27, 33]. Like PE, TAM, and UTAUT; UTAUT2 also shows that EE can influence a person's tendency to use a system. EE in this study is defined as low or high the effort required by a student to use an e-learning system for their education services. Students hope that the use of the system will be effortless with more benefits so that the sacrifices made to use the system are worth it. Previous research has shown that users can feel the benefits of e-learning systems without making significant efforts [34, 35, 38]. The more comfortable the user's perception of the operation of the e-learning system is, the more likely they will use it in various educational activities [35]. The second hypothesis then is:

H2: Effort expectancy positively affects behavioral intention of using the Moodle.

Social Influence (SI), which is defined as how social perception of a system will affect one's perception of the system [25, 31, 33], is taken into account in this study. The UTAUT and UTAUT2 show that SI can measure the feasibility of a system based on social assessments. SI in this study is a persuasive social impact that can affect a person's interest in using an e-learning system in the form of Moodle. Students tend to follow the trend so they will feel much more interested in the types of systems that are currently popular among them, including e-learning.

Social acceptance of the e-learning system from a community perspective can have a significant impact on student acceptance of the system [34-35]. The positive trend of e-learning systems at the social level will make one feel confident to use them [36, 40]. Therefore, the third hypothesis is:

H3: Social influence positively affects behavioral intention of using Moodle.

Facilitating Condition (FC) is the focal point of interest in this study. It refers to how the system facilities can affect a person's interest in using the system [25, 31, 33]. While the UTAUT shows that the comprehensively provided features attract consumers to actually use the system, the UTAUT2 indicates that these features can also fascinate someone to use the system. Students are curious about the innovation of features in e-learning, which makes them amazed and interested in exploring more. The FC in the current study is how the attributes of the e-learning system attract users to make the e-learning system the driving system. Previous findings have shown that the features of e-learning applications can attract students to use them [35,38,39,40]. If the e-learning system provides facilities that exceed the expectations of users' needs, the students' interest in using the system increases manifold [35]. Therefore, the fourth hypothesis is:

H4: Facilitating conditions has a positive effect on behavioral intention of using Moodle.

As part of social cognitive theory, self-efficacy theory states that confidence in one's abilities determines one's behavior in certain tasks [32]. In the context of IT; self-confidence, known as computer self-efficacy, represents a person's perception of their ability to use computers or IT to complete tasks [41]. In this study, computer self-efficacy refers to computer self-efficacy Apps., where Apps. refers to smartphone applications. Students' habits in using smart tools in their daily lives will make them more confident in reviewing smart education like e-learning. Previous findings have shown that computer self-efficacy is one of the major determinants of one's intention of using IT [16, 42], especially for the use of smartphones, tablets, and wearable devices [43, 44].

2. SOCIAL COGNITIVE THEORY (SCT)

Social Cognitive Theory identifies interactions taking place among personal, behavioural, and environmental factors [13]. According to Bandura [32], human behavior is not influenced by just one factor dimension. Numerous dimensions affect human behaviors. The relation between personal factor and behaviours reflects mind, affective, and action. Expectation, prior knowledge, and belief provide orientation towards behaviour. What comes to one's mind affects how he behaves, while physical structure and sensory nerve system have something to do with one's cognitive state. Experience felt by one's body changes sensory system and cognitive structure.

Human expectation, belief, and emotion can be created and changed through interactions with environment [32]. Conducive educational environment can affect one's mental structure. Technology based education environmental support can cause the standard of one's technology use and expectation to rise. While some technology users consider a value of educational digitalization acceptable and, therefore, internalize it; some individuals, however, reject values that educational technology provides and offer values available in them to educational environment as it is, instead.

The more confident older people are, the more likely they are to adopt social service apps [45]. Similar findings also suggest that computer self-efficacy can positively determine intention to use mobile healthcare applications [46]. Contrary to these findings, computer self-efficacy has no direct causal relationship with intention of using IT [25]. The current study contradicts the initial findings of the UTAUT as previous results revealed that in the context of the App, computer self-efficacy positively affects the intention to use the mobile App [45,46]. So, the fifth hypothesis is:

H5: Computer self-efficacy positively affects behavioral intention of using Moodle.

Social cognitive theory also suggests that dependence on other parties will form self-internalization to achieve certain goals [13], which means an affiliation between two interrelated parties in certain settings, such as an interacting environment between drivers and passengers, positively enhances the confidence. In their relational efficacy model, other-efficacy is defined as a person's perceived ability about other partner that can influence the person's behavior [14]. In contrast to self-efficacy, other efficacy can be a more substantive determinant of individual task-relevant behavior [15, 47]. Furthermore, other-efficacy can also indirectly influence behavior through self-efficacy; thus, Lent and Lopez developed their relational efficacy model [14]. However, they held that the relational efficacy model only applies to very close relationships.

Relational efficacy was tested in equestrian-equestrian relationships and it was found that if riders felt highly confident of their horse's abilities, they felt more optimistic about their own abilities required to perform [48]. In the context of e-learning, when a student faces a condition where the lecturer does not have experience with online learning systems, students might not be very confident in their lecturer's abilities before being willing to use the e-learning system. Moreover, the lecturer-student relationship in the e-learning system has more opportunities to flourish over a long period of time if the lecturer has higher confidence and willingness to use IT. Previous findings suggest that even in transactional settings, relational efficacy beliefs exist [49-51]. Therefore, if students are confident in the ability of their lecturers, it can increase their confidence in using the e-learning system. Therefore, the sixth and seventh hypotheses are:

H6: Other-efficacy positively affects behavioral intention of using Moodle.

H7: Other-efficacy positively affects computer self-efficacy.

The formulated hypotheses are illustrated in Figure 1:

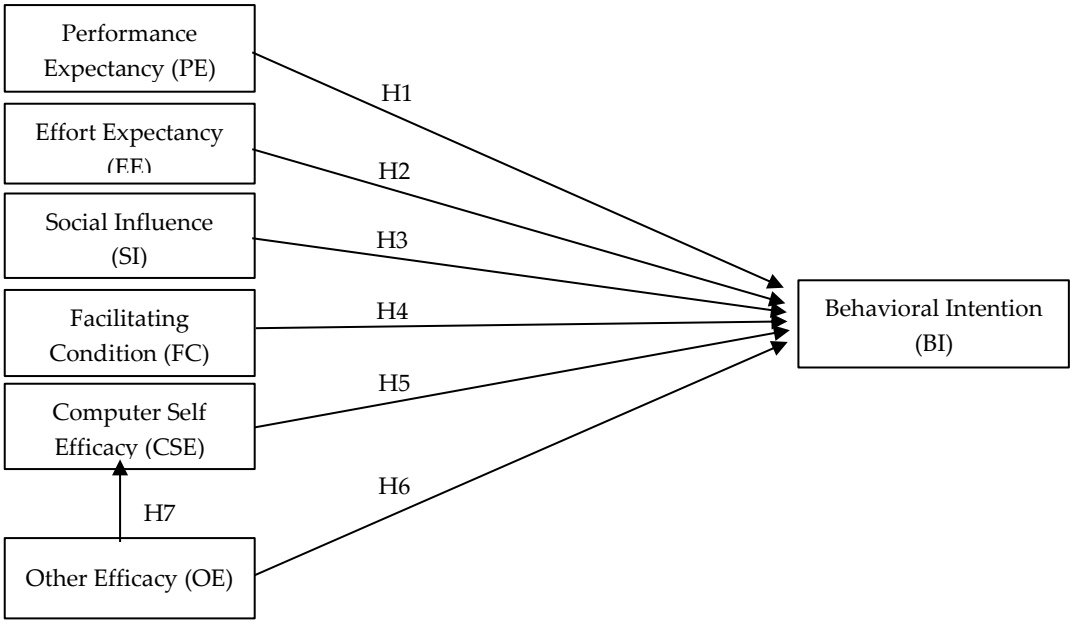

FIGURE 1. Theoretical framework

III. MATERIAL AND METHOD

1. PARTICIPANTS

The sample of this study was volunteer undergraduate students with 'active' enrollment status in state and private universities when the study was carried out. They were recruited using Google Forms shared via an educational webinar held by Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia. The sample of this study were undergraduate students from 38 state and private universities representing every province in Indonesia, in such a way that each respondent can represent students from all regions in Indonesia. Since the population was sampled evenly from universities throughout the country, sampling bias is considered relatively small in this study. The students who were respondents in this study were full-time students. Respondent perception bias may occur if they have other activities besides their study, like part-time jobs. More details of the sampled respondents are displayed in Table 1.

Table 1. Demographic profile of the participants

No	Description	Category	Percentage
1	Gender	Male	19.30
		Female	80.70
2	Semester	Semester 2	21.71
		Semester 4	19.36
		Semester 6	24.62
		Semester 8	16.37
		> Semester 8	17.94
3	Faculty	Linguistics	12.87
		Health	23.45
		Economics	28.54

		Education	27.47
		Others	7.67
4	Experience	< 6 Months	5.26
		6 - 11 Months	29.24
		1 - 2 Years	25.21
		3 - 4 Years	22.27
		> 4 Years	16.85
		No Mention	1.17
5	University	Public	84.80
		Private	15.20
6	Application Familiarity	Yes	53.50
		No	46.50
7	Frequency of Application Use	< Once/Week	5.30
		Once/Week	39.41
		> Once/Week	28.23
		Once/Day	14.60
		> Once/Day	10.82
		No Mention	1.64

2. DATA COLLECTION

Questionnaire was administered to collect the data. The translated version (Indonesian) questionnaire was used and tried out to 15 students before it was used for collecting the research data. The questionnaire used a 5-point Likert scale with options varying from "Strongly Agree" to "Strongly Disagree". It was assured that each university had its own LMS so that the respondents' prior knowledge of LMS was equal and that the adopted LMS was not dominated with just one particular type. The respondents were notified that the estimated time to complete the questionnaire was 10 minutes. An anti-distraction treatment was also given to minimize careless responding.

The measurement scale applied in the questionnaire was mainly adapted from the original UTAUT model consisting of 17 independent variable items and 3 dependent variable measures [25, 40, 52, 53]. Ultimately, it was extended to total of 30 independent variable items and 4 dependent variable items. A few items were dropped due to validity issues. Thus, 22 independent variable items and 3 dependent variable items were finally employed. The facilitation condition variables with formative indicators, instead of reflective ones used in the original model, were adapted and re-designed to suit the needs of questionnaire. Some items, measuring facilitation conditions in the original UTAUT when applied to certain IT, are formative [53]. Since the Application can only be accessed by compatible mobile devices used by persons who have sufficient knowledge about it, it is assumed that the indicators are also formative. Previous studies' measurement scale for five-item computer self-efficacy [25, 41, 54] and four-item efficacy [14, 47, 55] has also been adapted for the current research.

Content validity check has been conducted through an extensive literature review to ensure that all indicators represent important components of the facilitation state, including mobile devices and their compatibility, user knowledge, and public IT infrastructure required to access and use the Moodle e-learning system [25, 33, 34, 40, 52, 53, 56]. A redundancy analysis [57-58] to assess the convergent validity of the formative construct by relating the formatively measured construct to the global reflective measure of the same construct showed a high correlation coefficient of 0.925 (greater than the minimum 0.8), thus it proved the formative measure to be valid, as illustrated in Figure 2.

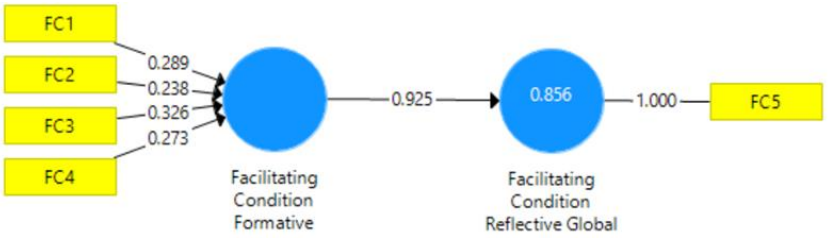

FIGURE 2. Redundancy analysis

Result of the collinearity analysis showed that Variance Inflation Factor value was lower than 5; it indicated that there was no high collinearity between each indicator. Furthermore, the results lower than 3.3 indicated that no multicollinearity was there [59]. Test of significance of the outer weights through the Bootstrapping procedure showed that all formative indicators had significant outer weights at the 0.05 level of significance. Details are given in Table 2.

Table 2. Formative indicators

Formulative Indicators	VIF	T Statistics	P Values
FC1	3.254	2.325	0.020
FC2	3.235	1.963	0.049
FC3	3.218	2.042	0.042
FC4	2.745	2.115	0.035

A Confirmatory Factor Analysis on reflective constructs was conducted, and two items were dropped due to low loading factors. A reliability analysis on the reflective construct using Cronbach's Alpha and Composite Reliability, suggesting values higher than 0.7 and 0.8 respectively [58, 60], shows satisfactory results; and the reflective construction is reliable, accordingly (see Table 3 for more details).

Table 3. Reliability and convergent validity analysis

Latent Variable	Items	Loading Factors	Cronbach's Alpha	Composite Reliability	Communalities	AVE
Performance Expectancy	PE2	0.842	0.757	0.858	0.674	0.674
	PE3	0.738				
	PE4	0.590				
Effort Expectancy	EE1	0.671	0.879	0.916	0.733	0.733
	EE2	0.811				
	EE3	0.942				
	EE4	0.773				
Social Influence	SI1	0.796	0.866	0.913	0.727	0.727
	SI2	0.795				
	SI3	0.856				
	SI4	0.726				
Computer Self Efficacy	CSE1	0.689	0.795	0.866	0.618	0.618
	CSE2	0.592				
	CSE4	0.705				

	CSE5	0.782				
Other Efficacy	OE1 OE2 OE3 OE4	0.823 0.868 0.804 0.651	0.870	0.911	0.719	0.719
Behavioral Intention	BI1 BI2 BI3	0.877 0.918 0.886	0.922	0.951	0.865	0.865

Further, a convergent validity test through each item loading factor and the Average Variance Extracted (AVE) was conducted. All items but 3 with a loading factor problem meet the criteria (as suggested by Chin 1998) [57], moreover the communality and AVE for constructs are secure.

Therefore, the results still seem convincing [61]. At last, a discriminant validity test using the Heterotrait-Monotrait correlation ratio (HTMT) was undertaken (see Table 4). As the requirements [62] for this validity test result were fulfilled; thus, the discriminant validity of the reflective constructs is assumed to be established. Once the questionnaire was considered well-prepared, it was created and administered on Google Form and shared via social media: Instagram, Line, Twitter, Facebook, and WhatsApp.

Table 4. HTMT test results

Latent Variables	HTMT Inferences (95%)	HTMT Values					
		Behavioral Intention	Computer Self Efficacy	Effort Expectancy	Other Efficacy	Performance Expectancy	Social Influence
Behavioral Intention	-	-	-	-	-	-	-
Computer Self Efficacy	0.752	0.612	-	-	-	-	-
Effort Expectancy	0.527	0.372	0.579	-	-	-	-
Other Efficacy	0.706	0.561	0.656	0.472	-	-	-
Performance Expectancy	0.769	0.632	0.715	0.616	0.597	-	-
Social Influence	0.75	0.618	0.528	0.383	0.485	0.615	-

Participants were given choice whether they wanted or did not want to participate in the study. They were informed that identities such as name, email address, and phone number were not required to ensure anonymity and privacy. Further, it was informed that their responses were voluntary, and they would be kept confidential. This way, complete responses and honesty have been encouraged. Information on Moodle e-learning system and some visuals of the Moodle App interface have been provided right below the informed consent form.

3. DATA ANALYSIS

As many as 518 responses were received, 8 of which were discarded because of being incomplete. Thus, the 510 responses were then analyzed. Considering the use of formative indicators and limited/small sample size, the Partial Least Squares - Structural Equation Modeling (PLS-SEM) was applied to analyze the data. It is suggested that the PLS-SEM be applied only when those two previous conditions are met [58]. PLS-SEM is useful for exploratory and confirmatory research [63]; however, PLS-SEM will only confirm the reliability and

validity, and lack of fit of the model. Nevertheless, Smart PLS has been used in analyzing the data and Standard Root Mean Residual (SNMR) values have been adopted to determine the fitness of the model as suggested by Henseler et al. [62]. Other measurements fit on the Smart PLS only for purely reflective measurements, whereas the model adopted in the current study has a formative construct.

IV. FINDINGS AND DISCUSSION

The analysis obtained an SNMR value of 0.079, indicating that the model is fit. The model, with an r2 value of 0.602, shows that all of the independent variables have good predictions of students' intention of using Moodle. Although the usage of formative constructs in the UTAUT study is not the first one, yet few have done it earlier [53]. It has also been confirmed that facilitating conditions as a formative construct still makes the model a good predictor. Figure 3 exhibits the model visualization and path coefficients.

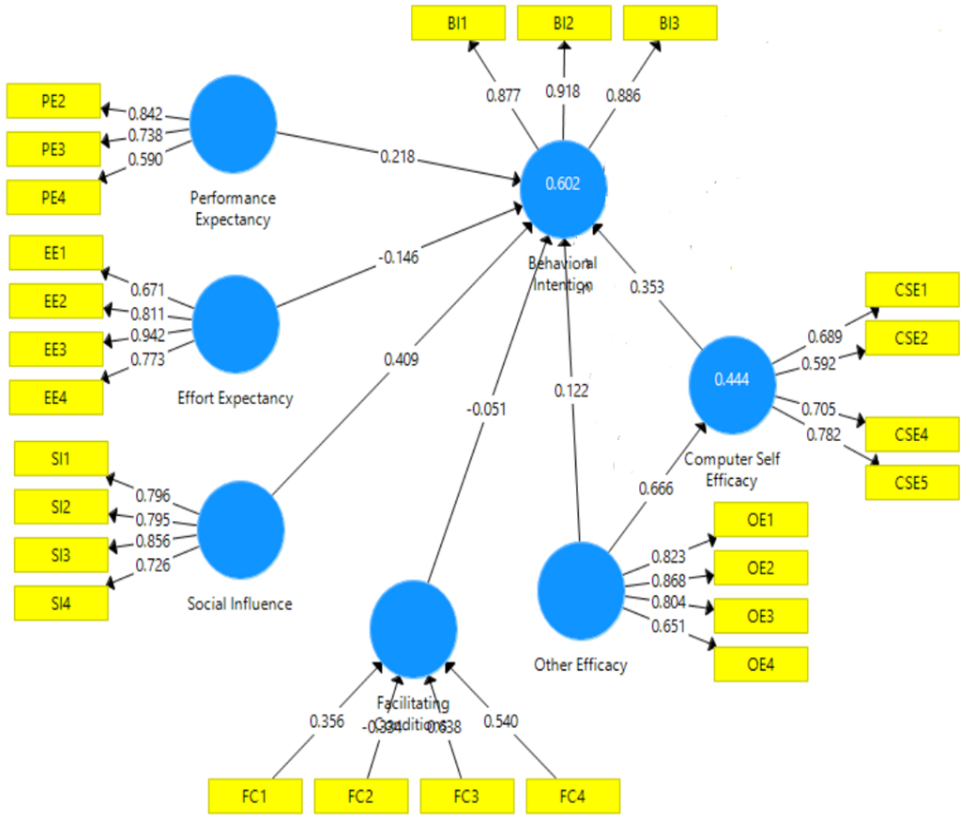

FIGURE 3. Loading factors and path coefficients

Data analysis indicated that Behavioral Intention is directly influenced by Performance Expectancy, Social Influence, Computer Self Efficacy, and Other Efficacy, while Effort Expectancy and Facilitating Condition are not. Regarding Social Cognitive Theory, data analysis revealed that Computer Self Efficacy and Other Efficacy constructs are apparently confirmed, where Other Efficacy directly influences Computer Self Efficacy, as shown in Table 5.

Table 5. Hypotheses testing result

Hypothesis	Path	Path Coefficient			Bootstrap				Result[1]
		Original	Bootstrap	S.D.	T-statistic	P Values	5.00 %	95.00 %	
H1	PE -> BI	0.218	0.212	0.109	2.110	0.018	0.015	0.368	Supported**
H2	EE -> BI	-0.146	-0.060	0.098	0.718	0.237	-0.22 l	0.109	Not supported
H3	SI -> BI	0.405	0.337	0.108	3.022	0.001	0.167	0.515	Supported**
H4	FC -> BI	-0.051	0.083	0.094	0.609	0.271	-0.076	0.240	Not supported
H5	CSE -> BI	0.353	0.191	0.099	2.000	0.023	0.033	0.369	Supported* *
H6	OE -> BI	0.122	0.162	0.100	1.652	0.050	-0.004	0.330	Supported* *
H7	OE -> CSE	0.666	0.571	0.061	9.090	0.000	0.464	0.668	Supported**

1. UTAUT VARIABLES

Table 5 shows that PE ($\beta = 0.218$; $p = 0.018 < 0.05$), which means that performance expectancy has a positive effect on behavioral intention of using Moodle; thus, H1 is supported. The result corroborates the findings of previous studies on performance expectancy as a predictor of intention of using e-learning systems [34,35,39,40). This finding has confirmed UTAUT constructs, suggesting that technology which supports performance will be favored (more likely to be adopted). Users believe that Moodle will be useful in supporting their educational needs. This finding implies that policy makers should support such a system as this one and develop and promote it further so that its benefits can be shared and enjoyed among other regions in Indonesia and beyond.

As can be seen from the table, EE ($\beta = -0.146$; $p = 0.237 > 0.05$) means that business expectations have no significant effect on the intention of using Moodle; thus, H2 is not supported. This finding has failed to verify UTAUT constructs, suggesting that practical technology will be favored by users. Contrary to previous findings exhibiting that effort expectancy as a strong predictor of behavior [34, 35, 38), this study shows that perceived ease of use of Moodle does not discourage users from using it. One of the reasons is that the e-learning system has been around for more than five years in Indonesia with students as frequent users. People are already familiar with the application. Through a longitudinal study of IT adoption, it was found that the perceived ease-of-use effect diminishes over time as users become more familiar with the system [27].

Similarly, research examining the expectations of e-learning system adoption efforts in Indonesia, such as that by Almunawar et al. [40] has shown results similar to those of the current study. Thus, people may already be familiar with Moodle App even though they have no experience with it. Second, though insignificant, the path coefficient shows a negative effect. This result may be attributable to the simplicity of the Moodle App interface as compared to other e-Learning Apps because it only imitates the learning form of a website. Simple designs may be easy to use. This may have the opposite effect and reduce user's interest in using it due to direct comparison with other e-learning application interfaces. These findings imply that Moodle designers can further improve their designs to a level comparable to other e-learning applications. Future researchers need to investigate into the indirect effect of effort expectancy on behavioral intention through performance expectancy the same as found in the original TAM model [27]. This finding may explain the limitations of the model under the study.

The table shows SI ($\beta = 0.409$; $p = 0.001 < 0.05$); it means that there is a positive social influence on behavioral intention of using Moodle; thus, H3 is supported. This finding has verified UTAUT constructs in that social factors affect one's perception, where the more familiar a technology among users' community, the more likely it will influence other users' interest. This result is compatible with previous findings that the

community perspective can affect a person's acceptance of the calling system [34, 36, 40, 52]. Public opinion built on Moodle is highly laudable for its social purpose, particularly its use in empowering and fulfilling needs in the education sector. Thus, users believe that the positive perspective of the community will make them more than willing to use Moodle as their means of education. These results indicate the need for more public exposure to Moodle through local or even global media and social media to increase public willingness to adopt the system.

FC (β = -0.051; p = 0.271 > 0.05) showed no positive effect of facilitation condition on behavioral intention of using Moodle; thus, H4 is not confirmed. This finding has failed to confirm UTAUT in that a condition which facilitates technology will affect one's intention of using it. This finding contradicts the results of previous research, which found that the application features of e-learning systems attract a people's attention and users' interest to make it part of their education system [35, 38, 39, 40]. It is argued that the Moodle App lacks advanced features like recording tools as compared to other e-learning systems. The lack of features also explains the negative path coefficient, although it is not significant. Users may perceive the lack of advanced features as a barrier in adopting Moodle. Our respondents belong to a generation that is familiar with modern technology (such as smartphone, smart door, e-hailing system, etc.). This causes them to have a very high expectation over LMS. Regrettably, the Moodle currently in use does not meet their expectation for e-learning innovation in their life. This finding implies that system developers should embed more advanced features in Moodle like other e-learning systems.

2. RELATIONAL-EFFICACY VARIABLES

Contrary to the original UTAUT findings [25], the current study showed that computer self-efficacy is a strong positive predictor of intention of using Moodle (β = 0.353; p = 0.025 < 0.05), thus, H5 has been proved to be true or proposed hypothesis is supported (see Table 6). The results also reveal that computer self-efficacy partially and complementarily mediates other-efficacy in determining intention of using Moodle. Other-efficacy positively influences intention of using Moodle App (β = 0.122; p = 0.050). It also shows its effect on computer-self efficacy (β = 0.666; p = 0.000 < 0.05). Then, other-efficacy exhibits indirect effect on Behavioral Intention as mediated by computer self-efficacy (β = 0.110: p < 0.036). It means that H6 and H7 have also been supported.

Table 6. Mediating variable analysis

Path	Original		Bootstrap		
	Path Coefficient		S.D.	T Statistics	P Values
OE --> BI (Direct)	0.122	0.162	0.100	1.652	0.050
OE-->CSE--> BI (Indirect)	0.110	0.110	0.061	1.809	0.036
OE --> BI (Total)	0.275	0.272	0.109	2.528	0.006

This finding has confirmed Social Cognitive Theory construct in that one's knowledge of and/or ability in a technology can change his cognitive perception of using the technology. This becomes stronger if supported by a conducive surrounding environment sharing equal knowledge of and/or ability in technology in regard. Findings of the current study have shown that Moodle users perceive their self-confidence as a necessary element in adopting the Moodle e-learning system. Their self-confidence increases only when they positively perceive the self-confidence of the lecturer. A similar study but did not include any other-efficacy was conducted by Malik and Rao [64]. Findings of this study have implied that management of e-learning systems, especially Moodle, should promote their features; and display them being operated on social media and various other websites. This study's findings also have offered theoretical implications, where relational efficacy can be a significant predictor in information technology adoption studies. Future research should be carried out on other systems such as e-learning systems, where there exists a reciprocal relationship between users and providers.

The current investigation was limited to transactional linkages, however future research works should also explore longitudinal studies of e-learning systems, especially for Moodle. This condition means that, over time, there may develop a close dyadic relationship between Moodle users and lecturers. This sort of relationship can improve belief in relational efficacy called relationship self-efficacy (RISE) which links the efficacy of others with self-efficacy in influencing behavior [14]. Many sport studies confirm the RISE variable in the close dyadic relationship between athlete-coach and equestrian [47, 48, 65]. Applying RISE to a longitudinal study of e-learning systems would be an interesting and rewarding work.

V. CONCLUSION

This study is focused on undergraduate student intention toward a system of education services through the Moodle e-learning system. As an alternative to virtual services globally, whether students will or will not seamlessly adopt the system, remains a big question. The current study aims to uncover the barriers or student intention to Moodle adoption in higher education institutions in Indonesia. The present study attempts to fill in the gaps by competing with the original UTAUT model combined with Social Cognitive Theory. The study has revealed that UTAUT constructs can affect students' intention of using Moodle LMS, except Effort Efficacy and Facilitating Condition. These constructs only apply to new systems which users are not familiar with. The longer someone uses a system, the perception of ease and features of the system is not so attractive as when it is first used. This research respondents have adequate prior knowledge of technology and, therefore, the perceived effort expectancy gives no impact on them. Moreover, two Social Cognitive Theory constructs, i.e. Computer Self Efficacy dan Other Efficacy were apparently confirmed in this study. One implication from this finding is that technology discrepancy can affect users' expectancy. Future research can try to compare the intention of using LMS as viewed from profession (e.g. university teachers and students).

VI. RECOMMENDATION

Results of the current study have important theoretical and practical implications in the context of education for e-learning application developers, management, and policy makers who need to consider perceived barriers and student adoption. Adopting Moodle in the e-learning system is one of the important features of social roles in educational services for the nation's new generation. Therefore, it has a promising future if the stakeholders support and finance it. The Higher Education stakeholders should consider a periodical demonstration of the system to improve the users' computer-self efficacy, and reinforce their perception that Moodle is a quality LMS almost effortless in its usage. Future research is encouraged to further study the results of the current research work, and to examine the indirect relationship between effort expectancy and choosing Moodle through performance expectancy as a mediator.

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Author contribution

All authors made an equal contribution to the development and planning of the study.

Conflict of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data are available from the authors upon request.

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