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Factors affecting MOOC and LMS acceptance in basic training of newcomer civil servants in Indonesia

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ABSTRACT

Pelatihan dasar calon pegawai negeri sipil (Latsar CPNS) is basic training for newcomer civil servants that must be followed during the pre-service period. The coronavirus disease 2019 (COVID-19) outbreak has caused face-to-face learning in the classroom to be canceled, so the learning process in the training organization must be replaced with a learning process using massive open online course (MOOC) and learning management system (LMS) with a distance learning system. This study used a modified form of the unified theory of acceptance and use of technology (UTAUT) model framework. The core factors in the UTAUT framework called facilitating conditions, will be divided into two factors. The two factors are the availability of infrastructure and devices, and internet capability (IC). The respondents of this study are newly recruited civil servants at the Ministry of Transportation of the Republic of Indonesia with 400 respondents used in the analysis process. We found that performance expectation (PE), effort expectation (EE), social influence (SI), and self-efficacy (SE) affect student behavior (SB). In addition, SI and IC affect SE. Meanwhile, the relationship between infrastructure and device availability (IDA) with SE has an insignificant result. In improving Latsar CPNS services, training organizations should pay attention to several factors that can influence SB.

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1. INTRODUCTION

The competence of civil servants can be improved through training to encourage talent and enhance employee creativity. In addition, training helps employees become interested in gaining more knowledge about their work. Ultimately, this helps them gain attention among their peers and be promoted. Training improves performance when selecting the right person for a role, making it easier to place people in jobs [1]. This is in line with the purpose of *Pelatihan dasar calon pegawai negeri sipil* (Latsar CPNS) which is organized to build moral integrity, honesty, enthusiasm, and motivation for nationalism and nationality. This training aims to build superior and responsible character. In addition, it also aims to strengthen professionalism and build field competence.

The Government of the Republic of Indonesia does not allow basic training for newcomer civil servants to be organized classically during the coronavirus disease 2019 (COVID-19) pandemic [2]. In response, *Lembaga Administrasi Negara* (LAN), or the State Administration Agency, quickly issued a policy. The policy temporarily suspends the classical implementation of Latsar CPNS. In the circular letter, the chief of the State Administration Agency stated that distance learning should be encouraged because emergencies could occur [3]. Information technology and learning management software can transfer classical learning to distance learning. They support the learning process without sacrificing the quality and accomplishment of learning objectives. Distance learning process can provide benefits for students because the distance learning process can be done anywhere and does not need to spend a lot of money to participate in these activities [4]. The challenge arises due to Indonesia's geographical location consisting of 17,000 islands separated by oceans and straits, where the availability of infrastructure and devices is only concentrated in urban areas [5]. The main cause of the problem is the unfavorable geographical conditions caused by the topography of an area that does not allow the building of BTS towers because BTS does not function if it occupies unfree air space (obstructed by tall buildings and hills) [6].

In adopting a distance learning system in Latsar CPNS, a good method is needed to measure how much influence the use of distance learning methods has on the behavior of students using online learning media. Studies on the adoption of distance learning have previously been conducted on civil servant training [7]. The studies used the unified theory of acceptance and use of technology (UTAUT). UTAUT is an appropriate method to measure how much user acceptance of technology [7]-[9]. In addition, several other studies on the adoption process of distance learning have also been conducted previously using the technological acceptance model (TAM) [10], [11]. Although these studies have produced some findings related to the adoption process of distance learning, there has been no explicit discussion on the impact of the availability of infrastructure and devices as well as the internet capability (IC) owned by participants whether it can have a direct impact on SB in the distance learning process. As a form of development of studies that have previously been carried out [7], [8], [10], [11], an analysis process in this study will be carried out whether the distance learning process can be applied to the Latsar CPNS learning process and whether the variables of infrastructure and device availability (IDA) [12] and IC [10], [13], will affect SB in the distance learning process in Indonesia. This study needs to be carried out considering the decree of the head of the State Administration Agency number, 14/K.1/Pdp.07/2022 requires the implementation of Latsar CPNS to be carried out by distance learning using the massive open online course (MOOC) software system for self-learning and learning management system (LMS) for distance learning.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

This section will discuss the literature related to the implementation of distance learning. In addition, this section will also discuss the development of the hypothesis and model framework as the basis of the analysis process. This basis will be used in the testing process at a later stage.

2.1. Hypothesis development

In this discussion, several hypotheses are built which form the basis for the formation of a new model framework. The hypothesis is obtained based on the results of previous studies. A description of the results of previous studies which is the basis for determining the hypothesis in this study can be seen in the following subsections.

2.1.1. Performance expectation

Performance expectation (PE) is defined as how many people think utilizing a strategy will enable them to gain from their work performance [8]. In previous studies, PE significantly affect SB, which can affect system usage behavior in distance learning systems [7], [9], [14].

- H1: PE affect SB in distance learning systems.

2.1.2. Effort expectation

The effort expectancy (EE) factor reflects the ease of learning to use or being skilled at using the system. If the system is easy to use, the effort will not be too high, and vice versa. If a system is difficult to use, it requires much effort [8]. In previous studies, EE affect SB [7], [9], [14].

- H2: EE affects SB in distance learning systems.

2.1.3. Social influence

The social influence (SI) factor is the extent to which an individual perceives the importance believed by others who will influence users to use the new system [8]. SI includes a person's behavior and reactions influenced by others. Examples of SI indicators include peer influence, pressure from family, and

other factors. SI is also defined as the important views of others (family, superiors, and friends) towards using a new system [15]. From the results of other studies, SI can affect SB in the distance learning process [7], [14].

- H3: SI affects SB in distance learning systems.

The presence of organizational support will increase students' trust, and it will enable them to integrate the use of technology into distance learning practices [11]. Their satisfaction is driven by the educational institution's reputation, the instructor's empathy, and the physical infrastructure [16]. This is in line with the results in other studies where SI significantly affects self-efficacy (SE) [4], [17]. According to another study, SI positively correlates with students' understanding and behavior toward their willingness to use e-learning [18].

- H4: SI affects SE in using distance learning systems.

2.1.4. Infrastructure and device availability

Instruments of e-learning infrastructure were e-learning system effectiveness, electronic devices, applications, and Internet accessibility. The effectiveness of distance learning is determined by the e-learning infrastructure [19]. The availability of infrastructure and devices can have a negative impact on student confidence [20]. This can occur due to the digital divide in rural areas, as indicated by the lack of Internet connections and technological devices and the readiness of participants to adopt digital teaching materials. The role of Internet connection availability can affect the performance of software or websites that support the learning process and can affect students' comfort in following the distance learning process [10]. In addition, another problem that can affect the low SE of students is the inadequate ownership of digital media to support the online learning process [14].

- H5: IDA affect the participants' SE in the distance learning system.

2.1.5. Internet capability

Information and communication technology (ICT) skills are not a particular concern in this study, as in Indonesia, basic ICT understanding is taught in the formal education curriculum. The ICT learning curriculum in Indonesia has been implemented in general education [1]. The capabilities in Internet operational skills that civil servants require in the distance learning process consist of Internet operational capabilities, Internet formal capabilities, Internet information capabilities, and Internet strategic capabilities [21]. Another study showed that internet skills can increase students' confidence in using distance learning systems [10].

- H6: IC affects student SE in distance learning systems.

2.1.6. Student behavior

SB in this study relates to usage behavior which describes a person's behavior in using the system and is measured based on the intensity or frequency of users using information technology [7], [8], [14]. Based on the explanation, this factor measures how often students use MOOCs and LMS. In this study, the SB factor acts as a dependent factor that measures the extent of student acceptance of the use of distance learning systems.

2.1.7. Self-efficacy

SE is generally described as an individual's confidence in their ability to perform the actions needed to achieve desired outcomes successfully. The ability to use online learning in daily life requires using the internet, laptops, web-based instruction, and digital learning tools. Thus, people confident in technology will have a favorable view of e-learning. In contrast, students with computer anxiety affect their satisfaction. When dissatisfied, their confidence and trust in using technology as a medium will be directly affected [21]. In addition, SE in using computers cannot be separated from the ease of accessing and using computers [22]. Generally, students with higher SE participate in learning more frequently than those with lower SE [23]. Based on information from previous studies, student SE has a great influence on the use of distance learning [17], [18], [24], [25].

- H7: SE affects SB in distance learning systems.

3. METHOD

3.1. Framework model

The form of the proposed model can be seen in Figure 1. The figure explains the framework model determined based on a review of references from previous studies and the determination of hypotheses that have been carried out. There are 5 exogenous factors consisting of PE, EE, SI, availability of infrastructure

and devices, and internet capabilities. SE is an exogenous and endogenous factor, and SB is an exogenous factor.

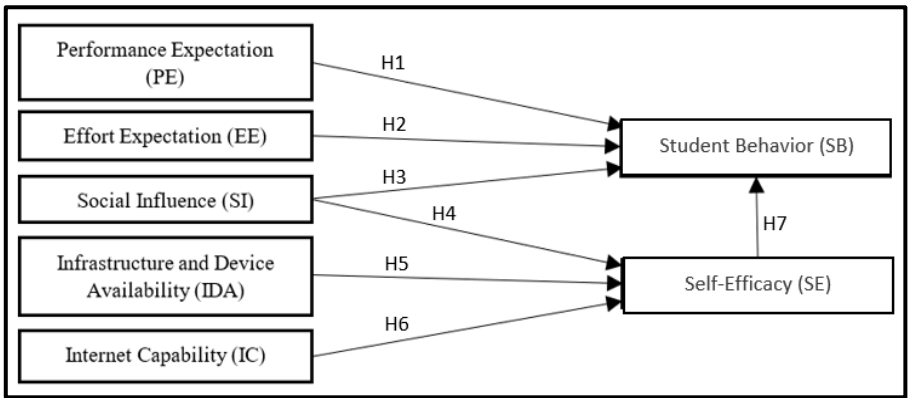

Figure 1. Recommended framework model

3.2. Total population and data sample

This study was conducted using quantitative methods. Respondents used in this study were participants in the basic training of newcomer civil servants within the ministry of transportation of the Republic of Indonesia. The number of respondents used in the analysis process was 400 students from 38 provinces in Indonesia. In this study, it is known that the number of Latsar CPNS students at the transportation apparatus HR development centre, ministry of transportation is around 3,306 people. The minimum number of samples taken is based on the Slovin formula as stated in the (1).

$$n = \frac{\mathrm{N}}{1+\mathrm{N}\, e^2} \quad (1)$$

Notes:
n = number of samples
N = total population
e = error tolerance value of 0.05
The minimum number of data samples required based on the calculation of the Slovin equation is 356.83 or around 357 people. Based on this limitation, the number of respondents used in the analysis process was 400 students from 38 provinces in Indonesia.

3.3. Data collection

Table 1 shows the 7 construct variables used as core indicators in this study. The 7 construct variables were broken down into 26 indicators that were used as core questions that had been adjusted to the needs of this study. The 26 core questions were used in the survey form and distributed to respondents.

3.4. Data analysis

The data analysis process was carried out using SEM-PLS, which was processed using smart PLS 4.0.9.2. The purpose of using smart PLS is to predict the relationship between construct variables, confirm the theory and can be used to explain whether there is a relationship between latent variables. This study used two model analysis processes: outer model analysis and inner model analysis [26].

3.4.1. Outer model analysis

The outer model analysis process is carried out to determine the effect of the relationship between determinant variables on construct variables. The process is carried out by going through several stages as follows:

a) Internal consistency analysis: the internal consistency value is based on the intercorrelation of the observed values of the indicators. It is between 0 and 1, and the higher the internal consistency value, the higher the reliability of the measuring instrument. The measurement process is carried out using Cronbach's alpha value, with a minimum value of 0.7.

b) Convergent validity analysis: convergence validity at the indicator level is called indicator reliability, as seen in the outer loadings. An indicator's justification value for latent variables is sufficient if the outer loading value is 0.7.
c) Discriminant validity analysis: discriminant validity is a measure that shows that a construct is different from other constructs. It needs to be tested at the indicator and construct levels. The discriminant validity testing process at the indicator level is carried out using the cross-loading assessment, and at the construct level, using Fornell-Lacker. The minimum discriminant validity value is 0.5. The latent variable value must be greater than all other variables (in row and column correlations).

Table 1. List of mapping variables

Construct	Code	Indicators	References
PE	PE1	Distance learning systems are useful in learning tasks	[7], [14]
	PE2	The use of a distance learning system allows participants to complete tasks more quickly.	
	PE3	The use of distance learning systems can increase learning productivity.	
	PE4	Distance learning systems can increase the possibility of obtaining performance improvements.	
EE	EE1	Interaction with the distance learning system will run smoothly and understandably.	[7], [14]
	EE2	The distance learning system makes improving the participants' skills very easy.	
	EE3	Participants will find the distance learning system easy to use	
	EE4	The learning process for operating the learning system is very easy for participants to understand	
SI	SI1	The participants' behavior to use the distance learning system is influenced by other people.	[7], [14]
	SI2	Important people for the participants think that the trainees should use the distance learning system.	
	SI3	Senior employees are very helpful to participants in using the distance learning system.	
	SI4	The organization (participant's workplace) generally supports using distance learning systems.	
IDA	IDA1	Participants have the facilities and infrastructure to use the distance learning system.	[10], [11], [19]
	IDA2	Participants were satisfied with the performance of the facilities and infrastructure they had during the training with the distance learning system.	
	IDA3	Distance learning system in accordance with other systems used by participants	
IC	IC1	The level of Internet operational ability possessed by participants	[21]
	IC2	Formal Internet proficiency level owned by the participants	
	IC3	The level of internet information ability possessed by the participants	
	IC4	The level of internet strategic ability possessed by participants	
SE	SE1	The availability of help from others anytime and anywhere increases trainees' SE.	[22]
	SE2	The availability of help from others when trainees face problems increases trainees' SE.	
	SE3	The availability of time provided by the distance learning system is sufficient to complete the work.	
	SE4	Availability of assistance facilities in the distance learning system	
SB	SB1	Participants enthusiastic about participating in distance learning	[7], [14]
	SB2	The number of uses of the distance learning system in 1 day	
	SB3	The number of uses of the distance learning system in 1 week	

3.4.2. Inner model analysis

The inner model analysis process is carried out by looking at the relationship/path coefficient between one latent variable and other latent variables by the proposed hypothesis. In this process, several stages of the analysis process are carried out as follows:

a) Comparing the t-statistic value with the t-table value: the limit of the t-table value used is 1.966, and the test results are declared significant if the t-statistic value>t-table value (1.966).
b) P-value comparison: the P value is similar to the t-table value, but the difference lies in the magnitude of the value. In this test, the P value must be below 0.05 (P<0.05); if the P value is >0.05, the relationship between the variables is insignificant.

c) Finding the path coefficient value: the path coefficient has a standardized value between -1 and +1. A path coefficient value close to +1 indicates a strong positive relationship between the correlated variables. A value close to -1 indicates a very strong negative relationship. If the path coefficient has a value close to 0, the two correlated variables have a very weak relationship that is not significantly different from zero. This study's path coefficient values are denoted by the original sample value (o).

4. DATA ANALYSIS AND DISCUSSION

The data that we have obtained has been randomly sorted into 400 respondents consisting of students who have attended Latsar CPNS organized by distance learning. Based on the grouping process that we have done, 52% of respondents come from Western Indonesia and Eastern Indonesia reaches 48%. In addition, the number of respondents who have less experience in distance learning is 19% of the total respondents. While students who have more experience in distance learning reached 81% of the total respondents.

4.1. Outer model analysis

The first step in this analysis was an internal consistency analysis with the results shown in Table 2. In the table, it can be seen that all outer loadings and Cronbach's alpha values are >0.7. Based on the results of the outer loadings and Cronbach alpha that we obtained in the testing process in Table 2, all results meet the requirements, so that further testing can be carried out.

Table 2. Consistency and convergent validity analysis result

Construct	Indicator	Outer loadings	Cronbach's alpha
PE	PE1	0.7770	0.8808
	PE2	0.8830	
	PE3	0.8914	
	PE4	0.8777	
EE	EE1	0.8812	0.9047
	EE2	0.8760	
	EE3	0.8803	
	EE4	0.8893	
SI	SI1	0.8495	0.8672
	SI2	0.8059	
	SI3	0.8755	
	SI4	0.8514	
IDA	IDA1	0.7867	0.7745
	IDA2	0.8797	
	IDA3	0.8192	
IC	IC1	0.8756	0.8578
	IC2	0.8767	
	IC3	0.7926	
	IC4	0.8015	
SE	SE1	0.8231	0.8387
	SE2	0.8068	
	SE3	0.8119	
	SE4	0.8358	
SB	SB1	0.8443	0.8371
	SB2	0.8836	
	SB3	0.8771	

The next testing process is discriminant validity analysis (cross-loading assessment), which is tested at the indicator and latent variable levels and the results can be seen in Table 3. In the table, it can be seen that the latent variable value in the red box has a greater value than the other variable values (in parallel rows and columns). Based on the results of the discriminant validity analysis (cross-loading assessment) that meets the requirements, the latent variable values used in this study are suitable for testing with the Fornell-Lacker test.

The results of the discriminant validity test (Fornell-Lacker assessment) can be seen in Table 4. The table shows that the latent variable value in the red box is greater than all other variable values (in parallel rows and columns). Based on the results of the cross-loading and Fornell-Lacker tests, the model is eligible for inner model analysis.

Table 3. Discriminant validity (cross-loading assessment)

	PE	EE	SI	IDA	IC	SE	SB
PE1	**0.777**	0.510	0.403	0.546	0.332	0.384	0.536
PE2	**0.883**	0.647	0.450	0.490	0.426	0.512	0.642
PE3	**0.891**	0.706	0.540	0.502	0.520	0.553	0.724
PE4	**0.878**	0.817	0.549	0.415	0.494	0.526	0.745
EE1	0.747	**0.881**	0.523	0.398	0.492	0.493	0.695
EE2	0.639	**0.876**	0.490	0.341	0.470	0.449	0.633
EE3	0.674	**0.880**	0.484	0.395	0.471	0.422	0.631
EE4	0.727	**0.889**	0.543	0.439	0.519	0.508	0.716
SI1	0.476	0.479	**0.849**	0.278	0.482	0.448	0.605
SI2	0.451	0.453	**0.806**	0.253	0.509	0.518	0.596
SI3	0.509	0.517	**0.876**	0.327	0.552	0.481	0.625
SI4	0.497	0.513	**0.851**	0.328	0.539	0.449	0.594
IDA1	0.391	0.328	0.222	**0.787**	0.258	0.230	0.331
IDA2	0.501	0.424	0.318	**0.880**	0.370	0.318	0.456
IDA3	0.495	0.351	0.323	**0.819**	0.300	0.257	0.414
IC1	0.473	0.500	0.541	0.384	**0.876**	0.553	0.613
IC2	0.465	0.495	0.535	0.281	**0.877**	0.558	0.594
IC3	0.382	0.392	0.470	0.278	**0.793**	0.475	0.489
IC4	0.431	0.465	0.517	0.325	**0.802**	0.455	0.543
SE1	0.432	0.407	0.442	0.218	0.461	**0.823**	0.569
SE2	0.508	0.483	0.486	0.315	0.547	**0.807**	0.649
SE3	0.392	0.345	0.397	0.200	0.411	**0.812**	0.504
SE4	0.547	0.488	0.499	0.318	0.562	**0.836**	0.646
SB1	0.658	0.584	0.659	0.408	0.588	0.645	**0.844**
SB2	0.585	0.573	0.610	0.368	0.564	0.653	**0.884**
SB3	0.774	0.808	0.598	0.488	0.593	0.608	**0.877**

Table 4. Discriminant validity (Fornell-Lacker assessment)

	SB	EE	IC	IDA	PE	SE	SI
SB	**0.868**						
EE	0.761	**0.882**					
IC	0.671	0.555	**0.838**				
IDA	0.488	0.448	0.379	**0.829**			
PE	0.779	0.792	0.524	0.561	**0.859**		
SE	0.730	0.533	0.612	0.328	0.581	**0.819**	
SI	0.716	0.580	0.616	0.350	0.572	0.561	**0.846**

4.2. Inner model analysis and hypothesis testing result

Based on the analysis results that we have compiled in Table 5, we find that H1, H2, and H3, are acceptable in this study. These results are in accordance with previous studies where PE->SB, EE->SB, and SI->SB, have significant test results [7], [9], [14]. Based on the findings, academics, experts, administrators, and designers of e-learning systems should focus on promoting the efficiency and effectiveness of systems that improve students' academic performance, so that in the future distance learning patterns are not only used for organizing Latsar CPNS, but can also be used for organizing other types of training for civil servants. When building and/or modifying an e-learning system, training institutions should consider ease of use so that students can use the system as easily as possible (with less effort) so that students are motivated to use it. To improve the quality of Latsar CPNS, the training organizers must provide training support services, which will facilitate the use of the system in the learning process. Organizational support as a support system can influence students to follow the distance learning process.

The analysis results from Table 5 show that the relationship between SI->SE, and ITC->SE also have significant results so that H4 and H6 can be accepted and these results are in accordance with previous studies [4], [17], [18]. Based on that results, training organizations should improve technical support services, because this can increase students' confidence to be able to participate in Latsar CPNS. In addition, support from the organization where students work can affect students' sense of SE so it needs to be emphasized again about the importance of the organization in supporting students' participation in Latsar CPNS activities by distance learning in accordance with the policies made by LAN as the fostering institution for Latsar CPNS implementation. In the development and implementation of Latsar CPNS, the organizers can at least provide special training related to the operation of the system used in distance learning and not just provide a guidebook related to the operation of the training, because not all students can understand the steps that must be taken in participating in distance learning and not all students are experts in internet skills.

Based on the results of the analysis in Table 5, SE->SB has a significant relationship, so based on these results H7 can be accepted. These results are in accordance with the information from studies that have

been done before [17], [18], [24], [25]. Based on the findings, to increase students' SE, training organizers should be able to ensure the ease of use of the LMS and MOOC. In addition, the support of the organization where students work can provide support to students in participating in distance learning by providing administrative assistance and the availability of devices. With the convenience and support, students' SE level can increase and it can motivate students to participate in distance learning activities.

The insignificant test results in Table 5 are obtained in the IDA->SE relationship which causes H5 to be rejected. This result differs from the description in the previous study, where the availability of infrastructure and devices has a negative impact on student SE [7], [12], [14], [25]. The existence of a digital divide and the impact of low economic levels on students can be a problem when implementing distance learning. This contradicts the information of previous studies that have been conducted [11], [19]. Based on the findings, although it does not have significant results, the availability of infrastructure and devices can be a threat to the successful implementation of Latsar CPNS by distance learning. As a step to anticipate this situation, training providers and organizations where students work can formulate policies related to budget needs and the provision of infrastructure and devices that students will need to participate in distance learning activities. In addition, anticipatory steps that can be taken are grouping students into a certain area that is not affected by the digital divide and by providing the equipment needed by students in participating in Latsar CPNS. For example, students can take part in Latsar CPNS activities from the office where students work. This can be organized by the student's workplace organization.

Table 5. Inner model analysis

	Original sample (O)	T statistics	P values	Result	Decision
PE->SB	0.268	5.896	0.000	Significant	H1 accepted
EE->SB	0.239	5.795	0.000	Significant	H2 accepted
SI->SB	0.253	7.745	0.000	Significant	H3 accepted
SI->SE	0.283	5.203	0.000	Significant	H4 accepted
IDA->SE	0.073	1.752	0.080	Not significant	H5 rejected
IC->SE	0.410	7.220	0.000	Significant	H6 accepted
SE->SB	0.305	7.686	0.000	Significant	H7 accepted

5. CONCLUSION

Based on the analysis process, we found that the internet capability variable can affect students' SE which can indirectly affect their behavior in following the distance learning process. However, in our findings, the availability of infrastructure and devices did not have a significant impact on students' SE. This variable is not special in the UTAUT method in previous studies. Because the availability of facilities and infrastructure and also the individual abilities of students are included in the facilitating condition variable, there is no specific measurement of these two variables. Further studies are needed to analyze whether the availability of infrastructure and devices can have a significant impact on student SE in other training settings. In addition, further in-depth studies may be needed to confirm the moderating factors that may affect the relationship between exogenous and endogenous factors in the main framework, especially on their influence on students' behavior in the distance learning process.

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