

An Empirical Study on the Factors Influencing Readiness to Implement Hybrid Learning

Angelika, Tanty Oktavia

Information Systems Management Department, Binus Graduate Program, Master of Information Systems Management, Bina Nusantara University

⁺*angelika@binus.ac.id (corresponding author), toktavia@binus.edu*

Abstract. Readiness for learning is an important first step before deciding to implement a new learning system, such as the hybrid learning system that was implemented in Indonesia. This study was conducted to determine which factors have a significant impact on readiness in hybrid learning. The research data will be collected through an online questionnaire with 100 student respondents and 100 lecturer respondents at universities in Indonesia. This research was analyzed using a hypothesis testing, namely the T-Test and P-value method to measure the difference between latent variables and to determine whether to reject the null hypothesis. The finding of this study is student attitudes, online media, lecturers' characteristics, and hybrid learning facilities are factors that influence readiness in the implementation of hybrid learning. This study has shown that the factors that can influence an individual's readiness come from the individual's behavior and intentions toward a new thing, which appears to have a lower willingness or feels much more engaged. Other factors, such as facilities and online media, are necessary for preparation, particularly in hybrid learning. Because universities could use the latest technology in hybrid learning, both students and lecturers should learn to keep up with technological improvements while fulfilling their responsibilities in education.

Keywords: readiness factor, higher education, hybrid learning

1. Introduction

In 2021, the Ministers in Indonesia declared that the entire online learning system can be held with a hybrid learning system starting from the academic terms of 2021/2022. Following the publication of this ruling, educational institutions started attempting to apply hybrid learning. This learning method combines face-to-face and online learning in a single lecture session.

This can be seen from a survey conducted by KPAI (Komisi Perlindungan Anak Indonesia) in 2020 with the result that 79.9% of lecturers did not interact outside of assignments with students so students had difficulty in following the learning process due to the absence of material explanations from the expected lecturers (Taufan Teguh Akbari, 2022). This is a concern for the implementation of hybrid learning because students and lecturers need to adapt again after previous adaptations in online learning showed suboptimal results. With the disadvantages obtained in online learning, educational institutions need to carry out a better preparation process to minimize suboptimal learning outcomes.

Another research from Kompas.com state that based on data on the distribution of internet users in Indonesia, the highest internet use in Indonesia lies on the island of Java, which is 55.7% based on 2020 (Slamet, 2021). The other regions, such as Maluku and Papua, have the lowest internet use, with just 3% of the total internet users in Indonesia (Slamet, 2021). The research also states that those two regions have the lowest use of the internet and the infrastructure also the quality of the internet network are problems the people have faced for a long time. This fact should be considered when the universities from that region plan to implement hybrid learning. As it is known that hybrid learning will need internet connection and technologies to support the implementation (Slamet, 2021).

Based on the background that has been explained, universities should ensure that students and lecturers are ready to adapt to hybrid learning methods so that the result of implementing hybrid learning becomes more optimal (Firdaus et al., 2020). To obtain the necessary readiness, through this article, a study was conducted to find out the factors that can affect this readiness so that universities can be more helpful in preparing students and lecturers so that the application of hybrid learning can be more optimal.

2. Literature Review

2.1. The Importance of Learning Readiness

Individual readiness will affect the results of their practices (Sriwichai, 2020). Preparing oneself can begin by reading the material that the teacher will explain following the class schedule so that an individual can prepare several questions regarding their lack of understanding of the material. This preparation is advantageous in making the teaching and learning process more effective and optimizing the knowledge gained by students. When it comes to the objectives to be achieved from a learning activity, readiness is an important condition that must be considered because if the readiness is assessed as lacking, the expected achievement of the learning session will be difficult to achieve and will demotivate the students and lecturers involved (Schindler, 2013). Demotivation that occurs can make learning outcomes less than optimal. Suboptimal learning outcomes can result in a less efficient knowledge transfer process from teacher to student where the knowledge transfer process should be fundamental in learning (Mutahar, et al., 2021). Education preparation is carried out to help mitigate concerns about their ability to absorb knowledge in order for them to maintain and even improve their abilities (Owino-O & Nyakecho, 2020).

A person's readiness is affected by both internal and external factors (Ramli et al., 2018). Individual emotional and physical characteristics are internal factors that influence individual readiness (Ramli et al., 2018). Individual readiness for learning will improve as a result of a positive increase from internal factors. External factors have an impact on the environment for both students and lecturers. The learning environment can include learning facilities provided by the educational institution as well as the learning atmosphere created during the teaching and learning process in the classroom (Leatemala et al., 2016). Not only students but lecturers also need to ensure that their social environment will support the teaching process so that the material can be delivered can provide maximum output to students (Saintika et al., 2021).

2.2. Student Readiness for the Implementation of Hybrid Learning

There are conditions that must be met before a hybrid learning system can be implemented successfully in order to provide assurances of its success. These conditions include the requirement for a learning environment-compatible attitude and the readiness of all stakeholders, particularly the students. Students will therefore require some sort of guide on how to adequately prepare for the new educational system, namely the hybrid learning system (Ghaibeh, 2022). Mohd Yasin et al., (2020) was conduct a research in analyzing the readiness factor of students. Based on the result, the students' readiness factor can be based on:

2.2.1 Technology Access (TA)

The technological infrastructure that the institution has created or the use of multimedia technology to connect in-class lecturers, in-class students, and students who are studying outside of the classroom, such as at home, can be used to evaluate the quality of a learning system. Additionally, it must be possible for users to access the information technology more easily thanks to the architecture of both the information technology and the interface design. Students can take more and more control of their academic lives as a result of their increasing access to technology (Mohd Yasin et al., 2020).

H1: Technology Access has a significant effect on the Hybrid Learning Readiness.

2.2.2 Online Media (OM)

When a student uses learning resources to prepare for class, they are typically using online learning media. Because there is an open source LMS to encourage the interchange of information and expertise, online media such as LMS can also be employed. Utilizing the appropriate online resources will help students become more self-aware and prepare them for hybrid learning (Mohd Yasin et al., 2020).

H2: Online Media has a significant effect on the Hybrid Learning Readiness.

2.2.3 Online Communication Self-Efficacy (OCSE)

Social interaction in hybrid learning is split into two types: face-to-face interaction that may result in physical touch and online interaction. Students with strong social skills typically have higher levels of self-efficacy for online communication, which allows them to use these platforms more effectively and better prepares them to implement a hybrid learning approach (Mohd Yasin et al., 2020).

H3: Online Communication Self-Efficacy has a significant effect on the Hybrid Learning Readiness.

2.2.4 Technical Usage Self-Efficacy (TUSE)

Self-efficacy is the confidence a person has in his capacity to use something on his own (Lamb et al., 2014). Self-efficacy in using technology refers to people's capacity to employ cognitive skills when employing current technologies. The ability of the person to use technology offered by their various universities, such as the usage of email, video conferencing software, and LMS, can be used to assess this self-efficacy (Mohd Yasin et al., 2020).

H4: Technical Usage Self-Efficacy has a significant effect on the Hybrid Learning Readiness.

2.2.5 Student Attitudes (SA)

In order to comprehend student demands and incorporate them into technology development, as well as to produce meaningful innovations, it is crucial to have an awareness of students' attitudes toward the usage of technology during hybrid learning. A good attitude about using technology in the learning process will significantly impact how effectively the technology is used, which impacts how well learning is applied (Kolo & Zuva, 2018).

H5: Student Attitudes have a significant effect on the Hybrid Learning Readiness.

2.3. Lectures Readiness for the Implementation of Hybrid Learning

In addition to the student's preparedness as learners, lecturers' readiness as knowledge providers for these learners should also be taken into account because they will guide the learners while they are still in lectures. Saintika et al., (2021) were conduct a research in analyzing the readiness factor of lectures. Based on the result, the lectures' readiness factor can be based on:

2.3.1 Lectures' Characteristics (LC)

The attitude and confidence of the teacher in implementing hybrid learning are used to characterize them. The level of preparation of instructors in encouraging readiness to implement hybrid learning will be impacted by their worries about employing technology. The teacher's aptitude will also influence how ready he is to incorporate technology into the learning process to achieve effective and efficient results (The & Usagawa, 2018).

H6: Lectures' Characteristics has a significant effect on the Hybrid Learning Readiness

2.3.2 Hybrid Learning Facilities (HLF)

As is well known, hybrid learning will use various technological resources, including computers, internet connectivity, and learning platforms. (Saintika et al., 2021). For the costs to be incurred to deliver the advantages required and for the university's income to be able to cover these costs eventually, the institution must ensure that the facilities have satisfied the needs of hybrid learning (The & Usagawa, 2018).

H7: Hybrid Learning Facilities has a significant effect on the Hybrid Learning Readiness.

2.3.3 Learning Environment (LE)

To successfully deploy hybrid learning, universities must provide strong support for their users. In particular, professors must use the technology before students do for them to prepare learning techniques. Success in deploying hybrid learning is influenced by the preparedness of the hybrid learning environment, including technical support, training, and the availability of gear and software given by the university (Ibrahim & Nat, 2019).

H8: Learning Environment has a significant effect on the Hybrid Learning Readiness.

2.3.4 Learning Management (LM)

Before a lecturer starts to teach their students, universities should manage the learning system and prepare the lecturer to use the technology that the universities have provided. Preparation the universities give, such as technical support, training, and the availability of hardware and software provided by the university will influence the success of the implementation of hybrid learning (Saintika et al., 2021).

H9: Learning Management has a significant effect on the Hybrid Learning Readiness.

3. Methodology

3.1. Population and Samples

This research was conducted by distributing questionnaires online with closed question types. The answer that the respondent can give is to choose a likert scale over the statement in the questionnaire. Respondents in the study were students and lecturers. For the determination of the number of samples, researchers use the Slovin formula. The calculation of the minimum number of samples is as follows:

$$n = \frac{N}{1 + Ne^2}$$

Information:

n = Minimum of samples

N = Total population
 e = error margin (10%)

Based on data from the Ministry of Education, Culture, Research, and Technology, the total student population in Indonesia is 2,163,682 people, and the total lecturer population in Indonesia is 294,040. The calculation of the number of samples for students populations using the Slovin formula is as follows:

$$n = \frac{2.163.682}{1 + 2.163.682 (0,1)^2}$$

$$n = 99,99$$

$$n = 100$$

Based on the calculations using the Slovin formula above, the minimum number of samples that need to be collected is 100 students from universities in Indonesia. To calculate the sample of lecturers population is as follows:

$$n = \frac{296.040}{1 + 296.040(0,1)^2}$$

$$n = 99,99$$

$$n = 100$$

Based on the calculations using the Slovin formula above, the minimum number of samples that need to be collected is 100 lecturers from universities in Indonesia.

3.2. Research Model

Figure 1 is the research model for analyzing the readiness' factor of students' population.

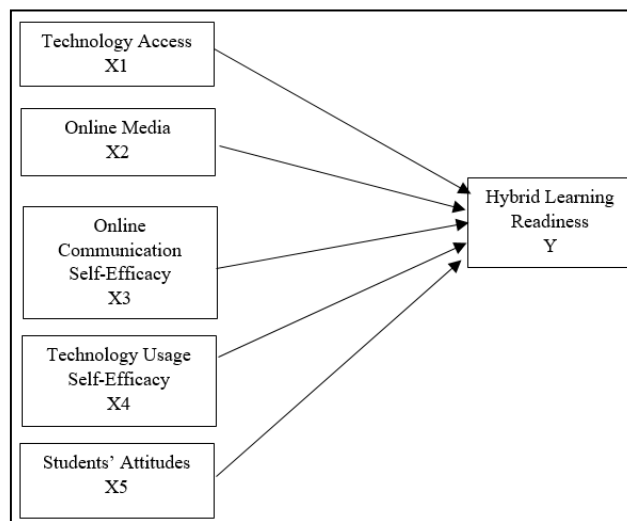


Fig. 1: Research Model for Students' Population

For the questionnaire distributed to collect data from student respondents, it contains questions that represent five predetermined research variables, namely Technology Access (TA), Online Media (OM), Technology Usage Self-Efficacy (TUSE), Online Media Self-Efficacy (OCSE), and Student Attitudes (SA).

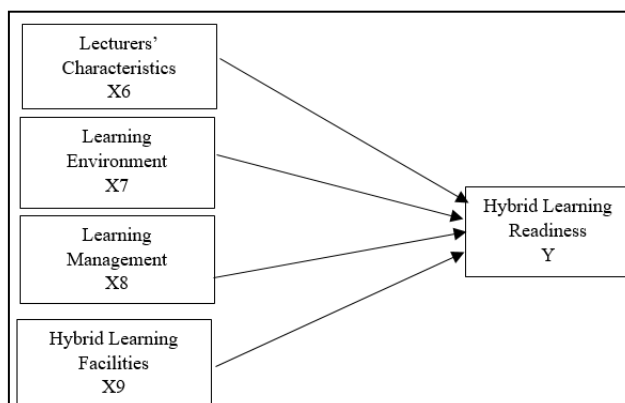


Fig. 2: Research Model for Lecturer Population

On the other hand, Fig 2 is the research model for analyzing the readiness' factor of lecturers' population. The questionnaire distributed to collect data from lecturer respondents contains questions that represent four research variables, namely Lecturers' Characteristics (LC), Hybrid Learning Facilities (FLF), Learning Environment (LE), and Learning Management (LM).

3.3. Analyzing Methods

To analyze the research result, First of all, it is necessary to do a validity test. Validity testing is used to find out whether the variables from the study are correct and can provide precise measurement results (Hair et al., 2017). An instrument that has a high level of validity means that it can provide precise measurement results while an instrument with a low level of validity will provide a measurement result that is irrelevant and cannot help the advancement of research. The validity testing was carried out by testing the Average Variance Extracted (AVE) (Hair et al., 2017).

After the validity testing was conducted, the next testing was reliability testing. A reliability test is a test that demonstrates a research instrument tool is reliable. Research instruments are said to be reliable if the instrument can show consistency if used repeatedly. If the measurement error caused is smaller, the more reliable the measurement will be. To test the reliability of the study, Cronbach's Alpha and Composite Reliability were tested (Hair et al., 2017).

To test the hypothesis, the author uses t-statistical value and p-value testing to test the hypothesis to determine whether it is acceptable. There are criteria for either accepting or rejecting a hypothesis, which are as follows:

- If the t-statistics value is greater than the t-table (t-statistics > 1.96) and the p-value is 0.05 with a 5% margin of error ($\alpha = 0.05$), H0 is rejected, and H1 is accepted.
- If the t-statistics value is less than the t-table (t-statistics < 1.96) and the p-values are greater than 0.05 with an allowance error of 5% ($\alpha = 0.05$), H0 is accepted, and H1 is rejected.

4. Results and Discussion

4.1. Student Population Results and Discussion

After collecting research data, the next step is processing and analyzing the data. In data processing, validity and reliability testing are conducted first to test research's variables and instruments. After that, hypothesis testing is carried out to analyze the significance of each variable.

4.1.1 Validity

A high level of validity instrument can provide precise measurement results, whereas a low level of validity instrument will provide irrelevant measurement results and cannot help research progress using AVE (Average Variance Extracted). If the AVE value is greater than 0.5, the variable is considered valid (Hair

et al., 2017).

Table 1: AVE Result of Students' Population

Students' Population	Average variance extracted (AVE)	Validity
TA (X1)	0.928	Valid
OM (X2)	0.668	Valid
OCSE (X3)	0.507	Valid
TUSE (X4)	0.543	Valid
SA (X5)	0.719	Valid
TK (Y)	0.748	Valid

According to the table 1, the independent variable (X) and the dependent variable (Y) have an AVE value greater than 0.5, indicating that the variables are valid for the student population.

4.1.2 Reliability

A reliability test determines the dependability of a research instrument. When a research instrument is said to be reliable, it can demonstrate consistency over time. The lower the measurement error, the more accurate the measurement. To measure the reliability of the variables, the author use Cronbach's alpha and composite reliability. If Cronbach's alpha value is greater than 0.60, the research instrument is said to be reliable (Hair et al., 2017). If Composite Reliability's value is greater than 0.70, the research instrument is said to be reliable (Hair et al., 2017).

Table 2 Cronbach's Alpha of Students' Population

Student's Population	Cronbach's alpha	Reliability
TA (X1)	0.981	Reliable
OM (X2)	0.824	Reliable
OCSE (X3)	0.689	Reliable
TUSE (X4)	0.804	Reliable
SA (X5)	0.902	Reliable
TK (Y)	0.823	Reliable

As shown in the table 2, all variables in this study have a Cronbach's alpha value greater than 0.6, indicating that all variables are reliable.

Table 3 Composite Reliability of Students' Population

Students' Population	Composite reliability	Reliability
TA (X1)	0.990	Reliable
OM (X2)	0.839	Reliable
OCSE (X3)	0.724	Reliable
TUSE (X4)	0.813	Reliable
SA (X5)	0.917	Reliable
TK (Y)	0.843	Reliable

Based on the table 3, all variables have a composite reliability value greater than 0.7, implying that all variables in this study are reliable.

4.1.3 Hypothesis Testing

The author uses SmartPLS bootstrapping to analyze the results of the t-statistics and significance values to test the hypothesis (p-values).

Table 4 Hypothesis Testing of Students' Population

Students' Population	T statistics (O/STDEV)	P values
OCSE -> TK	0.503	0.615
OM -> TK	4.061	0.000
SA -> TK	4.112	0.000
TA -> TK	0.872	0.383
TUSE -> TK	0.61	0.542

Based on the results of hypothesis testing that has been carried out, it is known that the Online Media (OM) and Student Attitudes (SA) variables have the most significant results of T testing and p-value testing compared to other variables. Both variables meet the criteria in hypothesis testing to reject the null or H0 hypothesis. Based on these results, it can be seen that H2 and H4 are accepted which means that the OM and SA variables have a significant influence on readiness in the application of hybrid learning.

The theoretical implications contained in the results of this study contribute to previous studies. This study is an empirical study that examines factors that are thought to have a significant influence on readiness in the application of hybrid learning. By researching different subjects and locations, there are differences in research results from the previous ones. The difference that occurs is that the online communication self-efficacy variable is a variable that does not have a significant influence on readiness in the application of hybrid learning but in previous studies this variable was a factor that had a significant influence. The theoretical implications contained in the results of this study contribute to previous studies. This study is an empirical study that examines factors that are thought to have a significant influence on readiness in the application of hybrid learning. By researching different subjects and locations, there are differences in research results from the previous ones. The difference that occurs is that the online communication self-efficacy variable is a variable that does not have a significant influence on readiness in the application of hybrid learning but in previous studies this variable was a factor that had a significant influence. The use of online communication media depends on the online media used because different online media can require different shrewdness as well. Likewise, with the intention in the application of hybrid learning, a lack of intention and behavior that does not show a positive attitude towards a change such as the implementation of hybrid learning as a new learning system, can result in a sense of laziness so that the level of competence also becomes less influential on readiness in the implementation of hybrid learning.

For the practical implications is if students use media that are not relevant for hybrid learning, such as still using a whiteboard instead of sharing a screen to elaborate the study material. On the other side, if the selected online media can not function as it should, such as if the server is not ready to be used by many users can decrease the student's readiness to implement hybrid learning. Furthermore, student attitudes toward hybrid learning influence student readiness. Students who refuse to accept changes in the learning environment from the beginning will face more challenges in getting ready than students who can accept and are willing to adapt to changes in the environment.

4.2. Lectures Population Results and Discussion

After the data collection that has been carried out, validity, reliability and hypothesis testing are also carried out for the lecturer population with the same testing method as testing for the student population.

4.2.1 Validity

To do validity testing for research results for lecturer populations, the author used AVE (Average Variance Extracted) testing. If the AVE value > 0.5, then the variable can be said to be valid.

Table 5 AVE of Lecturer's Population

Lecturers' Population	Average variance extracted (AVE)	Validity
LC (X6)	0.596	Valid
LE (X7)	0.716	Valid
LM (X8)	0.570	Valid
HLF (X9)	0.725	Valid
TKHL (Y)	0.753	Valid

Based on the data in the table above, it can be seen that both independent and dependent variables have an AVE value greater than 0.5, with the LM (Learning Management) variable having the lowest AVE value, implying that all research variables are valid.

4.2.2 Reliability

To do reliability testing for research results for lecturer populations, the author used Cronbach's Alpha and Composite Reliability testing. If the Cronbach's Alpha value > 0.6 and the Composite Reliability value > 0.7, then the variable can be said to be reliable.

Table 6 Cronbach's Alpha of Lecturer's Population

Lecturers' Population	Cronbach's alpha	Reliability
LC (X6)	0.758	Reliable
LE (X7)	0.877	Reliable
LM (X8)	0.766	Reliable
HLF (X9)	0.896	Reliable
TKHL (Y)	0.843	Reliable

As shown in the table above, all variables in this study have a Cronbach's alpha value greater than 0.6, indicating that all indicators in this study are reliable.

Table 7 Composite Reliability of Lecturer's Population

Lecturers' Population	Composite reliability	Reliability
LC (X6)	0.779	Reliable
LE (X7)	0.958	Reliable
LM (X8)	0.783	Reliable
HLF (X9)	0.903	Reliable
TKHL (Y)	0.884	Reliable

Based on the table above, all variables have a composite reliability value greater than 0.7, indicating that all variables in this study are reliable.

4.2.3 Hypothesis Testing

To test and analyze the research hypothesis, the authors used the SMARTPLS bootstrapping tool. The criteria used are the same as the hypothesis testing criteria for the student population that has been carried out previously.

Table 8 Hypothesis Testing of Lecturers' Population

Lecturers' Population	T statistics (O/STDEV)	P-values
HLF -> TKHL	2.298	0.022
LC -> TKHL	3.090	0.002
LE -> TKHL	1.424	0.155
LM -> TKHL	1.605	0.109

Based on the results of the hypothesis test using the statistical T-value testing method and p-value values, from the four test variables, it is known that the Hybrid Learning Facilities (HLF) and Lecturers' Characteristics variables are variables that have a significant influence on the readiness of lecturers in the implementation of hybrid learning. In other words, the more positive the lecturer's characteristics and the better the facilities provided, the readiness of lecturers to implement hybrid learning will be higher. From the results of hypothesis testing, it can be concluded that the accepted hypotheses are H6 and H7.

The theoretical implications in this study are from previous studies, this study shows that to prepare for the application of hybrid learning, an in-depth evaluation of the technical facilities used is needed. In previous studies, it was known that the level of readiness of all research variables was ready but needed to be increased. To find out the improvements that need to be made, it is necessary to know which factors most affect readiness in hybrid learning so that this research is carried out to find out this so that contribution made from this study is to conducting further research on the significance of factors that influence the implementation of hybrid learning.

The practical implications in this study is it is known the facilities used should not be arbitrarily selected in the application of hybrid learning. An evaluation is needed to determine which facilities will be used as supportive tools for the lecturer in developing learning strategies that are suitable for implementing hybrid learning. On the other hand, universities can develop the learning technology infrastructure used during online learning. Universities can evaluate what infrastructure needs to be adjusted, such as adding a feature for online check-in to ensure that lecturers attending classes are free from viruses or any infecting disease.

5. Conclusion

According to research, the factors that have a significant influence on student readiness in implementing hybrid learning are online learning media used in learning and student behaviour in dealing with changes in the learning environment. On the other hand, the lecturer's characteristics and hybrid learning facilities have a significant influence on the lecturer's readiness to implement hybrid learning. The findings of this study is each university can assess whether students and lecturers intend to implement hybrid learning and what facilities are suitable for use to support hybrid learning. Nevertheless, other variables must also be considered by the university. Although these other variables are not the most significant factors, the university can still pay attention to them in order to improve learning activities.

The limitation of this study is that should be highlighted is this study has not assessed the hybrid learning facilities used so the next research that can be done based on the results of this study is to conduct an assessment process regarding the utilization of hybrid learning technology. The evaluation process aims to determine whether there is an increase in the learning activity of students and lecturers and also what other developments can be done, such as creating an LMS system tailored to student needs. The requirements for the development of the LMS can be done by collecting data on what problems students face during online media use. The next step is to analyze the requirements and determine what features that can be developed to deliver the students' needs. With the evaluation process, the hope is that students' attitudes toward implementing hybrid learning can become more prepared.

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