

# ASSESSING TECHNOLOGY READINESS FOR BLENDED LEARNING AMONG STUDENTS IN INDONESIAN ISLAMIC HIGHER EDUCATION INSTITUTIONS

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## ABSTRACT

Since the pandemic, higher education has further embraced digital transformation, with blended learning being viewed as a viable and pertinent strategy. The digital gap and students' inclination for in-person instruction are just two of the difficulties that Islamic Higher Education Institutions (IHEIs) in Indonesia encounter while implementing blended learning, despite the growing advancement of technology infrastructure. By combining the Six Learning Aspects with the Readiness for Blended Learning approach, this study seeks to assess Java IHEIs students' readiness for blended learning. Purposive sampling methods were used to gather data from 348 respondents at Java IHEIs. PLS-SEM was used for analysis with SmartPLS 3.3.3. The findings indicate that while technological accessibility has no discernible impact on blended learning preparation, attitudes about classroom instruction are the most important predictor. This result demonstrates that affective preferences and learning culture influence IHEIs students' preparedness for blended learning, alongside technological considerations. The study's findings highlight the crucial role of human-centered approaches in IHEIs' development of blended learning systems. Thus, while continuing to improve faculty competency and technology infrastructure, institutional policies should prioritize the development of learning flexibility, consistent individual study habits, and motivation-boosting initiatives.

**Keywords:** *Digital Gap; SEM; Blended Learning; Readiness; Six Learning Aspects; Readiness for Blended Learning*

## 1. INTRODUCTION

The COVID-19 pandemic has brought significant changes to the field of education, with lasting effects on university learning systems. As we move into the post-pandemic era, blended learning is increasingly recognized as a viable strategy in higher education, even though online learning was an emergency solution at the start of 2020. Because blended learning combines the flexibility of online learning with the benefits of in-person interaction, it is no longer viewed as a stopgap measure but rather as a crucial component of the digital transformation of education.

According to a review of the research, blended learning remains a promising strategy for enhancing learning outcomes and experiences. However, user access and readiness issues, including ICT challenges, user behavior, and attitudes, make implementation difficult [1]. Effective blended learning in the context of theoretical courses after the pandemic is relevant for assessing blended learning

readiness not only from a technical perspective but also from pedagogical design and innovation [2]. It can be made clear that attitude is still a significant variable in blended learning by evaluating students' preparation based on their attitudes toward different learning components (flexibility, online engagement, etc.) [3].

The Six Learning Aspects, along with the Readiness for Blended Learning approach, have been used in several investigations of blended learning. A study by Kaban et al. [4] examined Turkish instructors' experiences with blended learning, focusing on the difficulties they encountered and the suggestions they offered. His study's findings indicate that instructors' experiences with blended learning can be both positive and negative, and that they must be ready with digital abilities. The preparedness of Moroccan English as a Foreign Language (EFL) students for the recently introduced mixed language proficiency courses was the subject of another study. Three research questions and a 29-item questionnaire, modified

from Shakeel et al. (2023), were used to collect data. The findings show that Moroccan EFL university students have a generally favorable opinion of blended learning. This optimistic outlook is considered necessary for blended learning to be implemented successfully [5].

Ribahan's study on the preparedness and accessibility of facilities for the adoption of blended learning in university foreign language instruction is one of the studies that has used the Hamzah et al. model. His study's findings demonstrated that, despite a few internet service issues, instructors and students were generally prepared to use blended learning [6]. Research findings from an educational institution indicating strong student readiness to implement blended learning highlight the potential of this method as an effective educational model in the current context [7].

Additionally, a study was conducted to examine the factors affecting the proficiency of Makassar vocational high school teachers in utilizing Technological, Pedagogical, and Content Knowledge (TPACK). The study's findings show that while teachers' social environments are in the high category, their attitudes, motivation, and dedication are in the low category, and their TPACK knowledge and competence are in the intermediate category. Concurrently, it was demonstrated that every independent variable significantly impacted the proficiency of vocational high school instructors in implementing TPACK [8].

Research in the health sector has also shown that, particularly since the COVID-19 pandemic, technological improvements and learning needs have made the adoption of blended learning methodology in nursing education unavoidable. Its implementation still presents challenges for certain nursing educators, nevertheless, in terms of infrastructure, equipment, psychological preparedness, and technology. According to research findings, Gauteng's nursing educators are not yet psychologically or technologically prepared, as the state's infrastructure and equipment support for blended learning remain insufficient [9].

Meanwhile, the digital divide is still a significant problem in Indonesia. Learning experiences vary depending on students' digital proficiency, device ownership, and internet connection. Research indicates that students' digital literacy is greatly impacted by their financial status and device ownership [10]. Despite being better than in other parts of Indonesia, the digital access gap at Java Island's IHEIs is still a major problem.

According to studies, there is a discernible digital literacy gap, and IHEIs students in Java still lack appropriate access to technology and online resources [11].

This phenomenon is understandable given the diverse origins of society, including students, across socioeconomic levels, urban/rural locations, and notable disparities in access to technology. Students' capacity to fully engage in the digital learning process is significantly affected by this problem. Furthermore, the technology infrastructure is distributed unevenly [12]. There is concrete evidence that the distribution of digital literacy, including its ethical and cognitive components, differs across locations. This information can be utilized to compare the preparedness of students and Islamic higher education institutions [13].

Despite the extensive body of national and international literature on blended learning, research specifically focusing on Indonesian Islamic Higher Education Institutions (IHEIs) remains limited. This gap is particularly important given the distinctive characteristics of IHEIs, which include students from diverse socioeconomic backgrounds and a unique curriculum that integrates both secular and religious education.

These contextual differences may influence students' learning behaviors, attitudes, and readiness in ways that differ from general higher education settings. Therefore, examining blended learning readiness within IHEIs is essential to provide a more context-sensitive understanding and to ensure that implementation strategies are aligned with the specific needs of this educational environment.

Current studies on blended learning preparation frequently depend on singular models [14, 15, 16, 17]. However, to comprehensively understand readiness within the complex IHEIs environment, which faces unique digital divide challenges and diverse student backgrounds, a more comprehensive approach that integrates numerous readiness models is essential to provide a complete picture.

By integrating two preparedness models, employing a multi-campus sample of IHEIs in Java, and contextualizing the results in light of the digital divide and post-pandemic learning culture, this study closes this gap. By examining IHEIs students' preparedness using two readiness theory models considering the digital divide and post-pandemic educational reform, this also constitutes a novel contribution.

The purpose of this research was to identify the factors that influence students' readiness, using a combination of the six learning aspects model and the readiness for blended learning approach. To determine the purpose, the researcher will administer a questionnaire created using the six learning features by Thang and Chaw, in conjunction with the ready-for-blended-learning model by Hamzah et al. The intended respondents are students enrolled in courses in both scientific and technology-based and non-science and technology-based faculties, including those that offer programs in religious studies within the Java IHEIs environment. The SmartPLS tool will assist in the PLS-SEM analysis of the data collection findings.

The article is structured into several key sections. The first section addresses the challenges and methodologies used in higher education teaching, presenting relevant literature and possible solutions. The second section covers a literature review on theories supporting the research, including the proposed measuring model and hypotheses. The third section details the study methodology, encompassing problem identification, data collection, analysis, and conclusion derivation. The fourth section presents results from both external and internal perspectives, comparing them with analogous studies. The fifth section concludes with recommendations for future research based on findings. Finally, the concluding section discusses the responsibilities of researchers and funding sources for the study.

## 2. LITERATURE REVIEW

### 2.1 Technology Readiness

A person's propensity to adopt and use new technologies to accomplish particular tasks and/or goals is known as technological readiness [17]. Readiness is the capacity to react or respond. This internal willingness is also linked to maturity, as maturity entails being prepared to execute a skill. Since students learn more effectively when they are prepared, this readiness must be taken into account throughout the learning process. A person's general state that prepares students to respond a certain way to a situation is known as readiness [18]. Readiness is also the willingness to take action. From the above opinions, it can be concluded that readiness is a state in which an individual is willing to respond when presented with an action or a specific condition [19].

People must be ready to embrace new technologies in order to be inspired to use them. Therefore, to achieve the objectives of technology adoption and make it more advantageous, it is

essential to determine the factors that affect consumers' preparedness to adopt new technology [20]. Factors affecting user readiness might be complicated. This readiness issue stems from the fact that everyone thinks differently and sometimes contradicts each other. The readiness of the hardware or its users has a significant impact on the successful implementation of new technology, particularly in an organizational setting.

### 2.2 Blended Learning

Blended learning is a learning system that combines face-to-face and e-learning, where knowledge is exchanged and integrated to make the best use of limited time while avoiding boredom through technology [21]. Another view holds that blended learning is an approach that integrates the innovation and advantages of online learning with the interaction and participation of face-to-face learning [22]. Another opinion also states that blended learning is a learning approach conducted face-to-face and online, utilizing information technology [23]. From a different perspective, technological innovation broadens the scope of learning solutions by reducing learning costs, improving access and flexibility, and creating more effective learning experiences [24]. There are four learning spaces in blended learning: direct synchronous, virtual synchronous, independent asynchronous, and collaborative asynchronous. Synchronous learning is learning that takes place at the same time and in the same location. Virtual synchronous learning is learning that occurs simultaneously across different locations.

### 2.3 Model Six Learning Aspects

The six learning aspects model is a model for studying students' adaptability to blended learning [25]. Six indicators are used: learning flexibility, online learning, study management, online interaction, classroom learning, and readiness for blended learning. The attitude toward learning flexibility variable defines learning flexibility as the ability to balance academic life, work, and family responsibilities [26]. Blended learning offers the benefits of time efficiency and location convenience for learners [27], and students can access learning materials on the web when needed [28].

Attitudes regarding online education vary, and students who are introverted or uncomfortable expressing their thoughts and opinions in person can benefit greatly from online learning. This learning type allows pupils more time to think through and articulate their answers [29]. According to the attitude toward study management variable, students

set up their self-regulated learning process so they can consciously work to organize, coordinate, and guide their learning activities as efficiently as possible while sharing learning responsibilities with the teacher [30].

By the online interaction attitude variable, a vital part of the learning process is interaction and conversation [31]. This fourth element suggests that open dialogue or critical debate, through online discussion boards and other forms, can be used for online interaction [32]. Attitude toward classroom learning variable asserts that classroom instruction offers an additional learning method in which students converse spontaneously in a permanent physical environment [33].

The blended learning adaptability variable asserts that learning readiness depends heavily on flexibility. This learning type is done to assess how well students can adjust to a blended learning environment that uses various technology platforms and to identify any issues or difficulties they are having with their education [34]. The information, social [35], psychological [36], affective [37], and physical [38] opportunities [38] required for students to make the most of the online learning environment are referred to as blended learning readiness [39].

#### 2.4 Model Readiness for Blended Learning

The readiness model for blended learning uses five indicators: technical abilities, technological accessibility, self-directed learning, attitude towards the traditional classroom setting, and attitude towards the blended classroom setting [15]. The technical abilities variable refers to the ability to perform tasks that require the use of specific tools, whether tangible or intangible, and the technology needed to master their intended use in various scenarios [40].

A technological accessibility variable can predict students' internet addiction, reluctance to communicate, and internet gratification-seeking [41]. Self-directed learning is a variable, also known as a form of learning where individuals have primary responsibility for planning, implementing, and evaluating their learning outcomes [42].

Attitude toward the traditional classroom setting variable indicates that traditional classrooms have a physical location where teachers directly impart knowledge. In a traditional classroom setting, students are interactive in asking questions and participating in activities to absorb new material [43]. Attitudes toward a blended classroom setting indicate that students can learn at their own pace. By

combining online and traditional learning, activities will become more flexible in understanding the learning [44].

#### 2.5 Proposed Research Model

The researcher assembled the research model proposed in this study and the hypotheses developed based on related studies and variables that had already been established. Figure 1 displays the suggested research model.

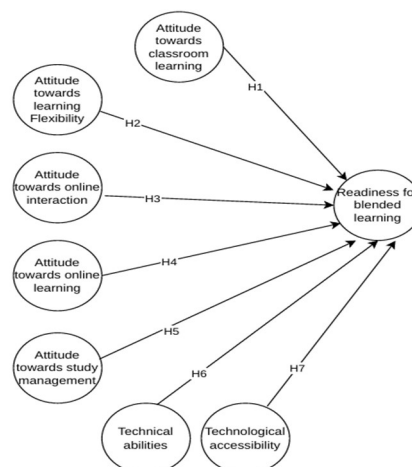


Figure 1: Proposed Research Model

The following seven hypotheses were employed in this investigation with reference to the suggested research model:

H1: Readiness for blended learning is positively impacted by attitude towards classroom learning.

H2: Readiness in blended learning is positively impacted by attitude towards learning flexibility.

H3: Readiness in blended learning is positively impacted by attitude towards online interaction.

H4: Readiness in blended learning is positively impacted by attitude towards online learning.

H5: Readiness in blended learning is positively impacted by attitude towards study management.

H6: Readiness for blended learning is positively impacted by technical abilities.

H7: Readiness for blended learning is positively impacted by technological accessibility.

### 3. RESEARCH METHOD

To understand how students at IHEIs feel about the readiness of the blended learning system, this study was developed using the Six Learning Aspects (SLA) Model and the Readiness for Blended

Learning (RBL) Model. The research approach is illustrated in Figure 5, using six phases extracted from a researcher [45].

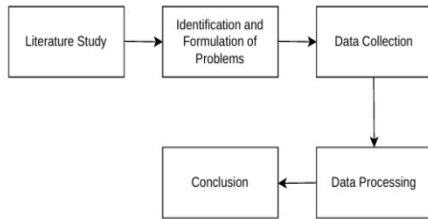


Figure 2: Research Procedure

Researchers seek evaluations of similar blended learning studies to inform their literature review. At this stage, the researchers review several theories and studies pertinent to earlier research to obtain theoretical justification. The model used in this study was selected based on the researchers' search results for relevant studies. The RBL and SLA models serve as the foundation for this basic concept, in which the researchers combine the two by modifying several variables based on previous literature. The variable of self-directed learning not only includes behaviour but also encompasses the attitude dimension related to how individuals manage their learning process [46].

Furthermore, the self-directed learning attitude encompasses not only technical proficiency but also how students manage their approach to self-directed learning [47]. The attitude of Pakistani students towards traditional (face-to-face) and online/technology-based learning implicitly indicates that perceptions of certain settings are part of a broader picture of attitudes towards classroom learning [48]. Students' learning attitudes towards a specific setting (traditional or blended) reflect their overall attitudes towards the class as a whole [49].

Eight variables are used in this study, divided into two groups: independent and dependent variables. The independent factors are attitudes toward classroom learning, learning flexibility, online engagement, online learning, and study management, with the dependent variable being readiness for blended learning. Researchers employed a five-point Likert scale, from level 1 (strongly disagree) to level 5 (strongly agree), to construct a questionnaire for data collection from respondents [50]. The researchers used a Google Form to develop the questionnaire, and the link was shared on social media.

Researchers employed two forms of statistical analysis: an inner model (the structural

model) and an outer model (the measurement model). Researchers utilized SmartPLS version 3.3.3 tools to analyse the acquired data. After reviewing the data, the researcher assessed the analysis results. To explain the results of quantitative statistical model analysis, researchers compare a large number of studies in the literature. Confirmation interpretation was carried out by comparing the results of the statistical analysis with the interpretation using a confirmation matrix. The final stage of this investigation is preparing a research report. It offers suggestions for more research along with a description of the study's results and conclusions.

4. RESULTS AND DISCUSSION

The researcher will break the results and discussion section into multiple conversation topics, including demographic analysis, outer and inner model analysis, and discussion based on the inner model analysis.

4.1 Demographic Analysis

Table 1 shows the respondents' attributes, including gender, age, faculty, and university. In all, 348 respondents were sampled for this study. Respondents ranged in age from 18 to 25, with the most prevalent age group being 18 to 22. The majority of respondents were from Universitas Syarif Hidayatullah Jakarta, and most were faculty members in economics, social sciences, and science and technology.

Table 1: Characteristics of Respondents from IHEIs in Java Island

Variable	Category / Group	Percentage (%)	Number of Respondents
Gender	Male	35.8	124
	Female	64.2	224
Age	18-22	78	271
	23-25	17	59
	>25	5	18
University	Education	30	104
	Islamic Studies	24	84
	Economics, Social Sciences, and Science & Technology	46	160
	UIN Syarif Hidayatullah Jakarta	32	112
	UIN Sunan Gunung Djati Bandung	14	49
	UIN Sunan Kalijaga Yogyakarta	11	38

UIN Maulana Malik Ibrahim Malang	22	77
UIN Sunan Ampel Surabaya	21	72

**4.2 Results of Measurement Model Assessments**

The Outer Model test consists of four tests: individual item dependability, internal consistency, average volume extracted, and discriminant validity. This stage is to determine the relationship between variables and their indicators [51]. Overall, every test step has met all requirements, as determined by the measurement model analysis. It can be concluded that the created model meets the requirements to proceed to the model structure testing phase if the outer loading value is greater than 0.6, the CR value is greater than 0.7, the AVE value is greater than 0.5, and the results of the discriminant validity test are in compliance with the rules. Figure 3 and Table 2 show the test findings.

Table 2: Composite Reliability and AVE

Latent Variable	Cronbach's Alpha (rho_a)	Composite Reliability (rho_c)	Average Variance Extracted (AVE)
RBL	0.968	0.977	0.933
ATCL	0.798	0.836	0.724
ATLF	0.851	0.879	0.708
ATOI	0.816	0.854	0.540
ATOL	0.838	0.867	0.620
ATSM	0.901	0.922	0.702
TA	0.912	0.935	0.742
TEA	0.782	0.807	0.679

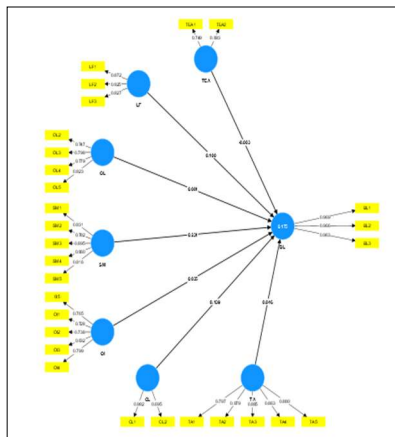


Figure 2: SEM Model of the Readiness of the Blended Learning System

**4.3 Results of Structural Model Assessments**

Additionally, hypothesis testing is done using the SEM technique. The next step will be to examine the regression coefficients for each direction linking the variables. To ascertain the significance of the resulting regression coefficient, look at the p-value column. If the p-value is less than 0.05, the regression coefficient that emerges from the relationship between one variable and other variables is significant, and vice versa. WLMV (Weighted Least Squares Mean and Variance) is used to estimate the model parameters after the model has been specified. In order to achieve a fit model with  $\chi^2 = 58,803$ ,  $df = 31$ ,  $p\text{-value} = 0.0019$ , and an RMSEA of 0.031 (90% CI =), unimportant variables must be removed one at a time along their influence route. The RMSEA score in this instance shows that the model matches the predetermined criteria rather well [51]. This fact is how a fit SEM model appears in Table 3.

Table 3: Hypothesis Testing Results

Hypothesis	Path Relationship	$\beta$ (Path Coefficient)	T-Value	P-Value
H1	ATCL → RBL	0.139	2.394	0.017
H2	ATLF → RBL	0.100	1.965	0.049
H3	ATOI → RBL	0.035	0.467	0.641
H4	ATOL → RBL	0.081	0.814	0.416
H5	ATSM → RBL	0.231	2.238	0.025
H6	TA → RBL	0.046	0.694	0.489
H7	TEA → RBL	-0.003	0.047	0.963
H1	ATCL → RBL	0.139	2.394	0.017

Three hypotheses have a substantial impact on readiness for blended learning according to the hypothesis testing results, with the variables involved being attitude toward classroom learning, attitude toward learning flexibility, and attitude toward study management. However, four hypotheses involving the variables attitude toward online interaction, attitude toward online learning, technical abilities, and technological accessibility do not have a significant impact, as the regression coefficient is -0.079 and the p-value is 0.139 (> 0.05).

#### 4.4 Discussion

The findings of this study reveal that several variables significantly influence students' readiness for blended learning at IHEIs. Empirically, the structural model demonstrates acceptable validity and reliability, as indicated by the measurement analysis results. The Average Variance Extracted (AVE) and Composite Reliability (CR) values for all constructs exceeded the minimum threshold (AVE > 0.50; CR > 0.70), confirming the robustness of the indicators in measuring their respective constructs. The  $R^2$  value for Readiness for Blended Learning was 0.158, indicating that the combined effects of the independent variables account for 15.8% of the variance in students' readiness. This result indicates that attitude towards classroom learning, attitude towards learning flexibility, and attitude towards study management contribute more significantly to readiness than other variables.

Specifically, attitude towards classroom learning, attitude towards learning flexibility, and attitude towards study management have shown positive and significant effects on readiness for blended learning with t-values greater than 1.645 and p-values less than 0.05. Conversely, attitude towards online learning, attitude towards online interaction, technical abilities, and technological accessibility were found to be statistically insignificant, indicating that technical aspects alone are insufficient to determine students' overall readiness for online learning. Attitudes towards online learning and towards online interaction do not significantly influence readiness for blended learning, in line with research findings indicating that students' attitudes towards online learning tend to be neutral, influenced by factors such as age, year of study, and ownership of personal computers [52]. In addition, it also requires a very high level of motivation to study online [53].

The variables of technical ability and technology accessibility should have a positive impact on readiness for blended learning [15], but in this study, neither variable had an effect. This fact can be understood because the respondents have already experienced online learning during the COVID-19 pandemic, and this can be done post-pandemic when there is an urgent need or during special events, such as the month of Ramadan, when learning is conducted entirely online. Therefore, the respondents can already have access to technology, platforms, gadgets, and the internet. Similar researchers whose findings contradict this study's results can also be understood, as their research was

conducted when the pandemic was beginning, so the experience of online learning was still being explored or implemented.

However, attitudes toward the online world and digital abilities by themselves are not enough to indicate readiness, as evidenced by the negligible effects of attitudes toward online learning, attitudes toward online interaction, technical skills, and technology accessibility. This finding aligns with Dhawan's research results that emphasize that technology must be accompanied by learner engagement, self-efficacy, and institutional support to yield effective outcomes [54]. In the context of IHEIs, the disparity in digital infrastructure, especially among students from rural areas or with low connectivity, increasingly highlights the need to strengthen non-technical readiness dimensions, including motivation and instructor support. These results confirm the strength of the integrated model, which combines the Six Aspects of Learning and the Readiness Framework for Blended Learning.

The significant influence of attitude towards classroom learning supports the view that IHEIs students continue to value face-to-face interaction as a central component of the learning experience. The results of this study align with prior research, which indicates that blended learning success depends heavily on learners' comfort with direct human interaction, especially in educational contexts that emphasize moral and spiritual development [55], [56]. In the IHEIs environment, which integrates religious and general knowledge, the attitude towards classroom learning serves as a medium for both intellectual and ethical formation, thereby fostering higher engagement and discipline.

The strong relationship between attitude towards learning flexibility and blended learning readiness confirms that adaptability is crucial in hybrid education settings. Students who can adjust to varying schedules, learning platforms, and instructional modes tend to experience smoother transitions between online and offline environments [57]. Similarly, attitude towards study management emerged as a key determinant, indicating that students with strong time management, self-regulation, and goal-setting abilities are better able to sustain motivation and performance across learning modalities [58].

Practically, this study suggests that institutional strategies at PTKIN should not only focus on improving technological infrastructure but also on developing learning autonomy, flexibility, and motivation among students. Training programs

that develop self-directed learning, reflective thinking, and adaptive study management can substantially enhance readiness. Additionally, the readiness of lecturers and institutional support systems must be strengthened to create an integrated learning environment that combines human interaction with digital innovation. Academically, this research expands the literature on blended learning readiness by confirming that the variable of self-regulated learning attitudes, rather than technical competence and attitudes towards the online world, serves as the foundation for effective hybrid education. The result are in line with previous research, which emphasise that successful blended learning implementation requires a balance between technology adoption and human-centered instruction [59], [60].

## 5. CONCLUSION

The results of this study indicate that attitudes towards classroom learning, learning flexibility, and study management have a positive and significant impact on students' readiness for blended learning at IHEIs. These three variables highlight the importance of fostering students' readiness to engage effectively in a hybrid learning environment. Conversely, attitudes towards online learning and online interaction, technical ability, and technology accessibility were found to have no significant impact, suggesting that technical factors alone are insufficient to ensure comprehensive readiness for blended learning. Furthermore, this study confirms that the blended learning readiness model, which integrates the six learning aspects model and readiness for blended learning model, demonstrates good validity and reliability based on the results of the measurement model analysis. The Average Variance Extracted (AVE) and Composite Reliability (CR) values exceed the minimum criteria, and the  $R^2$  value of 0.158 indicates that the combination of variables explains most of the variation in student readiness. These findings highlight that the readiness for blended learning at IHEIs is more influenced by cognitive adaptability, self-management, and student motivation than by their access to or mastery of technology. In a broader perspective, this study's results emphasize the importance of human-centered strategies in developing blended learning systems at IHEIs. Therefore, institutional policies should prioritize the development of learning flexibility, the cultivation of regular independent study habits, and the enhancement of motivation, while continuing to strengthen technological infrastructure and faculty competence.

## 6. LIMITATIONS AND FUTURE RESEARCH

This study has several limitations that warrant consideration. First, the limited sample size of higher education institutions in Java may influence the standard of research findings elsewhere or at other types of higher education institutions. Therefore, future research should use more representative sample methods from a variety of geographical areas in order to expand the sampling beyond purposive methods exclusive to Java. This would enable comparative analysis across institutional kinds and geographical contexts and enhance the generalizability of findings.

Second, the data were obtained through self-administered questionnaires, which could potentially introduce response bias and may not fully reflect students' actual experiences. To effectively capture real student behaviour and lessen response bias, future research should use mixed-method or longitudinal designs and supplement self-reported data with objective metrics like learning analytics and observational data.

Third, this model only explains a small portion of the variation in readiness for blended learning, suggesting that other important factors may have been overlooked. Therefore, future research is recommended to expand this model by adding other variables such as lecturer readiness, institutional policy support, and cultural influences.

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## REFERENCES:

- [1] M. A. Ashraf *et al.*, 'A Systematic Review of Systematic Reviews on Blended Learning: Trends, Gaps and Future Directions', *Psychol Res Behav Manag*, vol. 14, pp. 1525–1541, 2021, doi: 10.2147/PRBM.S331741.
- [2] R. Setiawan, D. Mardapi, A. Pratama, and S. Ramadan, 'Efektivitas blended learning dalam inovasi pendidikan era industri 4.0 pada mata kuliah teori tes klasik', *Jurnal Inovasi Teknologi Pendidikan*, vol. 6, no. 2, pp. 148–158, Nov. 2019, doi: 10.21831/jitp.v6i2.27259.

- [3] H. Yulia, 'Readiness for Blended Learning viewed from the Students' Attitude towards Learning Aspects', *International Journal of Active Learning*, vol. 2, no. 1, pp. 15–26, Mar. 2017.
- [4] A. Liman Kaban, E. Yataganbaba, A. Ates Cobanoglu, and M. Kokoc, 'Teachers' Readiness For Blended Learning, Their Reasons, Challenges, And Suggestions For Practising Blended Learning', *Turkish Online Journal of Distance Education*, vol. 25, no. 2, pp. 157–173, Apr. 2024, doi: 10.17718/tojde.1210124.
- [5] M. Hakimi and M. Lakhal, 'Exploring Moroccan EFL Undergraduates' Readiness for a Newly-Implemented Blended Learning Course in English Language Proficiency', *International Journal of English Language Studies*, vol. 6, no. 4, pp. 25–34, Oct. 2024, doi: 10.32996/ijels.2024.6.4.5.
- [6] R. Ribahan, 'Exploring Readiness Toward the Implementation of Blended Learning Among Lecturers and Students of Foreign Languages', *joe*, vol. 5, no. 4, pp. 16353–16370, Apr. 2023, doi: 10.31004/joe.v5i4.2789.
- [7] N. Fatehha and Z. Putriani, 'An Analysis of Students' Readiness in Blended Learning Implementation at the Department of English Education of UIN SUSKA Riau', *IJIELT*, vol. 8, no. 2, p. 22, Jan. 2023, doi: 10.24014/ijielt.v8i2.21146.
- [8] H. Hasanah, M. Ardi, L. Lu`mu, and M. N. Malik, 'Teacher Competency Analysis in Applying Technological, Pedagogical and Content Knowledge (TPACK) on Productive Learning in Vocational High School (VHS)', *International Journal of Social Science Research and Review*, vol. 5, no. 1, Art. no. 1, Jan. 2022, doi: 10.47814/ijssrr.v5i1.162.
- [9] S. Namulondo, M. M. Rasweswe, and R. S. Mooa, 'Blended learning during and beyond the COVID-19 pandemic: Attitudes of nurse educators in Gauteng', *Health SA*, vol. 28, p. 2194, Jun. 2023, doi: 10.4102/hsag.v28i0.2194.
- [10] Weli, M. Mukhlisin, J. Sjarief, and S. Madyakusumawati, 'Digital Divide and Digital Competence among Accounting Students', *j. pendidik. indonesia.*, vol. 13, no. 1, pp. 11–23, Apr. 2024, doi: 10.23887/jpiindiksha.v13i1.67739.
- [11] Rahmawati, 'Analisis kesenjangan literasi digital mahasiswa program studi PAI PTKIN Indonesia', masterThesis, UIN Syarif Hidayatullah Jakarta: Fakultas Ilmu Tarbiyah dan Keguruan, 2018, 2018. Accessed: Oct. 03, 2025. [Online]. Available: <https://repository.uinjkt.ac.id/dspace/handle/123456789/38121>
- [12] E. Maulidi, 'Ketimpangan Akses Teknologi dan Tantangan Utama Pendidikan Era Digital'. Accessed: Oct. 03, 2025. [Online]. Available: <https://www.penelitian.id/2024/12/ketimpangan-akses-teknologi-dan.html>
- [13] S. Zulaikha, M. Fadholi, S. Sururi, S. Syahril, S. N. Jamil, and P. N. Ariyanti, "“Bridging the digital divide”: Assessing and advancing teachers' digital literacy across Indonesian provinces", *Journal of Educational Management and Instruction (JEMIN)*, vol. 5, no. 1, pp. 195–212, May 2025, doi: 10.22515/jemin.v5i1.11586.
- [14] F. A. Muqtadiroh, A. A. Nisafani, and N. Silviana, 'Analyzing Student Readiness of e-Learning Implementation in Middle School', presented at the 1st Yogyakarta International Conference on Educational Management/Administration and Pedagogy (YICEMAP 2017), Atlantis Press, May 2017, pp. 59–65. doi: 10.2991/yicemap-17.2017.11.
- [15] F. Hamzah, S. Y. Phong, M. A. S. Sharifudin, Z. M. Zain, and M. Rahim, 'Exploring Students' Readiness on English Language Blended Learning', *Asian Journal of University Education*, vol. 16, no. 4, pp. 161–170, 2020, doi: 10.24191/ajue.v16i4.11948.
- [16] W. Rajikal, *Correlation Of Teaching Readiness Towards 21st Century Teaching Skill Practice Among Islamic Teacher*. 2020. doi: 10.5281/zenodo.4513994.
- [17] A. Alkaabi *et al.*, 'Experiences of university teachers with rotational blended learning during the COVID-19 pandemic: A qualitative case study', *PLoS One*, vol. 18, no. 10, p. e0292796, Oct. 2023, doi: 10.1371/journal.pone.0292796.
- [18] W. Jiang, Y. Zhan, D. Sun, and C.-K. Looi, 'Development and validation of a blended learning perception scale for higher vocational students', *Research and Practice in Technology Enhanced Learning*, vol. 19, pp. 032–032, Jan. 2024, doi: 10.58459/rptel.2024.19032.

- [19] J. M. Lewohl, 'Exploring student perceptions and use of face-to-face classes, technology-enhanced active learning, and online resources', *International Journal of Educational Technology in Higher Education*, vol. 20, no. 1, p. 48, Aug. 2023, doi: 10.1186/s41239-023-00416-3.
- [20] B. Anthony *et al.*, 'Blended Learning Adoption and Implementation in Higher Education: A Theoretical and Systematic Review', *Tech Know Learn*, vol. 27, no. 2, pp. 531–578, Jun. 2022, doi: 10.1007/s10758-020-09477-z.
- [21] A. Bock *et al.*, 'Effectiveness of face-to-face, blended and e-learning in teaching the application of local anaesthesia: a randomised study', *BMC Medical Education*, vol. 21, no. 1, p. 137, Feb. 2021, doi: 10.1186/s12909-021-02569-z.
- [22] C. V. Harper, L. M. McCormick, and L. Marron, 'Face-to-face vs. blended learning in higher education: a quantitative analysis of biological science student outcomes', *International Journal of Educational Technology in Higher Education*, vol. 21, no. 1, p. 2, Jan. 2024, doi: 10.1186/s41239-023-00435-0.
- [23] M. Gullur, 'Impact of Blended Learning on Engineering Students in Indian Context', *IJELT*, vol. 10, no. 4, pp. 13–19, Mar. 2022, doi: 10.37745/ijelt.13/vol10n4pp1319.
- [24] G. Zeybek, 'Investigation of Pre-service Teachers' Readiness Levels for Online Learning and Engagement Levels in the Online Environment', *JLAD*, vol. 9, no. 2, pp. 190–208, Jul. 2022, doi: 10.56059/jl4d.v9i2.538.
- [25] C. M. Tang and L. Y. Chaw, 'Readiness for Blended Learning: Understanding Attitude of University Students', pp. 79–100, Dec. 2013.
- [26] S. I. Shakeel, M. F. A. Haolader, and M. S. Sultana, 'Exploring dimensions of blended learning readiness: Validation of scale and assessing blended learning readiness in the context of TVET Bangladesh', *Heliyon*, vol. 9, no. 1, p. e12766, Jan. 2023, doi: 10.1016/j.heliyon.2022.e12766.
- [27] W. Cao, 'A meta-analysis of effects of blended learning on performance, attitude, achievement, and engagement across different countries', *Front Psychol*, vol. 14, p. 1212056, Jul. 2023, doi: 10.3389/fpsyg.2023.1212056.
- [28] B. Anthony Jnr, 'Examining Blended Learning Adoption Towards Improving Learning Performance in Institutions of Higher Education', *Tech Know Learn*, vol. 29, no. 3, pp. 1401–1435, Sep. 2024, doi: 10.1007/s10758-023-09712-3.
- [29] Z. Yu, 'The effects of gender, educational level, and personality on online learning outcomes during the COVID-19 pandemic', *International Journal of Educational Technology in Higher Education*, vol. 18, no. 1, p. 14, Apr. 2021, doi: 10.1186/s41239-021-00252-3.
- [30] A. Elmabaredy and N. Gencel, 'Exploring the integration of self-regulated learning into digital platforms to improve students' achievement and performance', *Discov Educ*, vol. 3, no. 1, p. 262, Dec. 2024, doi: 10.1007/s44217-024-00233-4.
- [31] J. Yin, T.-T. Goh, and Y. Hu, 'Interactions with educational chatbots: the impact of induced emotions and students' learning motivation', *International Journal of Educational Technology in Higher Education*, vol. 21, no. 1, p. 47, Aug. 2024, doi: 10.1186/s41239-024-00480-3.
- [32] N. Mansour, 'Students' and facilitators' experiences with synchronous and asynchronous online dialogic discussions and e-facilitation in understanding the Nature of Science', *Educ Inf Technol*, vol. 29, no. 12, pp. 15965–15997, Aug. 2024, doi: 10.1007/s10639-024-12473-w.
- [33] J. O. Fatokun, 'Exploring students' perception of engagement in face-to-face and online teaching', *EUREKA: Social and Humanities*, no. 6, pp. 62–72, Nov. 2024, doi: 10.21303/2504-5571.2024.003701.
- [34] L. Abbacan-Tuguic, 'Challenges of the New Normal: Students' Attitude, Readiness and Adaptability to Blended Learning Modality', *IJELS*, vol. 6, no. 2, pp. 443–449, 2021, doi: 10.22161/ijels.62.65.
- [35] M. Lukashe, B. I. Chigbu, and I. Umejesi, 'Synchronous online learning and career readiness in higher education: student perceptions, challenges, and solutions', *Front. Educ.*, vol. 9, Oct. 2024, doi: 10.3389/educ.2024.1449363.
- [36] A. El Galad, D. H. Betts, and N. Campbell, 'Flexible learning dimensions in higher education: aligning students' and educators'

- perspectives for more inclusive practices’, *Front. Educ.*, vol. 9, Apr. 2024, doi: 10.3389/educ.2024.1347432.
- [37] M. Hossain, M. Anglin, A. Safi, T. Ahmed, and S. Khan, ‘Adapting to the Digital Age: An Evaluation of Online Learning Strategies in Public Health and Social Care Education’, *Education Research International*, vol. 2024, no. 1, p. 5079882, 2024, doi: 10.1155/2024/5079882.
- [38] P. D. McCray and N. S. S. Clair, ‘Exploring Perspectives of HyFlex Blended Learning with Adult Learners in Higher Education Environments: An Instrumental Case Study’.
- [39] Ma. C. N. Oco, ‘Perceived Readiness for Online Teaching of Pre-service Teachers during the COVID-19 Pandemic’, *IJRIS*, vol. VII, no. V, pp. 797–814, 2023, doi: 10.47772/IJRIS.2023.70563.
- [40] Aldemita Ariane Joy A, Capusi Micaela D, Martinez Jayson S, Mendez Yannie D, and Zotomayor Jhon Jhon P, ‘Technological skills and readiness of the students on the utilization of digital application June 2023’, *Int. J. Sci. Res. Arch.*, vol. 11, no. 2, pp. 1226–1232, Apr. 2024, doi: 10.30574/ijrsra.2024.11.2.0541.
- [41] A. Dhir, S. Chen, and M. Nieminen, ‘Predicting adolescent Internet addiction: The roles of demographics, technology accessibility, unwillingness to communicate and sought Internet gratifications’, *Computers in Human Behavior*, vol. 51, pp. 24–33, Oct. 2015, doi: 10.1016/j.chb.2015.04.056.
- [42] S. Biswas, N. R. Thosar, and P. Srimani, ‘Self-Directed Learning Versus Traditional Teaching in Learning Gross Anatomy Among First-Year Medical Students: A Comparative Study’, *Cureus*, vol. 16, no. 8, p. e66542, Aug. 2024, doi: 10.7759/cureus.66542.
- [43] S. Suryanto, E. Purwanti, E. Limbong, A. Sitorus, B. Shinjee, and T. Alsolami, ‘Assessing English Language Education Students’ Attitudes in Hybrid Learning Instructional Environments’, *E3S Web Conf.*, vol. 594, p. 05012, 2024, doi: 10.1051/e3sconf/202459405012.
- [44] Z. Yesmakhanova, Y. Nurlan, A. Boranbayeva, A. Medeu, G. Rysbayeva, and N. Omarov, ‘Evaluation of students’ attitudes towards blended learning’, *SAJE*, vol. 44, no. 4, pp. 1–9, Nov. 2024, doi: 10.15700/saje.v44n4a2541.
- [45] A. Subiyakto, D. Septiandani, E. Nurmiati, Y. Durachman, M. Kartiwi, and A. R. Ahlan, ‘Managers Perceptions towards the Success of E-performance Reporting System’, *TELKOMNIKA (Telecommunication Computing Electronics and Control)*, vol. 15, no. 3, pp. 1389–1396, Sep. 2017, doi: 10.12928/telkomnika.v15i3.5133.
- [46] N. Auliana and S. Hadijah, ‘Self-Directed Learning Attitudes: A Study on English Department Students | Auliana | TLEMC (Teaching and Learning English in Multicultural Contexts)’. Accessed: Feb. 22, 2026. [Online]. Available: [https://jurnal.unsil.ac.id/index.php/tlemc/article/view/2757?utm\\_source=chatgpt.com](https://jurnal.unsil.ac.id/index.php/tlemc/article/view/2757?utm_source=chatgpt.com)
- [47] B. Chung and W. Bing, ‘Relationship Between the Self-Directed Learning Attitude, Academic Self-Efficacy, and Athlete Satisfaction in Korea College Athletes’, *Sage Open*, vol. 15, no. 3, p. 21582440251357160, Jul. 2025, doi: 10.1177/21582440251357161.
- [48] A. Ullah, F. Shahzad, U. Ata, Rehman, M. Naseer, and N. Akhtar, ‘Analyzing the Students’ Attitudes and Behavior towards Traditional Classes and Technology-Enhanced Online Learning’, vol. 07, pp. 765–776, Sep. 2024.
- [49] Z. Yu, W. Xu, and P. Sukjairungwattana, ‘Meta-analyses of differences in blended and traditional learning outcomes and students’ attitudes’, *Front. Psychol.*, vol. 13, Sep. 2022, doi: 10.3389/fpsyg.2022.926947.
- [50] W. Budiaji, *Skala Pengukuran dan Jumlah Respon Skala Likert*. 2018. doi: 10.31227/osf.io/k7bgy.
- [51] J. F. Hair, Ed., *A primer on partial least squares structural equations modeling (PLS-SEM)*. Los Angeles: SAGE, 2014.
- [52] I. Irwanto, U. Cahyana, and N. P. S. Ayuni, ‘Examining the e-learning attitudes of Indonesian students during the COVID-19 pandemic’, *JEELR*, vol. 11, no. 1, pp. 36–45, Jan. 2024, doi: 10.20448/jeelr.v11i1.5290.
- [53] Y. Zhu, ‘University Students’ Attitudes Toward Online Learning In A Blended Course’.
- [54] S. Dhawan, ‘Online Learning: A Panacea in the Time of COVID-19 Crisis’, *Journal of*

- Educational Technology Systems*, vol. 49, no. 1, pp. 5–22, Sep. 2020, doi: 10.1177/0047239520934018.
- [55] A. Alammary, ‘Blended learning models for introductory programming courses: A systematic review’, *PLOS ONE*, vol. 14, no. 9, p. e0221765, Sep. 2019, doi: 10.1371/journal.pone.0221765.
- [56] B. D. Simanjuntak, R. Simamora, D. R. F. Polii, and D. U. Zega, ‘Effectiveness of Using Blended Learning Media in Christian Religious Education’, *Asian Journal of Philosophy and Religion*, vol. 2, no. 2, pp. 247–262, Oct. 2023, doi: 10.55927/ajpr.v2i2.8854.
- [57] C. Müller, T. Mildenberger, and D. Steingruber, ‘Learning effectiveness of a flexible learning study programme in a blended learning design: why are some courses more effective than others?’, *Int J Educ Technol High Educ*, vol. 20, no. 1, p. 10, Feb. 2023, doi: 10.1186/s41239-022-00379-x.
- [58] Y. Zhao, Y. Li, S. Ma, Z. Xu, and B. Zhang, ‘A meta-analysis of the correlation between self-regulated learning strategies and academic performance in online and blended learning environments’, *Computers & Education*, vol. 230, p. 105279, Jun. 2025, doi: 10.1016/j.compedu.2025.105279.
- [59] Y. M. Tang *et al.*, ‘Readiness for Online Learning--Model’, Sep. 2021, doi: 10.1037/t81628-000.
- [60] R. Rasheed, A. Kamsin, and N. Abdullah, ‘Challenges in the online component of blended learning: A systematic review’, *Computers & Education*, vol. 144, p. 103701, Sep. 2019, doi: 10.1016/j.compedu.2019.103701.