

**IMPLEMENTING OF BLENDED LEARNING IN TERMS OF  
TECHNOLOGY READINESS AND TECHNOLOGY ACCEPTANCE:  
AN ANALYSIS**

**ADI WIBOWO NOOR FIKRI<sup>1</sup>**

**RORIM PANDAY<sup>2</sup>**

**CHOIROEL WOESTHO<sup>3</sup>**

**ERI BUKHARI<sup>4</sup>**

<sup>1,2,3,4</sup> Faculty of Economic, Bhayangkara Jakarta Raya University  
Corresponding author: Rorim Panday<sup>2</sup>

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**ABSTRACT**

Blended learning has become an attractive learning model in the world of education, especially as an application of innovative new information technology. However, the face-to-face learning process using information technology has not been able to provide an effective and efficient solution. To achieve success in the learning process, blended learning needs to rely on solid learning theories and pedagogical strategies. This research aims to know how technology readiness and technology acceptance of lecturers in implementing Blended Learning. Data collection using questionnaires from lecturer respondents who have received blended learning training, at the Faculty of Economics, Bhayangkara Jaya University as many as 52 people. Data processing using path analysis from AMOS. The results showed that Optimism had a significant positive effect on perceptions of ease of use and perceptions of usefulness. Innovation has a significant positive effect on perceived ease of use. Insecurity has a significant negative effect on perceptions of ease of use. Perceived ease of use has a significant positive effect on perceived usefulness. As an implication of this research, there needs to be the development of an integrated blended learning system as well as training for lecturers and students in order to improve technology readiness, so that the implementation of Blended Learning will be maximized.

**Keywords:** Technology Readiness, Technology Acceptance, Path Analysis

**1.0 INTRODUCTION**

The development of education in Indonesia until now has gone through towards a better direction and is not less competitive with the other countries. Even so, the current education system still uses traditional learning methods, where interactions only occur in the classroom. The current learning method requires lecturers and students always be present in the classroom so that the time should be used for interaction between lecturers - students or students - students will be spent in the classroom, where students listened to the material given by the lecturer (Irawan, Susanti, & Triyanto, 2015). The result of processes like this is inefficient and ineffective learning activities.

In the education system in the era of the industrial revolution 4.0, it is necessary to change the paradigm, especially in developing new learning methods where there is a role for technology so that it requires lecturers to carry out their activities quickly, effectively, and efficiently, especially in carrying out the Tri-Dharma of Higher Education. Utilization of technology into the education system, especially to keep these interactions running well without reducing the pattern of learning that should be.

One of the efforts to change the paradigm in the learning process is blended learning, which is a learning method by utilizing technology through internet media, where interactions between lecturers and students can occur not only in the classroom. They can provide feedback in the form of questions and opinions on the material that has been given, both during lectures, and outside class hours, so that the learning process runs more flexibly, effectively, and efficiently. In addition, the blended learning method provides an opportunity for lecturers to change traditional learning methods that tend to be teacher-centered learning to become more student-centered learning. (Graham, 2011).

In modern society, where time is very valuable, while universities are limited in terms of room capacity, then blended learning is an option. Even so, in the implementation of blended learning, there are things that must be considered not only by lecturers but also by students when they want to do this learning method. Time commitment is needed because blended learning provides opportunities for students to learn a skill based on self-motivation, time management, and focus.

The blended learning method is currently being implemented at Bhayangkara Jaya University. This application is carried out first to lecturers by providing debriefing and training in using applications that support blended learning. Problems that arise during the briefing, some lecturers are still not used to accepting the presence of technology in the implementation of lectures, especially if they use the blended learning method because they think that it is more effective if the lecturers and students are in the lecture room so they can see the potential of students. This is a classic reason for lecturers who have not been able to change from conventional learning to learning by using information system technology. The reason for not being able to change is suspected to be that when briefing is given, there are a number of rules for running blended learning applications that must be set and formulated; which is not present in conventional learning. Seeing this, some lecturers reacted pessimistically by using information system technology and the Internet for the teaching and learning process. Using software that supports blended learning is required to be more creative and innovative in presenting, and setting up blended learning. For this requirement, some lecturers objected when they had to innovate in making teaching materials; because as generally, lecturers are used lecture materials that have been used repeatedly, even without any changes from year to year. Some lecturers even stutter in technology, feel very uncomfortable having to use information technology, and even feel insecure, if the lecture materials have to be uploaded into the information system through supporting software for blended learning. Feeling optimistic, the character of innovation, feeling uncomfortable, and feeling insecure is expressed by Parasuraman as a character of technology readiness. Thus, it will be researched how the lecturer's technology readiness for the blended program that will be implemented at UBJ. In addition, the software made, according to the lecturers, is not easy to use and according to their perception still has few benefits. The latter is related to

technology acceptance, which is referred to as Davis's theory of technology acceptance. At least in discussing blended learning there are two things, namely technology readiness, and technology acceptance.

The next problem is the unpreparedness of technological devices in the classroom, so there needs to be a technological update at the University to support the method so that it runs well. In addition to technological devices in the classroom, some lecturers are also still not proficient in using technological devices used such as laptops or smartphones so they cannot support the implementation of the blended learning method.

Thus, this research was conducted to see to what extent lecturers are able to accept and readiness of technology to be ready for blended learning methods in conducting learning interactions with students at Bhayangkara Jaya University.

## 2.0 LITERATURE REVIEW

Blended learning combines online and face-to-face approaches. The blended learning approach utilizes the use of technology in the classroom to optimize student education through online and face-to-face interactions. The meaning of blended learning has changed over time. The suggested combined definition is to designate the various possibilities presented by combining the Internet and digital media with established forms of classrooms that require the physical presence of both teacher and students. (Friesen, 2012).

Blended learning is starting widely used at various levels of educational institutions and organizations. The implementation of blended learning in universities is limited by funds and time, but professional organizations develop better. After lecturers feel comfortable with this application, they are then motivated to develop it better for teaching services or training activities (Allen, Seaman, & Garrett, 2007; Hilliard, 2015).

In practice, the effectiveness of the blended learning method is not much different from the traditional method, which requires interaction between lecturers and students which in turn will make students more confident in building a structured mindset. In implementing blended learning at the University, it is necessary to take steps that can be taken so that the application can run effectively. (Sharpe, Benfield, & Francis, 2006) describes three ways blended learning can be adopted by universities:

1. Learning materials are available online through a learning management system to complement traditional teaching activities.
2. Students are introduced to digital technology and new pedagogies to get a new and different learning experience.
3. Students use digital technology independently, including managerial training combined with e-learning (Practicum).

From these steps, the implementation of blended learning requires the involvement of all parties to run effectively. The readiness of lecturers to change the method from traditional to blended learning by accepting and using technology in the process.

The research was conducted to see the readiness and acceptance of lecturers' technology in implementing blended learning. Technological readiness refers to the tendency of people to adopt new technologies to achieve goals in their activities (Parasuraman, 2000). Referring to Parasuraman, technology readiness is used to measure users' readiness to take advantage of new technology, where the personality dimensions of technology readiness are: optimism, innovation, discomfort, and insecurity.

The four personality dimensions influence a person to accept and use new technology. In this case, optimism and innovation function to help mental technology, while discomfort and insecurity serve as mental barriers to accepting new technology. Technological readiness is an individual's belief in technology, which can be a positive belief or a negative belief, can exist within a person where each individual has different beliefs. (Parasuraman & Colby, 2015). The definitions of the four dimensions are independent of one another, each making a unique contribution to an individual's technological readiness.

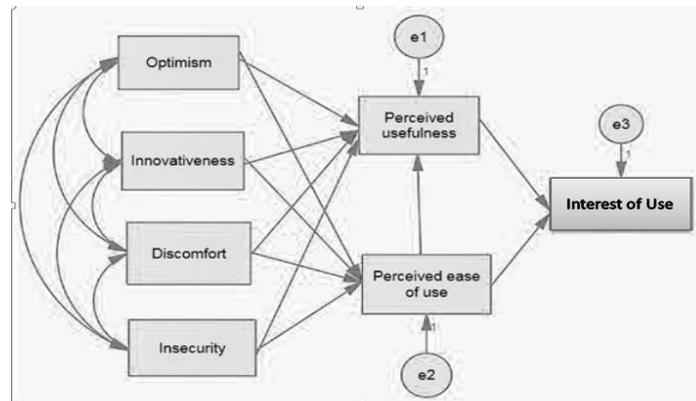
In addition to technology readiness, technology acceptance supports the effectiveness of the blended learning method. The technology acceptance model (TAM) was developed (Davis, 1985). In TAM, there are two influencing factors: perceived usefulness, which refers to "how much someone believes that using technology can improve their performance"; and perceived ease of use, which refers to "how much someone believes that using technology can be free from hard work"(Davis, 1985; Venkatesh & Davis, 2000).

TAM has received a lot of acclaim over the years, is applied across a wide range of models, and the perceived usefulness, as well as perceived ease of use, has been tested reliably and validly. (Burton-Jones & Hubona, 2006; King & He, 2006). Meanwhile, TRAM (Technology Readiness-Acceptance Model) has been used in two studies by (Rorim Panday & Purba, 2015) in Analysis Of Technology Readiness And Technology Acceptance Of Geodesy Student In Using Ina Geoportal (Rorim Panday, 2015) and The Analysis Technology Readiness Acceptance Use of Computers and Information Technology in Contractor Project Management (R Panday, Wibowo, & Mardiah, 2019). This TRAM model has been used by several researchers from other countries which have been mentioned in the last two research papers. Looking at related research, this research differs from previous research in terms of the object and subject of the research.

### 3.0 METHODE

The purpose of this research is to see the effect of technology readiness – technology acceptance in the implementation of blended learning and to see the relationship of TRAM (Technology Readiness-Acceptance Model). This study is a quantitative study using a questionnaire developed by Parasuraman for Technology Readiness and Davis for Technology Acceptance and made some adjustments for the target subject. The questionnaire was translated into Indonesian, and given to respondents, namely Economics Lecturer at Bhayangkara Jaya University. The number of respondents as a sample of 54 Lecturers of the Faculty of Economics.

After tabulating the data, the validity and reliability of the data were calculated using the Pearson correlation and the Cronbach coefficient. To calculate the data and TRAM, SPSS ver.24 and AMOS 23 were used. The path analysis model is as follows:



**Figure 1. The Integrated Model TRAM**

According (to Parasuraman & Colby, 2015; Tsikriktsis, 2004), people who are optimistic and innovative towards technology as an enabler that has a positive effect, are generally considered to have positive attitudes towards new technology and technology use. Therefore, our hypothesis:

**H1.** Optimism is positively related to Perceived Usefulness.

**H2.** Optimism is positively related to Perceived Ease Of Use.

**H3.** Innovativeness is positively related to Perceived Usefulness.

**H4.** Innovativeness is positively related to Perceived Ease Of Use.

According (Rorim Panday, 2015), Discomfort, is expected to have no negative impact on perceived Usefulness. One would expect others to see the main value of a system regardless of how they handled it. However, discomfort is expected to affect perceptions of ease of use (Perceived Ease Of Use). Unmanageable systems are more likely to be non-user-friendly systems. So, we hypothesize:

**H5.** Discomfort is not significantly related to Perceived Usefulness.

**H6.** Discomfort is negatively related to Perceived Ease of Use.

Insecurity related to technology is on the other hand associated with ambiguity and low usage (Parasuraman & Colby, 2015; Tsikriktsis, 2004). Based on previous research, assume that insecurity predicts lower levels of perceived usefulness and perceived ease of use (Perceived Usefulness & Perceived Ease Of Use). So, our hypothesis:

**H7.** Insecurity is negatively related to Perceived Usefulness.

**H8.** Insecurity is negatively related to Ease of Use.

The effect of perceived ease of use contributes to the perceived usefulness that has been carried out (King & He, 2006; Lin, Shih, & Sher, 2007; Masrom, 2007; McFarland & Hamilton, 2006; Schepers & Wetzels, 2007; Venkatesh & Davis, 2000). Based on the

assumption that some user-friendly applications can be considered useful, not all useful applications are user-friendly. So, our hypothesis:

**H9.** Perceived Ease of Use is positively related to Perceived Usefulness.

According (Davis, 1985; Venkatesh & Davis, 2000) a major contributor to the actual use of new technology is its perceived usefulness. Therefore, most people adopt new technology based on its functionality, not on a practical basis. Users, for example, are willing to adopt a difficult system if it captures critical functionality. However, practically, about 90% of the research conducted on TAM also shows a direct effect of perceived ease of use on actual use (Schepers & Wetzels, 2007). So, we hypothesize:

**H10.** Perceived Usefulness is positively related to Interest in use.

**H11.** Perceived Ease of Use is positively related to Interest in use.

#### 4.0 RESULT AND DISCUSSION

Before conducting path analysis, the first thing to do is to test the validity and reliability of the data. The results listed in table 1 show that the Pearson correlation number for each indicator is greater than 0.3 with a significance level of 0.01, so it can be said that the data collected are valid. Meanwhile, the reliability value of each variable is greater than 0.7, so it can be said that the data collected is reliable.

**Table 1. Validity and Reliability Results**

Validity											
	Pearson Corr.										
Op1	.797**	In1	.701**	Dis1	.512**	Ins1	.569**	Pu1	.928**	Pe1	.875**
Op2	.833**	In2	.422*	Dis2	.585**	Ins2	.603**	Pu2	.955**	Pe2	.925**
Op3	.878**	In3	.791**	Dis3	.726**	Ins3	.741**	Pu3	.902**	Pe3	.851**
Op4	.823**	In4	.746**	Dis4	.753**	Ins4	.823**	Pu4	.910**	Pe4	.197
Op5	.882**	In5	.841**	Dis5	.386*	Ins5	.547**	Pu5	.929**	Pe5	.897**
Op6	.896**	In6	.766**	Dis6	.511**	Ins6	.599**	Pu6	.915**	Pe6	.932**
Op7	.831**	In7	.673**	Dis7	.469**	Ins7	.397*				
Op8	.863**			Dis8	.570**	Ins8	.528**				
Op9	.767**			Dis9	.645**	Ins9	.554**				
Op10	.737**			Dis10	.470**						
<b>Realiability</b>		<b>Realiability</b>		<b>Realiability</b>		<b>Realiability</b>		<b>Realiability</b>		<b>Realiability</b>	
.950		.830		.763		.775		.965		.862	

\*\* Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at the 0.05 level (2-tailed).

Meanwhile in table 2, using Likert scale analysis, it is known the average value of the technology readiness and technology acceptance variables. From the technology readiness variable, the average value of the optimism indicator is 3.83. This indicates that respondents agree that there is a sense of optimism in them when using blended learning as a learning medium. For the innovation indicator, the average value is 3.35, which indicates that

respondents doubt whether they can innovate when using blended learning as a learning medium. Meanwhile, the average value of the discomfort indicator is 3.06 and the average value of the insecurity indicator is 3.25, which indicates that respondents still doubt whether the use of blended learning can lead to comfort and safety, especially during the learning process.

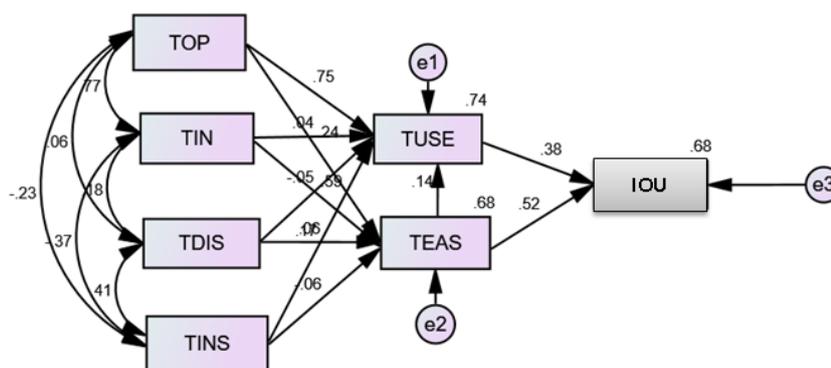
To find out what the impact of technology readiness is when respondents use blended learning in the learning process, it can be calculated by the average value of optimism plus the average value of innovation, then subtracting the value added from the average discomfort and insecurity so that the result is 0.87 or fall into the low category. It can be said that respondents have a good sense of optimism and innovation in using blended learning as an alternative learning media.

In the technology acceptance variable, the average value on the perceived usefulness indicator is 3.95, this indicates that respondents agree that there are benefits that can be felt when using blended learning. While the average indicator of perceived ease of use is 3.44. Respondents are still unsure whether there is ease in using blended learning, a factor that causes this, because of the low training in using Blended Learning.

**Table 2. Average Values For Each Indicator And Variable**

Op1	Op2	Op3	Op4	Op5	Op6	Op7	Op8	Op9	Op10	T_Op	Average
3,72	3,59	4,09	3,84	3,94	3,94	3,78	4,00	4,00	3,34	38,25	3,83
In1	In2	In3	In4	In5	In6	In7	T_In				
3,34	2,97	3,41	3,25	3,59	3,59	3,28	23,44				3,35
Dis1	Dis2	Dis3	Dis4	Dis5	Dis6	Dis7	Dis8	Dis9	Dis10	T_Dis	
2,91	3,13	2,88	2,44	3,38	2,69	3,69	3,06	3,25	3,22	30,63	3,06
Ins1	Ins2	Ins3	Ins4	Ins5	Ins6	Ins7	Ins8	Ins9	T_Ins		
4,06	3,88	3,06	3,03	2,50	2,88	2,91	3,38	3,56	29,25		3,25
Pu1	Pu2	Pu3	Pu4	Pu5	Pu6	T_Pu					
3,97	3,88	3,94	3,88	4,03	4,00	23,69					3,95
Pe1	Pe2	Pe3	Pe4	Pe5	Pe6	T_Pe					
3,53	3,72	3,69	2,56	3,59	3,53	20,63					3,44

The results of the path analysis are shown in Figure 2 and Table 3.



**Figure 2. Path Analysis Calculation Results**

**Table 3. Average Values for Each Indicator and Variable**

Indicators			Estimate	S.E.	C.R.	P	Label	Note
Perceived Usefulness	<---	Optimism	.484	.099	4.899	***	par_1	H1 Proven
Perceived Ease Of Use	<---	Optimism	.137	.094	1.451	.147	par_2	H2 Not Supported
Perceived Usefulness	<---	Innovativeness	.046	.224	.206	.836	par_3	H3 Not Supported
Perceived Ease Of Use	<---	Innovativeness	.612	.192	3.181	.001	par_4	H4 Proven
Perceived Usefulness	<---	Discomfort	-.049	.119	-.412	.680	par_5	H5 Proven
Perceived Ease Of Use	<---	Discomfort	.057	.117	.482	.630	par_6	H6 Not Supported
Perceived Usefulness	<---	Insecurity	.173	.117	1.471	.141	par_7	H7 Not Supported
Perceived Ease Of Use	<---	Insecurity	-.053	.116	-.463	.644	par_8	H8 Proven But Not Significant
Perceived Usefulness	<---	Perceived Ease Of Use	.162	.182	.892	.372	par_9	H9 Not Supported
Interest Of Use	<---	Perceived Usefulness	.102	.036	2.822	.005	par_10	H10 Proven
Interest Of Use	<---	Perceived Ease Of Use	.157	.041	3.857	***	par_11	H11 Proven

Based on the results of path analysis using AMOS 23, only 5 hypotheses were proven, including H1, H4, H5, H10, and H11, and 6 hypotheses were not proven. For a proven hypothesis, it can be seen from the p-values less than 0.05 with a Critical Value (CR) greater than 2, namely hypotheses H1, H4, H10, and H11. Meanwhile, for H5, there is a negative effect between discomfort and benefits when using blended learning, although the p-values are more than 0.05. The other H6 hypotheses are not proven, with p-values more than 0.05.

As a driving factor, lecturers have high optimism and innovation in using blended learning. This can be seen from their belief in the usefulness of blended learning (perceived usefulness) and their belief in blended learning (perceived ease of use). From the results obtained, the usefulness received by lecturers when using blended learning (perceived usefulness) and lecturers' confidence in the ease of blended learning (perceived ease of use) are high, so acceptance of technology is also high. Of the two indicators of technology acceptance, there is confidence in using technology easily, especially blended learning so that it has an effect on the use of blended learning.

As a driving factor, the results obtained are in accordance with (Parasuraman & Colby, 2015; Tsikriktsis, 2004), where optimism has an influence on perceived usefulness. This optimism is felt when there are useful when applying the blended learning method. These uses include

making the work of lecturers effective and efficient, because blended learning does not require lecturers to be present in the classroom, but it is enough to provide material online and discussion can be carried out outside the classroom.

While the results are optimistic about the perceived ease that is not in accordance with the (Tsikriktsis, 2004). Lecturers assume that the lack of training in blended learning applications and the unpreparedness of the device causes the lecturers to feel not optimistic that the blended learning method can run smoothly.

From the results of the innovation indicators, the results obtained are in accordance with (Parasuraman & Colby, 2015; Tsikriktsis, 2004) only innovation on perceived convenience. The convenience of blended learning applications that have been provided by the University, allows lecturers to innovate not only in providing material in the form of presentations but also in opening up discussion rooms with students outside of lecture hours.

As an inhibiting factor, although lecturers feel they have high insecurity and discomfort from using technology, this does not affect their level of confidence in using blended learning (perceived usefulness) and their belief in the ease of blended learning. (perceived ease of use).

**Table 4. Squared Multiple Correlations**

	Estimate
Perceived Ease of Use	.678
Perceived Usefulness	.740
Interest of Use	.677

In table 4 it can be seen how the contribution of technology readiness to the ease of using blended learning (perceived ease of use) with a value of 67.8%. Meanwhile, its contribution to perceived usefulness is 74%. This indicates that the technology readiness variable consisting of optimism, innovation, discomfort, and insecurity has a high role in influencing respondents about the ease and usefulness of using blended learning.

Furthermore, the contribution of technology acceptance consisting of ease of use and perceived usefulness to interest in using blended learning has a high influence of 67.7%. Respondents assessed that the use of blended learning in learning applications at Bhayangkara Jaya University could be accepted as an alternative learning media. This is because blended learning provides useful to respondents, especially related to effectiveness and efficiency in carrying out their obligations as lecturers.

In an effort to increase the use of blended learning, there are several things that must be improved:

1. There is a policy from education providers or the Ministry of Education to immediately require the use of blended learning at the University level, this is to make it easier for lecturers to carry out other Higher Education Tri-Dharma obligations, namely Community Service and Research.

2. The Ministry of Education needs to develop an integrated blended learning system so that universities no longer need to develop a blended learning system independently. This system is widely accessible, not only by students from the same University.
3. Increase training for lecturers organized by the Ministry of Education and Universities, so as to improve the ability of lecturers to use blended learning.
4. Increase the frequency of using blended learning, not only as a learning process but also as an interaction related to research and the service of lecturers and students.

## 5.0 CONCLUSIONS

As a conclusion from this research, among others:

1. There is a policy that must be carried out by the Ministry of Education to require the use of blended learning in every Higher Education Tri-Dharma activity.
2. Development of an integrated blended learning system, so that it can be accessed by students not only from the same university, so as to expand access to knowledge.
3. The value of technological readiness from the driving factor is still better than the inhibiting factor; this causes respondents to feel the usefulness and ease of using blended learning in learning activities.
4. There needs to be further development of blended learning so that it is easy to understand and use by lecturers and in the end also for students.
5. Increased training, especially the procurement of syllabus on blended learning, so that lecturers' innovation in using blended learning continues to grow.

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