Teachers Intention to Use E-Learning During The Covid-19 Pandemic: Age and Gender Perspective

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A B S T R A K

Selama masa pandemi covid-19, pembelajaran dilakukan dengan tidak adanya sistem tatap muka antara guru dan siswa melainkan dilakukan secara daring dengan menggunakan sistem e-learning. Dengan sistem ini, seluruh siswa dan guru bahkan tetap dapat melaksanakan pembelajaran meskipun berada di rumah. Penelitian ini bertujuan untuk menganalisis intensi guru dalam menggunakan e-learning selama pandemi covid-19. Penelitian ini menggunakan model modifikasi TAM (Technology Acceptance Model). Penelitian ini menggunakan 7 skala likert dalam mengukur seluruh indikatornya. Metode analisis data menggunakan Structure Equation Models (SEM). Hasil penelitian menunjukkan bahwa perceived ease usefulness (USE) berpengaruh signifikan terhadap intensi guru dalam memanfaatkan e-learning, sementara perceived ease of use (EASE) tidak berpengaruh signifikan terhadap penggunaan e-learning. Jenis kelamin tidak terbukti sebagai variabel moderasi atas hubungan antara USE dan EASE dengan intensi guru menggunakan e-learning. Usia guru menguatkan hubungan USE terhadap penggunaan e-learning. Namun usia guru memperlemah hubungan EASE dengan penggunaan e-learning. Guru pria dan wanita memiliki pemahaman yang sama terkait e-learning. Selain itu, guru dengan usia lebih dewasa lebih melihat e-learning sebagai sistem yang memberikan manfaat bagi mereka untuk melaksanakan tugas sebagai pengajar. Mereka juga lebih fokus pada peningkatan kinerja. Disisi lain guru dengan usia lebih dewasa kurang meperdulikan kemudahan menggunakan e-learning.

A B S T R A C T

During the Covid-19 pandemic, learning was carried out online using an e-learning system. With this system, all students and teachers can even carry out learning even though they are at home. This study aims to analyze teachers' intentions in using e-learning during the covid-19 pandemic. This study uses a modified model of TAM (Technology Acceptance Model). This study uses 7 Likert scales in measuring all indicators. The data analysis method uses Structured Equation Models (SEM). The results of the study show that perceived ease of use (USE) has a significant effect on teacher intentions in utilizing e-learning, while perceived ease of use (EASE) has no significant effect on the use of e-learning. Gender was not proven to be a moderating variable on the relationship between USE and EASE with teachers' intentions to use e-learning. Teacher age strengthens the USE relationship to e-learning use. However, teacher age weakens the relationship between EASE and e-learning use. Male and female teachers have the same understanding regarding e-learning. In addition, teachers with a more mature age see e-learning as a system that provides benefits for them to carry out their duties as teachers. They also focus more on improving performance. On the other hand, teachers with more mature ages are less concerned about the ease of using e-learning.

1. INTRODUCTION

The covid-19 pandemic has hit various countries, causing the closure of many schools and universities including Indonesia. The closure has led to changes in the learning system at all educational levels in Indonesia (Karasan & Erdogan, 2021; Nariman, 2021). The Government of Indonesia, through Circular Number 4 of 2020 concerning the Implementation of Education Policies in an Emergency for the Spread of Corona Virus Disease (COVID-19), has adopted a policy to implement online system learning. This

is learning conducted with no face-to-face system between teachers and students but is done online using the internet network. Using this system, all students and teachers even can still carry out the learning though they are at home (Al-Maroof & Salloum, 2021; Ansong-Gyimah, 2020).

E-learning systems can be implemented through applications that can bring together students and teachers online, such as Zoom, Google Meet, WebEx, Microsoft Teams, and other social media (Arpaci & Basol, 2020; Aydın & Tasci, 2005). However, the difference between the way of teaching online and offline causes many obstacles in the learning system. In Indonesia there are still many issues in online learning, such as availability of quotas, weak internet network; parental factors; and students' and teachers' readiness (Bhuana & Apriliyanti, 2021; Coman et al., 2020; Onyema et al., 2020). This student shift in the learning system due to Covid-19 has caused the teachers and the students to experience problems in the online learning system. Moreover, particularly in Indonesia, there has not been any progress in the reduction of Covid-19 cases which has led the government to continue to extend this e-learning. It is affect teachers' ability to implement e-learning increasingly important (Ibrahima et al., 2021; Sari et al., 2019).

Other related studies to evaluate teachers' intentions for a learning model have been carried out by other experts, such as the use of flipped classrooms, virtual reality, web 21, online social network, massive Open Online Courses, MOOC, and Google classroom (Alabdullatif & Velázquez-Iturbide, 2020; Khechine et al., 2020; Yildiz Durak, 2019). Regarding the use of the system to implement e-learning, the teachers are not obliged to use a particular system. This means that various online learning provider systems can be used by the teachers for delivering materials. The use of an information system to support e-learning is voluntary (Alqahtani & Rajkhan, 2020; Prasojo et al., 2020). Previous study examined the teachers' intention, who are currently studying at state universities in Malaysia in using Virtual Reality (VR) in the classroom (Majid & Shamsudin, 2019). The results showed that perceived ease of use and perceived usefulness would influence their attitudes and intentions to use VR in the classroom. Previous study examined the factors that influence the intention of Indonesian Vocational High School (SMK) teachers to use Web 2.0 (IUW) using the Technology Acceptance Model (TAM) framework and Technological Pedagogical Content Knowledge (TPACK) (Prasojo et al., 2020). Engaging 640 participants, they were found that there were significant differences based on gender regarding IUW. However, there were no significant differences informed by age and area of expertise. These findings also informed that Subjective Norms and Facilitating Conditions have a significant effect on IUW.

Based on the TAM theory, the first factor influencing the users in using the system is the perception of usefulness. The perception of usefulness is to measure the users' belief that a system can improve the person's work performance and then the users will increase one's intention to use the system (Laar et al., 2020; Mohan et al., 2020). Perceived usefulness is the basic level used by the users to evaluate the benefits obtained in using a system (Buabeng-Andoh, 2018; Lin et al., 2020; Raza & Qazi, 2020). Also, perceived usefulness is a person's perception or belief that the use of a system can improve user performance (Hamid et al., 2016; Ibrahima et al., 2021). In connection with the implementation of e-learning, previous study examined the impact of culture and gender on the students' readiness to implement e-learning (Mutambik et al., 2020). The result found that there were differences between gender and culture in the students' readiness to carry out e-learning. Previous studies have suggested that the higher rates of use of various websites by male students increase their knowledge of the web, which in turn causes them to use this new technology more frequently than the female ones (Grande-De-prado et al., 2020). Moreover other study argued that male users are more dependent on facilitation conditions when examining the use of new technology than female users. Male users may be more selective in using the system (So & Swatman, 2010; Venkatesh, 2003; Yawson & Yamoah, 2020).

Based on the description above, the researcher are interesting to conducting research related to that topic. This research focuses on the teachers in Central Java because it is related to the governor's policy that continues to extend the online learning system so that the teachers' mastery in the online learning system is very urgent to be studied. The purpose of this study is to analyze teachers' intentions in using e-learning during the covid-19 pandemic which involving gender.

2. METHOD

This research is inferential research using primary data. The object of the research is a junior high school teacher at a school affiliated with an Islamic traditional boarding school in the city of Semarang. The total population is 112 teachers. In order to increase the response rate, the data were searched using a questionnaire that was distributed directly to the respondents and the questionnaire was distributed based on the incidental random sampling method. The objects of our research are the Islamic boarding schools and those located in rural areas. Islamic boarding schools have a strong habit of learning offline, so some of them, except in Semarang continue to carry out direct learning. Besides, rural geographical conditions will

affect the quality of the internet network and this is an important factor in the implementation of e-learning. The location selection is to complement previous research, which tended not to pay attention to school locations as a consideration in analyzing research findings (Ibrahima et al., 2021; Siron et al., 2020; Sukendro et al., 2020).

The perceived usefulness variable (USE) is measured by four indicators, namely the speed of the system in carrying out tasks, increased performance, increased productivity, increased efficiency. The variable perceived ease of use (EASY) is measured by indicators of the suitability of the user's wishes, the cost of using the system, user skills, user control, user expertise. The teacher's intentions to use e-learning (INTENT) are measured by indicators of desires, hopes and plans for the use of e-learning in the future (Buabeng-Andoh, 2018; Farah, 2017). These three variables were measured by a 7-point Likert scale (1 mean strongly disagree and 7 mean strongly agree). The moderating variable age was measured by the sum of years and gender was measured by a dummy (1 for men, 0 for women).

The data are analyzed using Structural Equation Model. We use the WARPPLS as a statistical tool. The data will also be tested for model feasibility, including Average path coefficient (APC), Average R-squared (ARS), Average Adjusted R-squares (AARS), Average full collinearity VIF, and Average Block VIF (AVIF). The fit indices model is a very important measure because it shows the suitability of the model with the data and shows the quality of the model under the research.

3. RESULT AND DISCUSSION

Result

Respondent is devided base on gender and age criteria. The result or description of research respondents is present in Table 1.

Table 1. Respondents Descriptive

Description	Percentage
Gender	
Female	62.50
Male	37.50
Age	
< 21	9.09
21-30	25.00
31-40	22.73
41-50	26.14
51-60	17.04

Base on Table 1 show found that 62.5% of them are women and the rest are men. Meanwhile, in terms of age, our respondents are somewhat even. Although most are 41-50 years old (26.1364%), those who are 21-30 years old have a percentage of 25%. On average, the research respondents are 36.8 years old. The result also describes the moderating variables, namely age and gender. Then description of the latent variables, including the perceived usefulness, ease, and teachers' intention to use e-learning is show in Table 2.

Table 2. Descriptive Latent Variables

Scores	Use				Ease				Intention	
	`U1	U2	U3	U4	E1	E2	E3	E4	I1	I2
1	3.4091	4.5455	3.4091	3.4091	4.5455	5.6818	6.8182	2.2727	11.3636	3.4091
2	4.5455	4.5455	4.5455	7.9545	4.5455	5.6818	7.9545	4.5455	11.3636	4.5455
3	6.8182	7.9545	12.5000	7.9545	20.4545	17.0455	17.0455	13.6364	20.4545	6.8182
4	30.6818	31.8182	27.2727	26.1364	34.0909	31.8182	32.9545	30.6818	28.4091	30.6818
5	37.5000	29.5455	23.8636	35.2273	26.1364	20.4545	31.8182	21.5909	19.3182	37.5000
6	12.5000	15.9091	26.1364	10.2273	9.0909	11.3636	3.4091	20.4545	6.8182	12.5000
7	4.5455	5.6818	2.2727	9.0909	1.1364	7.9545	0.0000	6.8182	2.2727	4.5455
Means	4.5000	4.4773	4.5114	4.4886	4.0455	4.2159	3.8523	4.5341	3.6250	4.4773
Means Variables	**4.4943**				**4.1619**				**3.9773**	

Base on Table 2 show the results of the description show that the respondents' perceptions of the usefulness of e-learning (mean 4.4943) are higher than the perceived convenience (mean 4.1619). However, the score of 4.4943 is close to the middle score (doubtful). This indicates that respondents consider the usefulness and convenience of e-learning to be low. This is at the same time the task of the education office to increase understanding and how to use e-learning at schools. This is quite serious because in Indonesia, the Covid-19 pandemic has caused the closure of so many schools, and e-learning learning has become one of the best solutions to overcome this issue. However, the teachers do not yet have good skills applying in e-learning, and education for teachers to do e-learning is still limited. This condition causes a low number of teachers using e-learning. Table 2 also shows that the teacher's intention to do e-learning has an average of 3.9773. This score is below the midpoint (score 4). This shows that the teachers' intention to do e-learning is very low. It can also be concluded that the closure of schools without preparation for how the teachers prepare e-learning causes the intention to use e-learning to be low. The results of the model quality test are show in Table 3.

Table 3. Model fit and quality indices

Indicators	Conclusion
Average path coefficient (APC)=0.232, P<0.006	Significant
Average R-squared (ARS)=0.406, P<0.001	Significant
Average adjusted R-squared (AARS)=0.378, P<0.001	Significant
Average block VIF (AVIF)=1.512, acceptable if <= 5, ideally <= 3.3	Ideal
Average full collinearity VIF (AFVIF)=1.807, acceptable if <= 5, ideally <= 3.3	Ideal
R-squared contribution ratio (RSCR)=0.995, acceptable if >= 0.9, ideally = 1	acceptable

Base on Table 3, in general the model we use is fit and has met the quality to be used to answer the research hypothesis. The results of hypothesis testing are presented in Table 4 and Figure 1.

Table 4. The results of the hypothesis test

	Use	Ease	Gender/use	Gender/ease	Age/use	Age/ease
Path Coefficients	0.256	-0.003	0.037	-0.13	0.266	-0.23
P values	0.006	0.49	0.362	0.104	0.004	0.012
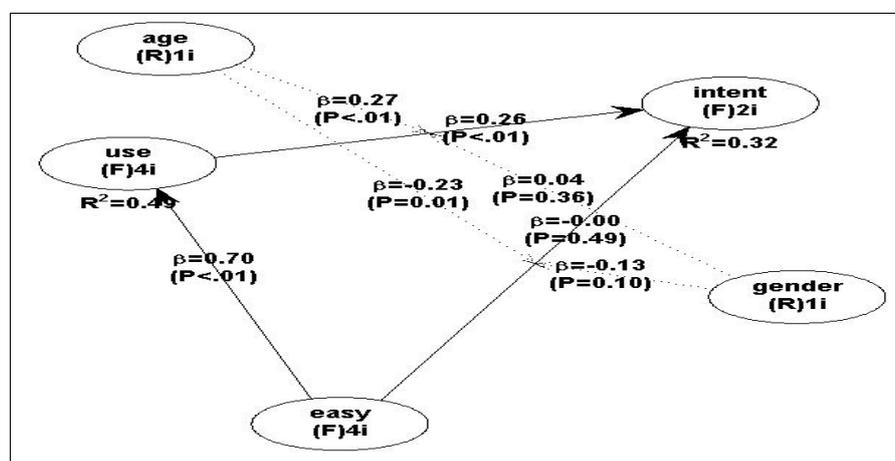
Figure 1. Model Test Results

Base on Figure 1 shows that the effect of USE on INTENT produces coefficients of 0.256 and P value of 0.006. P Value is less than 0.05 and indicates that USE has a positive effect on INTENT. The effect of EASE on INTENT produces coefficients -0.003 and P Value 0.49. P value is greater than 0.05 indicates that EASE does not have a significant effect on INTENT. The moderating effect of gender on the relationship between USE and INTENT produces a coefficient of 0.037 and P values of 0.362. P Value 0.363 is greater than 0.05 and indicates that GENDER does not moderate the relationship between USE and INTENT. The moderating effect of GENDER on the relationship between EASE and INTENT produces a coefficient of -0.13 and P values

of 0.104. P Value 0.104 is greater than 0.05 and indicates that GENDER does not moderate the relationship between EASE and INTENT.

The moderating effect of AGE on the relationship between USE and INTENT produces a coefficient of 0.266 and P values of 0.004. P.Value 0.004 is smaller than 0.05 and indicates that AGE does not moderate the relationship between USE and INTENT. The moderating effect of AGE on the relationship between UASE and INTENT produces a coefficient of -0.23 and P values of 0.012. P.Value 0.012 is smaller than 0.05 and indicates that AGE does not moderate the relationship between EASE and INTENT. Figure 1 shows that the effect of EASE on USE produces coefficients of 0.698 and P value <0.001 and shows that EASE has a positive effect on USE. The compilation of acceptance or rejection of the hypothesis is show in Table 5.

Table 5. Results of hypotheses testing

Hypothesis	Decision
H1: Perceived usefulness has a positive influence on teacher intentions to use e-learning.	Accepted
H2: Perceived ease of use has a positive influence on teacher intentions to use e-learning.	Rejected
H3: *Perceived ease of use* has a positive influence on the *perceived usefulness* of *e-learning*.	Accepted
H4: Gender affects the relationship between perceived ease of use and intentions to use e-learning.	Rejected
H5: Gender affects the relationship between perceived usefulness and intentions to use e-learning.	Rejected
H6: Age affects the relationship between perceived ease of use and intention to use e-learning.	Accepted
H7: Age affects the relationship between perceived usefulness and intentions to use e-learning.	Accepted

Discussion

The results of this study found that the teacher's perception of the use had an influence on the teacher's intention to use e-learning. E-learning provides benefits for providing learning materials to the students. For the teachers, e-learning is a way for them to complete their job as educators. There are many benefits to the teachers and the students from e-learning during a pandemic where they cannot do hands-on learning. This benefit increases the teachers' intention to use e-learning. Thus, their confidence in applying e-learning can improve their performance and arouse and increase their intention to use e-learning (Buabeng-Andoh, 2018; Hamid et al., 2016). Thus, usability is a major factor in selecting a system for conducting an e-learning system (He et al., 2018; Karasan & Erdogan, 2021).

TAM stated that the users' intention to use a system is their perception of the ease of the system. This relates to the cost or effort evaluation effort to use the system. The results of this research indicate that teachers' perceptions of the ease of using e-learning do not affect the intention to use e-learning. The results of this study reject the findings from previous study which found that ease of use affects students or teachers in the use of e-mail learning (Lin et al., 2020; Majid & Shamsudin, 2019; Prasojo et al., 2020). Then the results reject other studies that supported the TAM theory. The results of this research ultimately do not support the TAM theory.

The results also show that the users' perceived ease of use ease on e-learning will affect their perception of use. When users think that a system is easy to use, they will continuously use it. This also happens in this research. When the teachers think that e-learning is not so difficult to apply o, they will tend to find its use. Thus, the perceived ease of use on e-learning will affect the perception of the usefulness of e-learning. The results of this research corroborate the findings from some previous studies and support the TAM theory (He et al., 2018; Martono et al., 2020). Besides, this is also evidence that perceived convenience is the basic level of users' evaluation of a system. The results of this study also corroborate the findings have found that the perception of the usefulness of the system will affect the perception of usefulness (He et al., 2018; Martono et al., 2020).

The results of gender testing as a moderating effect on the relationship between perceived ease of use and perceived usefulness on intentions to use e-learning show the hypothesis rejection. Our results show that gender does not support or weaken the relationship between perceived usefulness and intentions to use e-learning. Besides, gender also does not support or weaken the relationship between perceived ease of use and the intention of using e-learning. We assess those male and female teachers have the same knowledge of e-learning and have the same readiness for this e-learning system. This is due to their lack of preparation for using the new system (Nugroho & Mutiaraningrum, 2020; Nurlaily et al., 2019). Their unpreparedness due to the unpredictable covid-19 pandemic has an impact on the school closures.

The differences in the results of this research with previous ones lie in the policy background. The teachers as the research sample use e-learning due to current circumstances and rules. It is force them to

use e-learning due to the Covid-19 pandemic that hit Indonesia. Also, Indonesia has a different culture from other countries which causes differences in research results. For example, Indonesia is known for its friendly culture has high interactions with fellow members of society. This also affects the teachers' preference to meet the students in direct learning. The adoption and absorption of e-learning technology are also heavily influenced by cultural and social factors (Barton, 2013; Chen et al., 2021).

The results of the age variable test show that it moderates the relationship between perceived usefulness and perceived ease of teachers' intention to use e-learning. Our results show that age supports the relationship between usability and teachers' intention to use e-learning. Older age causes the teachers to increasingly assess the usefulness of e-learning, the benefits provided by the teachers, and the benefits provided by e-learning. However, this research shows that age weakens the relationship between ease of use and intention in using e-learning. This shows that adults tend to ignore the convenience of e-learning. The teachers with older ages more assess a system from its benefits and ignore the aspect of system convenience. Although there are no previous results that are similar to this research, the results of this research briefly reject the findings who conducted a survey of corporate e-learning readiness in Turkey and found that there was no significant effect between age groups on e-learning readiness (Aydın & Tasci, 2005). Besides, this research supports previous study who stated that the teachers' ages have a significant effect on their readiness to implement e-learning (So & Swatman, 2010).

The implication of this study bring overview of teacher's intention to use e-learning can be improving by perceived usefulness. In addition, the age of the teacher can increase the impact of perceived usefulness in increasing the teacher's intention to use e-learning. The age of the teacher can also increase the effect of perceived usefulness on the teacher's intention to use e-learning. The suggestion for schools and the government to increase the teachers' intention to use e-learning. The government can also actively conduct training, coaching, and mentoring for the teachers in conducting e-learning. The government can also partner with universities to carry out community services through the teachers' training before applying e-learning.

4. CONCLUSION

This results indicate that that perceived usefulness has a positive effect on teacher intentions to use e-learning, and perceived ease of use has a positive influence on perceived usefulness of e-learning. However, Perceived ease of use has no effect on teacher intentions to use e-learning. The moderation test shows that gender does not moderate the effect of perceived ease of use on intentions to use e-learning and the effect of perceived usefulness on intentions to use e-learning. However, teacher age has been shown to moderate the effect of perceived ease of use on intentions to use e-learning and the effect of perceived usefulness on intentions to use e-learning.

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