

HASIL CEK_Using an Technology Readiness Model to Understand Perceived Usefulness of Learning in the Covid 19 Era

by Universitas Ahmad Dahlan Yogyakarta 46

Submission date: 03-Nov-2023 12:04PM (UTC+0700)

Submission ID: 2216017162

File name: erstand_Perceived_Usefulness_of_Learning_in_the_Covid_19_Era.pdf (267.44K)

Word count: 5444

Character count: 30806



Using an Technology Readiness Model to Understand Perceived Usefulness of Learning in the Covid-19 Era

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ARTICLE INFO

Article history:

Received September 04, 2021

Revised September 08, 2021

Accepted October 28, 2021

Available online November 25, 2021

Kata Kunci:

Pendidikan Agama Islam,
Komunikasi, Motivasi

Keywords:

Islamic Religious Education,
Communication, Motivation



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ABSTRACT

The use of new technology for educators makes it difficult for educators to update existing learning, knowledge skills, and various knowledge. However, the application of technology to the attitude of educators in adopting new technology is joined with the covid-19 pandemic, which requires educators to prepare technology. Technology readiness (TR) becomes a model in preparing technology that characterizes individuals using and adopting new technologies to achieve the desired goals. Perceived usefulness is an essential indicator of the attitude we take in the use of specific technologies. The purpose of this study was to analyze the TR of perceived usefulness in learning in the Covid-19 era. This research focuses on providing a general understanding and awareness of the importance of TR in everyday life. This type of research is quantitative, using univariate analysis and simple linear regression. This research design includes correlational research. The number of samples was 215 students were involved. The data collection tool uses an online questionnaire. The result is that school teacher education students in Yogyakarta have high TR abilities and positively affect perceived usefulness. This research implies that educators or stakeholders realize the importance of TR and technology services by encouraging positive attitudes towards technology to reduce reluctance to use technology.

ABSTRAK

Penggunaan teknologi baru bagi pendidik menyulitkan pendidik untuk memperbarui pembelajaran yang ada, keterampilan pengetahuan, dan berbagai pengetahuan, namun penerapan teknologi hingga sikap pendidik dalam mengadopsi teknologi baru ditambah dengan pandemi covid-19 yang mengharuskan pendidik menyiapkan teknologi. Kesiapan teknologi (TR) menjadi model dalam mempersiapkan teknologi yang menjadi ciri khas individu dalam penggunaan dan adaptasi teknologi baru untuk mencapai tujuan yang diinginkan. Perceived usefulness menjadi sebuah indikator penting terhadap sikap yang kita ambil dalam penggunaan teknologi tertentu. Tujuan penelitian adalah menganalisis TR terhadap perceived usefulness dalam pembelajaran di era Covid-19. Penelitian ini berfokus pada memberikan pemahaman dan kesadaran umum akan pentingnya TR dalam kehidupan sehari-hari. Jenis penelitian ini adalah kuantitatif dengan menggunakan analisis univariate dan regresi linear sederhana. Desain penelitian ini termasuk penelitian korelasional. jumlah sampel 215 mahasiswa yang terlibat. Alat pengumpulan datanya menggunakan kuesioner online. Hasilnya ialah mahasiswa pendidikan guru sekolah di Yogyakarta memiliki kemampuan TR yang tinggi dan mempengaruhi efek positif terhadap perceived usefulness. Penelitian ini menyiratkan bahwa pendidik atau seluruh pemangku kepentingan menyadari pentingnya TR dan penggunaan layanan teknologi dengan mendorong penggunaan sikap positif terhadap teknologi untuk mengurangi keengganan menggunakan teknologi.

1. INTRODUCTION

The use of technology has proliferated to reach 7 billion or 95% of the world's population. Technology also affects the economic, sociological, and psychological aspects of rapid technological growth (Blakely et al., 2020; MacLachlan et al., 2018; Summak et al., 2010). The use of technology is very important because it can increase efficiency and effectiveness in every use sector (Al-Hariri & Al-Hattami, 2017; Burbules et al., 2020; Winter et al., 2021). In the world of education, the effect has been seen positively in teaching, learning, research, and information to students (Haidari et al., 2019). Technology has played an essential role in improving the quality of education that has been incorporated into the education system (Winter et al., 2021). Educational integration provides exploration and enables it as an essential means of realizing the Sustainable Development Goals (SDGs) in education (Christopoulos & Sprangers, 2021; Rafiee & Abbasian-Nagheh, 2021; Unwin, 2019). This means that technology is able to improve results in learning and has an important role (Liu & Wang, 2020).

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Indonesia is one of the countries that have adopted and followed rapid technological advances (Aini et al., 2020; Rahardja et al., 2019; Saddhono et al., 2019). However, this progress is not accumulated up by Human Resources (HR), who can keep up with changes in world education. Often we find that educators maintain traditional ways of delivering the learning process and are still reluctant to use technology. Educational technology choices make it difficult for educators to constantly update their knowledge, skills, and information from multiple sources and exacerbate educational inequalities (Tuma, 2021; Warden et al., 2020). Many developing countries, including Indonesia, cannot use the potential competitive advantage of technology, especially in education (Alam & Asimiran, 2021; Shohel & Kirkwood, 2012). These problems are examples of problems and challenges for students as aspiring teachers ready for technology-based education. Prospective teachers are required to understand the condition of the times in order to be able to realize the progress of a nation, especially in the world of education (Burbules et al., 2020; Danniels et al., 2020).

The Covid-19 virus has become a new challenge, especially in the education sector, which is happening almost all over the world (Bozkurt et al., 2020; Christopoulos & Sprangers, 2021; Lau & Lee, 2021). But individuals must rely on the ability to adapt both in thoughts, behaviors, and emotions to deal with rapidly changing situations (Howard et al., 2016; Saha et al., 2021). We all agree that educational technology has been around for a long time, but the technology before has not had enough of the expected impact. The pandemic forced all aspects to turn to digital tools to respond to these challenges, some individuals responded with positive behavior, and some things were detrimental (Mali & Lim, 2021; Winter et al., 2021). This is due to students' inability to change technology, and students still tend to get used to face-to-face learning so that, if they come face to face with technology, it will have an impact on decreasing motivation and learning responsibilities. At the same time, technology provides a great perspective into the role of education in transforming the learning process, supporting continuous study, and facilitating students around the world during distance learning (Abbasi et al., 2020; Bozkurt et al., 2020).

One of the terms in preparing technology is Technology Readiness (TR), a concept developed to characterize the tendency of individuals to use and adapt new technologies to achieve goals both in work, tasks, and daily activities (Park & Zhang, 2021; Richardson et al., 2021). The integration of technology into education can develop itself towards technology integration, which has been considered a determining factor in how well a prospective teacher can use technology effectively to improve teaching and learning (Al-Hariri & Al-Hattami, 2017; Alam & Asimiran, 2021). The use of technology is generally profitable but the key lies in its users (Martinez-Gautier et al., 2021). A teacher candidate's positive attitude helps teacher candidates use more instructional technology tools and makes learning more interesting for students. Prospective teachers who have a negative attitude and do not accept technology readiness are not required to use technology efficiently in integrating technology into education in teaching (Hoareau et al., 2021; Petko et al., 2018; Yilmaz & Goktas, 2017). Practically the use of technology by prospective teachers can be a determinant of the effectiveness factor (Comi et al., 2017; Weng & Chen, 2020).

The use of technology is always related to the perceived usefulness of how technology is practical in everyday life. Perceived usefulness is an essential indicator of the attitude we take in the use of a particular technology. Perceived usefulness has a strong relationship with other technology perceptions that affect technology adoption (Y.-Z. Chang et al., 2020; Zhu & Luo, 2021). In addition, perceived usefulness notes the role of mediation in various aspects. Previous research has shown a large impact in exploring the positive relationship between perceived usefulness. The result is that if individuals can use technology, it will make it easier to find the information they want as well as an efficient and effective process (Chung et al., 2017; Kaushik & Rahman, 2017; Martens et al., 2017; Roy et al., 2017). The individual's willingness to prepare for the use of technology (Bakirtaş & Akkaya, 2020; Liao et al., 2018). The difference lies in the belief in the use of technology on academic staff, while this study focuses on describing the ability of prospective teacher technology readiness and its effect on perceived usefulness.

Given the importance of TR abilities in students, this needs to be analyzed to determine the big picture of student TR abilities. The main objective of this study is to analyze and interpret how much influence TR has on perceived usefulness, This is in line with (Sun et al., 2020). The aim of this research is relevant to inform and correct potential deficiencies in students' TR abilities. The implications of the results of this study are required to increase knowledge about TR abilities and realize the importance of TR abilities in daily life.

2. METHOD

This research uses this type of quantitative research. This research is included in this type of correlation research because it focuses on knowing the relationship of two or more variables without making any changes. This research design uses survey design, a method commonly used in social research.

In its use, survey design uses questionnaires for data collection that is distributed directly or online. This study uses a sample of Cohen and Maris²⁰ theory with a population of 1,100. The sample to be carried out in this study was 215 final semester students of primary school teacher education at Ahmad Dahlan University, with 70 males and 145 females involved and declared valid. Inaccurate samples will only lead to unexpected⁸ research conclusions or lead to misleading conclusions.

The data collection technique in this study used a questionnaire using a Likert scale of 1-5 with a score of disagreement as one and strongly agree to be given a 5. This study's TR indicators and perceived usefulness were equipment capability, technology skills, self-direct learning, r²⁴ivation, and technology acceptance. The research instruments can be viewed in Tables 1 and Table 2. The data generated in this study is in the form of quantitative data. The presentation of quantitative data was collected from online questionnaires, and then the data were analyzed using simple regression. The research results are then presented in tabular form and discussed in depth. The criteria for categorizing TR abilities are measured through the standard curve distribution of the criteria, and their aspects can be viewed in Table 3.

Table 1. Instrumen Technology Readiness

Aspects	Indicators	Statement Item No	Sum
Kesiapan Perangkat (Equipment Capability)	To find out the source of accessing technology	1,2,3,4,5	5
Technology Skill	Respond and know how level of proficiency students in the use of technology	1,2,3,4,5,6,7,8,9,10,11,12	12
Self Direct Learning	Increase efforts as best as possible in time management	1,2,3,4,5,6,7	7
	Committed to boosting confidence and believing in ability	8,9,10,11,12,13,14	7
Motivasi	To find out the motivation in the use of technology and the purpose of its use	1,2,3,4,5	5
Sum			36

Table 2. Instrumen Perceived Usefulness

Aspects	Indicators	Statement Item No	Sum
Kesiapan Perangkat (Equipment Capability)	To find out the benefits of accessing technology in online time	1,2,3,4,5,6,7,8,9,10	10
Sum			10

Table 3. Category Technology Readiness

Category	Equipment Capability	Technology Skill	Self-Direct Learning	Motivation
Very Low	$X \leq 10,05$	$X \leq 24$	$X \leq 28,5$	$X \leq 10,05$
Low	$10,05 < X \leq 13,35$	$24 < X \leq 32$	$28,5 < X \leq 37,5$	$10,05 < X \leq 13,35$
Medium	$13,35 < X \leq 16,65$	$32 < X \leq 40$	$37,5 < X \leq 46,5$	$13,35 < X \leq 16,65$
High	$16,65 < X \leq 19,95$	$40 < X \leq 48$	$46,5 < X \leq 55,5$	$16,65 < X \leq 19,95$
Very High	$19,95 < X$	$48 < X$	$55,5 < X$	$19,95 < X$

3. RESULT AND DISCUSSION

Result

Based on the results of questionnaires that have been collected as many as 215 students, the data obtained are in the form of tables and percentage indicators. Then the effect of the variable X on Y. Based on descriptive statistics, the mean is 131.04, the median is 132.00, and the standard deviation is 18.39, which is based on a questionnaire that has been filled out by elementary school teacher education students in Yogyakarta. Furthermore, to determine the TR ability of elementary teacher education students based on the percentage of results per indicator is presented. The TR indicator table can be seen in Table 4.

Table 4. Mean Indicator Technology Readiness

Indicator	Mean	SD	Category
Equipment Capability	17,41	3,419	High
Technology skill	42,30	7,221	High
Self-direct learning	53,24	7,884	Very High
Motivation	18,10	3,210	Very High

Based on **Table 4**. The analysis results show that the TR ability of school teacher education is in Yogyakarta mostly shows a very high category on self-learning and motivational indicators. However, most equipment capabilities and indicators of technical skills are still in the high-level category. It requires some strategies to improve this ability to be able to reach a very high level. Furthermore, a simple regression analysis is needed to determine how much influence TR has on perceived usefulness; The results showed that the calculated t value was 7,472 and the t table was 2,234, so it can be assumed that there is a positive influence between TR on perceived usefulness, especially for elementary school teacher education students in Yogyakarta.

Discussion

The overall TR indicators are in the high-very high category; It is known from each indicator that each individual can accept the presence of new technology. In the indicator of equipment capability, it is known that the level of readiness in preparing the equipment has been reached, which means that several aspects such as sources of access either from computers or mobile phones, network access, and being able to utilize the basics of use have been adequately fulfilled. However, previous research has shown that students are confident to complete assignments regardless of their technological readiness (Sahin & Yilmaz, 2020; Suni Astini, 2020; W²⁷en et al., 2020). In the technological skills indicator, it can be perceived that individuals have mastered the skills to use technology to support the learning and learning process during the pandemic (Christopoulos & Sprangers, 2021; Churiyah et al., 2020; Mpungose, 2021). This is reinforced by utilizing learning technology and skills that improve student preparation and increase targeted learning (Azhari & Fajri, 2021; Khatoony & Nezhadmehr¹²20). This means that students' mastery of skills in Yogyakarta has shown a high category (Kenny et al., 2020; Petko et al., 2018; Stone et al., 2020). In independent learning indicators, it can be felt that the indicator shows a very high category. It is essential to support the academic achievement of students. Direct self-learning is another characteristic personality factor closely related to academic achievement (Geng et al., 2019; Hanik, 2020; Zetriuslita et al., 2020). Empirical research gives a positive impression between independent learning and academic performance (Heo & Toomey, 2020; Lin & Wu, 2016; Rabgay, 2018). Several personality factors influence self-learning; A meta-analysis found that self-learning was positively correlated with intrinsic motivation, internal locus of control, academic achievement (Akbari & Sahibzada, 2020; Haidari et al., 2019). This means that the independent learning ability of students in Yogyakarta is excellent. They can apply self-study, which is the primary basis for self-study, especially in learning new technologies.

The motivation indicator shows that students in Yogyakarta have shown a very high category. Based on the fact that individuals have three psychological needs: competence; autonomy; reciprocal relationships, all three to improve well-being and encourage doing something. Then it will consciously motivate students in preparing for the presence of new technology. This means that motivation indicators are essential indicators in supporting individuals in encouraging and preparing for the use of new technologies and improve results (Howard et al., 2016; Rafiee & Abbasian-Naghneh, 2021). Furthermore, the average shows that all TR indicators are in the high category, which means that elementary school teacher education students in Yogyakarta can accept and believe that new technology will help improve performance and achievement according to what they want. It is felt that TR has a significant positive effect on perceived usefulness (H.-Y. Chang et al., 2021; Rafiee & Abbasian-Naghneh, 2021). These results provide new reinforcement of the impact of covid-19, making students ready to prepare for the use of new technology; this is evidence to answer questions that have been made by (Alam & Asimiran, 2021; Winter et al., 2021). His research explained that students during the pandemic had better performance than pre-pandem¹¹tudents, so the role of technology will positively impact t¹¹ole of future teacher candidates, making the teaching and learning process more enjoyable (Danniels et al., 2020; Raja & Nagasubramani, 2018).

Based on the above, it can be assumed that a good TR awareness of each individual can help accept the presence of new technology and improve the individual's desired performance and work performance. This research is expected to provide recommendations to stakeholders about the impact of TR on behavior and achievement, inform potential shortcomings in its use, and enrich the literature on TR capabilities in Yogyakarta. However, this study has limitations; namely, the data collection method only uses a

questionnaire, so that it cannot describe other perspectives in detail for each individual. So those further researchers are expected to use mixed methods or other types of research to answer the limitations of previous research. This research implies that educators or stakeholders should be aware of the importance of TR and the use of technology services by encouraging positive attitudes towards technology to reduce reluctance to use technology.

4. CONCLUSION

Technology readiness has a significant positive effect on perceived usefulness. The use of technology readiness in elementary school teacher education students had a positive impact on achieving the knowledge transfer process and researchers found no obstacles during the distance learning process. These results provide new reinforcement of the impact of covid-19, making students ready to prepare for the use of new technology.

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