

doi: 10.26529/cepsj.1113

Online Learning During the Covid-19 Pandemic: Readiness and Satisfaction among Indonesian Students

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☞ The spread of Covid-19 has affected the entire world, including the education sector in Indonesia. This study examines the relationship between Indonesian students' readiness and students satisfaction with online learning during the Covid-19 pandemic. It used an online questionnaire to reach 518 students as a participant. Structural equation modelling (SEM) with SmartPLS software was utilised to examine the relationship between the variables. The finding indicated four dimensions of student readiness (online student attributes, time management, technical competencies, and online communication competencies) closely related to students' satisfaction with online learning. The result provided an understanding of the condition of online learning satisfaction from students readiness point of view during the Covid-19 pandemic in Indonesia. This study serves as a starting point for stakeholders (government and education institutions) in making future policies.

Keywords: Covid-19, online-learning, students readiness, students satisfaction

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Spletno učenje med pandemijo covid-19: pripravljenost in zadovoljstvo indonezijskih študentov

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Širjenje pandemije covid-19 je prizadelo ves svet, tudi izobraževalni sistem v Indoneziji. Prispevek preučuje odnos med pripravljenostjo in zadovoljstvom indonezijskih študentov s spletnim učenjem med pandemijo covid-19. Uporabili smo spletni vprašalnik, ki je zajel 518 študentov. Za preučevanje razmerja med spremenljivkami je bilo uporabljeno modeliranje strukturnih enačb (SEM) s programsko opremo SmartPLS. Ugotovitve so pokazale, da so štiri razsežnosti pripravljenosti študentov (lastnosti študentov na spletu, upravljanje časa, tehnične kompetence in kompetence spletnega komuniciranja) tesno povezane z zadovoljstvom študentov s spletnim učenjem. Rezultat je omogočil razumevanje stanja zadovoljstva s spletnim učenjem z vidika pripravljenosti študentov med pandemijo covid-19 v Indoneziji. Raziskava je izhodišče za deležnike (vlado in izobraževalne ustanove) pri oblikovanju prihodnjih politik.

Ključne besede: covid-19, spletno učenje, pripravljenost študentov, zadovoljstvo študentov

Introduction

The spread of covid-19 has impacted various sectors, including the education sector (Assunção Flores & Gago, 2020; Blankenberger & Williams, 2020; Kalloo et al., 2020; Murphy, 2020; Quezada et al., 2020; Scull et al., 2020; Verma et al., 2020). Indonesia is affected by Covid-19. This situation forces the Indonesian government to take learning from home policy using distance learning methods, such as web-based and m-learning. Of course, this policy has two different impacts. The policy helps prevent the spread of Covid-19 and encourages all educational institutions to adopt technology in learning activities; however, there are many challenges to prepare comprehensive online courses for developing countries, such as Indonesia.

Unlike in developed countries, the adoption of technology in the developing country's learning process is lacking. It is voluntary and limited because of the lack of resources and government support (Acharya & Lee, 2018; Ansong et al., 2016; Mathema, 2007; Tagoe, 2012). As in other developing countries, the progress of technology adoption in the learning process is slow in Indonesia. Previous research revealed that the challenges of the adoption include a lack of infrastructure (insufficient internet access), staff reluctance to adopt e-learning, technical skills and student willingness to learn, and inadequate experience with e-learning (Anggraeni & Sole, 2018; Chaeruman, 2018; Kaunang & Usagawa, 2017; Kuntoro & Al-Hawamdeh, 2003; Lestariyanti, 2020; Pratama & Arief, 2019).

Despite so many challenges, since March 2020, the Indonesian government has implemented a learning-from-home policy to prevent the spread of Covid-19. However, after months, many students do not feel satisfied with the online distance learning method. UNICEF's survey showed that 66% of students felt uncomfortable with learning from home, and most (87%) want to go back to studying in school as they did before the covid-19 pandemic (Karana, 2020; UNICEF, 2020). Another survey by the Ministry of Women Empowerment and Child Protection of the Republic of Indonesia showed similar results: 58% of children were not happy with learning from home (Kemenpppa, 2020). The study also showed that most students wanted to return to school soon (Handarini & Wulandari, 2020).

The students' satisfaction which online learning was related to their acceptance or the degree of comfort with e-learning (Liaw & Huang, 2013). The term 'satisfaction' also refers to the pleasure they felt when carrying out a necessary or required action or when they get what they need/want (Liaw & Huang, 2013; Shee & Wang, 2008). Many factors can explain the students' satisfaction

with online learning. Previous studies showed several predictors, such as engaged learning, agency, and assessment (Dziuban et al., 2015); perceived self-efficacy, perceived anxiety, interactive learning environments, and perceived usefulness (Liaw & Huang, 2013); perceived usefulness, and perceived ease (Ashrafi et al., 2020; Goh et al., 2014; Joo et al., 2016). Most of those studies used the Technology Acceptance Model (TAM) as antecedents to predict students' intention and students' satisfaction with online learning.

Besides, some researchers noticed another factor related to students satisfaction and experience of online learning: students readiness (Liaw & Huang, 2013; Yilmaz, 2017). However, only a few studies have examined online learning readiness with regards to students' satisfaction; therefore, more research is needed. The current research attempts to fill the gap by exploring the predictor of students satisfaction with online learning using students readiness instead of the technology acceptance model (TAM). Furthermore, Indonesia is a developing country where distance learning with technology (e.g., online learning) was not as familiar as in developed countries. Nevertheless, the Covid-19 pandemic forces all learning processes to be carried out from home using online learning. Thus, it would be interesting to capture and discover student satisfaction with online learning using students readiness as a predictor.

Theoretical framework

Over the years, many scholars have been interested in understanding student satisfaction because of its crucial role in a learning activity, which is why many teachers always seek feedback from students at the end of the lesson. The teachers would be able to design a future efficient course by understanding students' satisfaction (Hackman & Walker, 1990).

In general, student satisfaction can be described as the student's satisfaction and happiness related to the various aspects of the service they received (Karataş & Şimşek, 2009; Yilmaz, 2017). Moreover, satisfaction is a construct that is directly derived from the service components. The students' satisfaction in an online course environment is a multidimensional and complex construct (Dziuban et al., 2015; Wei & Chou, 2020; Yilmaz, 2017). There are various aspects regarding students' satisfaction with online learning: curriculum, instructor presence and feedback, course structure, discussion forum, technological features, instructional style, interaction, materials, technical support, and learning styles (Wei & Chou, 2020; Yilmaz, 2017).

Most researchers explored students' satisfaction with online learning using the technology acceptance model (TAM) as an antecedent. In contrast, the present study has attempted to capture students' satisfaction from a different

angle. As observed by some researchers, students' readiness is one of the determinants of their satisfaction with online learning (Liaw & Huang, 2013; Yilmaz, 2017). The idea or concept about students' readiness for online learning was first put forward by Warner et al. (1998). They divided students' readiness into three key dimensions: student preference of learning mode, student competence and confidence in using computers, the internet, and electronic communication, and student ability in self-directed learning.

Over the years, students' readiness has been explored across various constructs. Based on the literature review regarding students' readiness, four common constructs have arisen: 'online student attributes, time management, technical competencies, and online communication competencies' (Martin et al., 2020).

There are four crucial factors in online student attributes (OSA): self-regulated learning, self-directed learning, locus of control, and academic self-efficacy (Martin et al., 2020). These factors were positively related to students satisfaction (Kuo et al., 2013). Several studies support this opinion. The higher the self-directed learning or level of learner control through the self-discipline of the online learners, the higher chances of success in online learning (Lin & Hsieh, 2001). Self-direction and interaction desire encourage students' achievement in the distance learning environment (McVay, 2001). Another study shows that online learners who have the locus of control also tend to have good self-motivation and self-direction (Chang & Ho, 2009). The literature also shows that academic self-efficacy is an internal factor in the students' readiness for online learning. Additionally, academic self-efficacy is linked to motivation, persistence, and performance (Caprara et al., 2011; Rafsanjani, 2014).

Regarding time management (TM), scholars have associated learning self-management with students readiness for online learning (Martin et al., 2020; Zimmerman & Kulikowich, 2016). Online learning includes synchronous and asynchronous learning. One of the toughest challenges in asynchronous learning is self-discipline, which is about keeping up with the courses, completing and submitting the assignments on time, and actively participating in discussions (Disenza et al., 2001; Garrison et al., 2019; Roper, 2007). Another study also shows that the better self-management, the better the learner ability in managing time (Smith, 2005). Hence, students must have good time management to obtain satisfactory results in the online environment.

Regarding online communication competencies (OC), several studies indicate that one of the characteristics of students readiness is their ease with online learning (Martin et al., 2020; Smith, 2005). The convenience in online learning refers to the willingness of the student to interact and to communicate

with the teacher and peers in the online environment (i.e., using a discussion forum, email, chat) (McVay, 2001; Smith, 2005). Furthermore, another study reveals that the better the interactions in online learning, the better the chances for students to meet their individual needs for learning (Kaymak & Horzum, 2013). Therefore, the students' willingness to engage in online discussion is closely related to their readiness and become a crucial element for online learning.

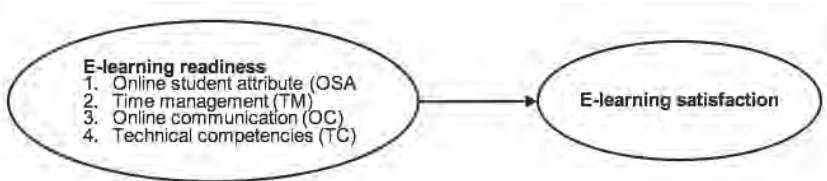
Regarding technical competencies (TC), this term refers to finding and utilising digital information and technological tools (e.g., computer skills, internet skills). Previous studies showed the technical competencies play a critical role (Cho & Shen, 2013; Martin et al., 2020; Shi et al., 2011; Tsai & Tsai, 2003) and are closely related to course satisfaction in the online learning environment (Bolliger & Halupa, 2012). Moreover, students with high technical skills show better abilities in web-based online learning than students with low technical skills (Tsai & Tsai, 2003). Therefore, the proficiency of technical competencies supports success in an online learning environment.

In summary, the current research explored students' satisfaction with online learning using students' readiness as a predictor. This research also attempted to examine the dimension that foundational to students' readiness for online learning. Hence, based on the theories, the research hypotheses are:

- H1. Online student attributes positively affect online learning satisfaction.
- H2. Time management positively affects online learning satisfaction.
- H3. Communication positively affects online learning satisfaction.
- H4. Technical competencies positively affect online learning satisfaction.

Figure 1

Research model



Method

Participants

The survey was conducted randomly on 550 students from 19 universities on five major islands in Indonesia (i.e., Sumatra, Java, Kalimantan,

Sulawesi, and Papua). All the participants had to meet the following criteria: coming from the universities that implemented the distance learning policy caused by the spread of Covid-19 and following the learning process from home using web-based, mobile learning, and other equivalent media. Among the selected sample, 32 were dropped because many questionnaire items were empty and did not meet the sample criteria. We utilised an online questionnaire to reach all the research participants. We sent an email to respondents based on data obtained from the relevant ministries (Ministry of Education and Culture of the Republic of Indonesia). In the email, we invited the respondents to participate in this research. We explained the research objectives, the significance of the study and the variables to be investigated. If they were willing to become participants, they could complete a questionnaire on the link (URL) provided.

Instruments

We adopted the instruments from the previous studies. First, a linguist translated the instrument into Indonesian to suit the context of our respondents. Then, experts with online learning backgrounds reviewed the items to ensure that respondents could understand each questionnaire item properly.

To measure students readiness, we adapted an instrument developed by Martin et al. (2020). The scales consisted of eighteen items to measure four dimensions of students readiness for online learning: online student attributes, time management, communication, and technical competencies. The instrument was measured on a five-point Likert scale, from strongly disagree (1) to strongly agree (5). A high score indicates high online learning readiness and vice versa. The *loading factors* of all items was calculated as >0.8 and the *cross-loading* as >0.8 for each dimension. Cronbach's alpha coefficient of the instruments was calculated for each dimension: 0.95 for online student attribute, 0.92 for time management, 0.92 for communication, and 0.94 for technical competencies.

We also adapted the online courses satisfaction scale (OCSS), which Wei and Chou (2020) developed to measure students' satisfaction with online learning. We are using four items to measure students' general satisfaction related to the instructor and the design of courses in the online learning environment. The instrument was measured on a five-point Likert scale, from strongly disagree (1) to strongly agree (5). A high score indicates high online learning satisfaction and vice versa. The validity of the instruments was calculated as $> .8$ for the *loading factors* of each item and $> .8$ for the *cross-loading*.

Data analysis

This study examined the research model using structural equation modelling with SmartPLS software to determine the relationship among the variables and examine the dimensions underlying students' online learning readiness.

Results

Respondents characteristics

The respondents' characteristics of this study are presented in Table 1. In more detail, females dominate this study with more than 74% and males for the rest (25%). Furthermore, judging from the academic standing, second-year students are on the top, followed by first and third-year students with a slight disparity. Last, the students from economics and business disciplines became most respondents, followed by education, engineering, law and arts.

Table 1

Respondents characteristics (N = 518)

Characteristics		Σ	%
Gender	Female	385	74.32%
	Male	133	25.68%
Academic Standing	1 st -year student	162	31.27%
	2 nd -year student	176	33.98%
	3 rd -year student	143	27.61%
	4 th -year student	37	7.14%
Discipline	Economics, business, management & accounting	166	32.05%
	Law	55	10.62%
	Engineering	72	13.90%
	Arts & humanities	46	8.88%
	Education	98	18.92%
	Others	81	15.64%

Relationship among the variables

We conducted a Pearson correlation to investigate the relationship between the variables. The results are shown in Table 2, which shows the correlation (r-value) between antecedent (readiness) and consequent (satisfaction) is in the range .325 - 0.508 that indicates moderate to strong correlation (Pallant, 2020). The first and third dimension of readiness has r values of .508 and .501.

These results indicated a strong correlation between online student attributes and students satisfaction, as well as between online communication and students' satisfaction. Then, the second and fourth dimensions have r-values of .435 and .325. These indicated a moderate correlation between time management and students satisfaction; technical competencies and students satisfaction

Table 2

Correlation among variables

	Readiness-OSA	Readiness-TM	Readiness-OC	Readiness-TC
Readiness-OSA	1			
Readiness-TM	.401**	1		
Readiness-OC	.499**	.438**	1	
Readiness-TC	.274**	.319**	.341**	1
Satisfaction	.508**	.435**	.501**	.325**

Note. **. Correlation is significant at the .01 level (2-tailed).

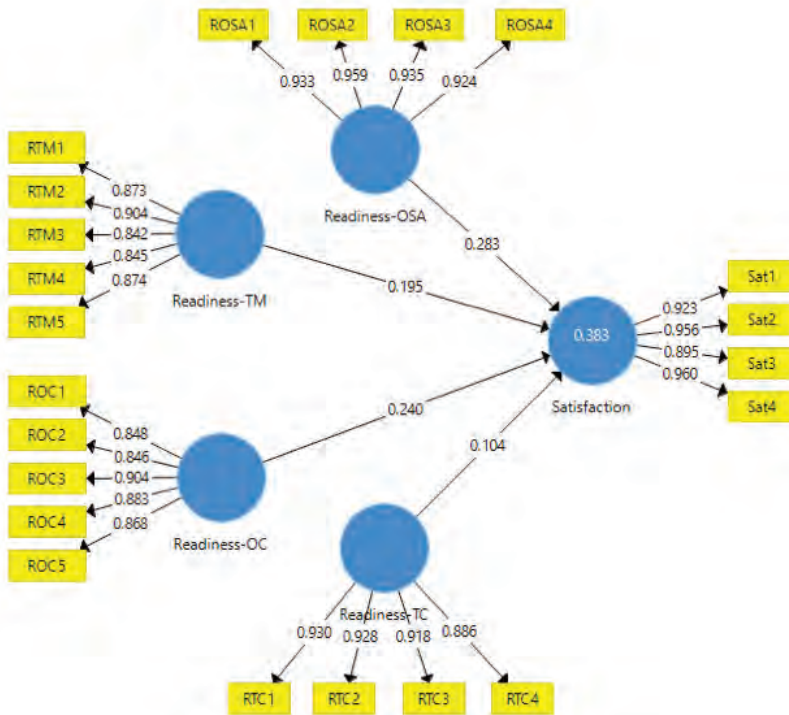
Path analysis

We conduct structural equation modelling (SEM) to examine the re-search hypotheses. The results show that all the hypotheses are accepted (Table 2). The results indicate that online learning readiness has a significant effect on online learning satisfaction. Furthermore, among the students' readiness di-mensions, the online student attribute is the dimension of readiness with the greatest influence on students satisfaction ($\beta = .283$), followed by online com-munication ($\beta = .240$), time management ($\beta = .195$), and technical competen-cies ($\beta = .104$).

Table 3

The result of hypotheses test

Hypotheses	Path Coeff.	St. Dev.	P-Val.	Decision
H1 Readiness-OSA \rightarrow Satisfaction	.283	.041	.000	Accepted
H2 Readiness-TM \rightarrow Satisfaction	.195	.041	.000	Accepted
H3 Readiness-OC \rightarrow Satisfaction	.240	.046	.000	Accepted
H4 Readiness-TC \rightarrow Satisfaction	.104	.042	.019	Accepted

Figure 2*Structural model with standardised path coefficient*

Discussion

When we examined the research hypotheses (Table 2), it was seen that online learning readiness positively affects online learning satisfaction. The current finding indicates that the higher students online learning readiness, the higher students online learning satisfaction. In other words, online learning readiness is one of the predictors of online learning satisfaction.

Furthermore, we examined the effect of four readiness dimensions on students online learning satisfaction. First, online student attributes (OSA) dimension. The result showed OSA had a significant positive effect on students online learning satisfaction. The OSA consisted of self-regulated learning and self-directed learning, which indicated that students with good self-regulated learning (e.g., able to set learning goals under deadlines and be self-disciplined) and good self-directed learning (e.g., able to utilise and to optimise various learning resources) are more capable of adapting to online learning designs.

Hence, the design of courses (online or offline learning) was not a big deal for them. They can adapt quickly to new learning designs (e-learning).

Moreover, self-regulated learning and self-directed learning can play an essential role in online learning activities, which are often dominated by individual learning activities. Hence, the students who do not have self-directed learning skills would encounter problems in the online learning process, e.g., did not know what to do and feeling lost. This finding was in line with a previous study that shows that self-regulated learning and self-directed learning plays a pertinent factor in student preparedness. In addition, the current results indicated that the increase in students online learning satisfaction is in line with the increase in the student online attributes. This finding strengthened the previous study that online student attributes positively correlated with student satisfaction (Kuo et al., 2013).

Regarding the time management (TM) dimension, the result of the model showed that TM is another dimension of readiness that affect students online learning satisfaction. As proposed by the scholars, time management reflects learning self-management. The student with good time management will be able to deal with the online learning environment's challenges. In the online learning environment, the students are required to keep up with the course's pace, such as the course deadline (completing and submitting the assignments on time), synchronous and asynchronous learning method, and actively participating in the discussion. Hence, the student with good time management will obtain satisfactory results in the online environment. This finding strengthens the previous study that shows that managing time plays a crucial factor in readiness, achievement and satisfaction in the online learning environment (Smith, 2005).

Regarding the online communication (OC) dimension, data analysis showed that it is another online readiness dimension that affects students online learning satisfaction. According to the previous study, online communication is closely related to students' ease with online learning (Martin et al., 2020). When students feel at ease with online learning, they will interact/communicate with teachers/peers without difficulty. This study showed the student willingness to interact with teachers or peers in the online learning environment related to students readiness, which will have a positive impact on learning satisfaction.

Furthermore, online communication is also related to how good students understand how to communicate and express themselves in an online learning environment. This study also revealed that the better the students' online communication skills, the better the ability to adapt to the online learning environment, positively impacting learning satisfaction. The current finding is similar to that of previous studies revealing that good quality of interaction

and communication can increase learning satisfaction (Yilmaz, 2017), and the better the interactions in online learning, the better the students' chances to meet their individual learning needs and learning outcome (Gülbahar, 2009; Kaymak & Horzum, 2013).

Regarding technical competencies (TC), the result showed that they function as another dimension of readiness that affects online learning satisfaction. This study revealed that students who can utilise technological tools (such as computers and the internet) to find digital information report higher satisfaction. Students with good technical competencies show better performance because almost all activities in online learning are carried out using technological tools (e.g., computers and internet). This study is similar to previous ones that demonstrate that technical competencies are crucial and related to course satisfaction in the online learning environment (Bolliger & Halupa, 2012; Cho & Shen, 2013; Martin et al., 2020; Shi et al., 2011).

Conclusion and implication

In summary, this study reported that dimensions of students online learning readiness play an important predictor of students online learning satisfaction. Our finding confirmed that students online learning readiness positively affect students' online learning satisfaction. In the context of Indonesian students, the Covid-19 pandemic has forced all educational institutions to switch to using technology-based learning (web-based learning or learning management systems). As a developing country, such sudden change is not easy due to many limitations, especially lack of infrastructure (inadequate internet access), students and staff's reluctance, lack of technical skills, and inadequate experience with online learning.

When the questionnaire results are examined in more detail, they showed that Indonesia's students' readiness and satisfaction with online learning was low. These findings confirmed the previous study that the students' readiness was closely related to students' satisfaction in the online learning environment. The finding indicated that as students online learning readiness increase, they will be more satisfied with online learning, and vice versa. This study provided a short description of the impact of the Covid-19 pandemic on Indonesia's education sector, especially in higher education, which is about students' readiness and students satisfaction in online learning.

The Covid-19 pandemic has illustrated that Indonesia's education sector is not ready to adopt technological developments, especially in online learning. This study serves as a starting point for all stakeholders in policymaking in the future. We recommend that all universities in Indonesia consider making fundamental changes to be more adaptive to technological developments,

especially in learning activities. We also encourage the government (such as the Ministry of Education and Culture, and the Ministry of Communication and Information Technology) to provide the infrastructure to accelerate online learning adoption in Indonesia. This is very important. The education sector must keep pace with the rapid development of technology, especially in the learning process. Therefore, all parties' participation is needed so that the education sector in Indonesia can adapt to technological developments. With the adoption of technology, we hope that the education sector can reduce dependence on offline learning and switch online.

Limitation

The current research used unbalanced participants from gender perspectives. Most of the participants are female (more than 74%). However, according to the previous study, gender has a relationship with lives and job satisfaction (Joshnloo & Jovanović, 2020; Jovanović, 2017; Okpara et al., 2005). Therefore, we are concerned about the interference from gender perspectives on the current result. Furthermore, the research was conducted on students of higher education as participants. This study's results cannot be generalised to contexts outside higher education (middle and elementary schools) because of different characteristics. For that reason, more research is needed to confirm and generalise our finding.

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