Readiness, acceptance, and social presence in full online learning

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Abstract: This study aimed to examine the effect of lecturer readiness in online learning on the acceptance of lecturers in online learning applications, and the effect of lecturer acceptance in online learning applications on the lecturer's perception of social presence. The subjects of this study were the lecturers at the Faculty of Economics, Universitas Negeri Medan which was taken by a total sampling technique. This study used a survey method with electronic questionnaires to collect data. Of the 113 lecturers, 81 responses were returned, and there were two incomplete questionnaires. This study had 79 responses that met the requirements of the analysis. The data were analyzed using Variance-based SEM. The results of the data analysis indicate that perceived usefulness is a critical variable in getting social presence in online learning. Meanwhile, the readiness of lecturers in online learning is an essential antecedent of the acceptance of the use of online learning applications.

Keywords: online learning, social presence, MOOC

INTRODUCTION

The use of information technology (IT) in learning in higher education has been researched and implemented for a long time. Various studies have reported the effectiveness of using IT in improving the quality of learning. Interestingly, due to the Covid-19 pandemic, IT mediation has become immensely dominant, as it completely replaces the full time face-to-face classroom meetings (Hardini, Setyarini, & Harto, 2021; Sagala, Hasibuan, & Suharianto, 2021; Siswanto, Kartanegara, & Chuan, 2021). Nevertheless, online learning remains a different concept from the IT-integrated approach aimed to optimize learning. A full-time online learning method has long been known with the term “massive online open course (MOOC)”. In its development, studies related to MOOC show struggles in the method, including low student participation and involvement in the learning activities which lead to frustrations due to their inability to achieve the learning outcomes (Bonifacio, 2013; Dumford & Miller, 2018; Hamann, Pollock, & Wilson, 2012; Hayashi, Garcia, & Maddawin, 2020; Mayende, Prinz, Isabwe, & Muyinda, 2017; Swan & Shih, 2005). It is suspected that low participation and involvement is affected by low social presence among students and lecturers in online learning (Cobb, 2009; Nurharjanto & Widyanotoro, 2020; Swan & Shih, 2005). Social presence serves an important variable in learning because the notion of physical presence in a social environment may provide the necessary pressure to study, as well as generate fruitful two-way communication responses, recognition of one’s existence and their knowledge, and the learning satisfaction due to the growth or development of knowledge (Lave & Wenger, 1991; Swan & Shih, 2005; Vygotsky, 1978). On the other
hand, online learning itself is by nature vulnerable to low social presence due to interactions mediated by electronic devices. In addition, researchers and education experts also argue that the sensation of learning in the classroom cannot be replaced by IT-mediated learning (Arends, 2006; Roehl, Reddy, & Shannon, 2013) due to the emotional element in learning activities that make student-teacher interaction an important part in learning.

Issues of online learning become even more complex in developing countries as the limitations in access to infrastructures as well as IT literacy contribute to the increasing occurrences of awkwardness in using IT in learning (Effiyanti & Sagala, 2018). Essentially, there are a number of variables that may influence the success of individuals or organizations in managing information technology for learning activities, such as acceptance and attitude toward IT, the organization’s capacity to absorb, the availability of infrastructure, IT-alignment, the individuals’ readiness to shift toward IT-based work culture, as well as the availability of literature and references on best practices of using IT in learning (Effiyanti & Sagala, 2018; Sagala, Zainal, & Effiyanti, 2017; Sagala, Hasibuan, et al., 2021).

Previous research findings indicate that the attitude of educators in Indonesia is in fact quite open to accepting the demands of learning innovation through using IT (Budiyani & Sujarwo, 2020; Damayanti, Santyasa, & Sudiatmika, 2020; Fauziyah & Triyono, 2020; Sagala, Zainal et al., 2017; Sagala, Hasibuan, 2021). At the higher education level, the Ministry of Education and Culture of the Republic of Indonesia published the Guidelines for the Implementation of Learning in the Even Semester of 2020 in Higher Education (Ministry of Education and Culture, 2020). Previously, the Ministry of Research, Technology, and Higher Education of the Republic of Indonesia had also published the Guidelines for the Development of Higher Education Curriculum in the 4.0 Industrial Era (Ministry of Research, Technology, and Higher Education, 2018). Therefore, higher education institutions have in fact had basic references for online learning implementation. In addition, the accessibility or availability of IT-supporting infrastructures at the higher education level are generally adequate. In general, every lecturer has owned and used a computer and a mobile device to support the implementation of the higher education objectives as academic personnel, as well as the development of research on educational technology at the higher education level, especially at teacher training colleges. In regard to this, Traxler (2007) suggests that higher education tends to have better readiness for IT integration in academic programs due to better availability of infrastructures and accessibility to knowledge. Further, Sagala, Hasibuan, et al. (2021) similarly find that the readiness of higher education teaching staff for online learning is quite adequate, despite a few technical problems during the early process of shifting to a new learning mode.

Nevertheless, these studies have yet to examine whether the attitude of educators toward IT is associated with their readiness in delivering online learning and its impact on social presence in online learning. Meanwhile, online learning during the Covid-19 pandemic has the opportunity to create a model that is different from the IT-integrated learning situation in face-to-face classroom meetings. The state of full-time online learning has caused social interaction to be limited and indirect (Cobb, 2009). Indirect social interaction has a risk of reducing social presence in the learning process (Cobb, 2009; Leh, 2001; Naciri, Baba, Achbani, & Kharbach, 2020). Meanwhile, social presence is a key instrument in student participation in learning (McGuinness & Fulton, 2019; Neamtu, 2013). Therefore, this study attempted to explore further the readiness and acceptance responses among university
lecturers to full-time online learning and its impact on the social presence sensation that they experience.

IT acceptance in online learning can reflect the self-efficacy of IT users in using IT (Davis, 1989; Effiyanti & Sagala, 2018). Acceptance of information system is formed by the cognitive belief within the the individuals which results in the way they perceive information technology as useful (perceived usefulness), easy (perceived ease of use), and enjoyable (perceived enjoyment) when being used (Davis, 1989; Venkatesh & Davis, 2000). The cognitive belief serves as the assumption in Technology Acceptance Model (TAM) in proxy with the self efficacy construct based on the Social Cognitive Theory (Bandura, 2001; Davis, 1989; Davis, Bagozzi, & Warshaw, 1989).

This suggests that when examining how well an IT application is received by its users, TAM requires that the users be individuals with computer self-efficacy. Therefore, in certain conditions, the TAM construct can even reflect one’s attitude toward the use of IT. In online learning practices, using the TAM construct is beneficial to examine an educator’s attitude in using IT for learning (Effiyanti & Sagala, 2018). The attitude toward IT certainly indicates the educator’s capabilities in online learning, in which learning is fully mediated by IT (Effiyanti & Sagala, 2018). Further, the lecturers’ readiness to integrate IT in their academic activities becomes key to the readiness and success of higher education institutions in online learning (Lu & Price, 2018; Petko, Prasse, & Cantieni, 2018). Meanwhile, the lecturers’ belief in their personal capabilities (personal belief) is also instrumental in their readiness for online learning (Lu & Price, 2018; Petko et al., 2018; Sagala, Hasibuan et al., 2021). In this case, personal belief serves as the indicator of cognitive belief of IT users personally and the proxy of lecturer readiness in online learning (Cheon, Lee, Crooks, & Song, 2012). The belief helps lecturers to be more prepared in facing various challenges that may emerge during the process of shifting to the online platform, which allows their attitude to be more accepting of the use of various IT tools, whether software or hardware, in online learning. This becomes crucial as learning activities are complex, which means that the shifting process requires adaptations and adjustments, despite the lecturers having good technology literacy, as well as guidelines for online learning and sufficient IT infrastructures (Demuyakor, 2020; Sandars et al., 2020). There is a pedagogical aspect that is dynamic and constantly developing in the online learning implementation, especially the issue of social presence as mentioned in the early paragraphs. This condition requires the instructor’s personal belief that they are ready to implement online learning (Sagala, Hasibuan et al., 2021). Therefore, personal belief is believed to be an important antecedent in forming the acceptance of online learning implementation which further impacts the sustainability of social presence in online learning.

In order to obtain an empirical perspective on the readiness of university lecturers and their acceptance in online learning which influence the social presence in online learning, this study aims to examine the effect of lecturer readiness for online learning on the lecturer acceptance of online learning applications and the effect of lecturer acceptance of online learning applications on their perceived social presence. This study adapts the information system acceptance model developed by Venkatesh (2000) and the readiness for using mobile learning as studied by Cheon et al. (2012). However, this study is designed in a simpler construct framework by referring to parsimony. This study is imperative for educators and higher education institutions in determining the appropriate online learning design. IT should
not be viewed as the only solution to learning innovation, especially for the post-Covid-19 world. There are more prominent variables in preparing effective learning, such as the lecturers’ competency in creating meaningful social interaction in learning. The attainment of meaningful learning sensation becomes a key issue in learning that is irreplaceable even in online learning.

METHOD

This study is a quantitative study with a survey method. The research subjects were lecturers at the Faculty of Economics of Medan State University. Among 113 active lecturers at the Faculty of Economics of Medan State University, 81 responses were obtained, with 79 of them filled out completely. The total sampling technique was used to obtain appropriate responses in representing the lecturers’ perceptions on the implementation of online learning (Cooper, Schindler, & Sun, 2006).

In summary, the sample demographics can be seen in Table 1, which consists of 54.4% male. Based on the education background, 81.0% have a master’s education, whereas 19.0% have a doctoral degree. Furthermore, 46.8% have participated in the dissemination and training of using LMS, whereas 53.2% have never participated in such training. Based on the demographic figures of the sample, the composition of the sample in this study is relatively heterogeneous with an even gender distribution, with representations from every level of education, and an even distribution of LMS training experience. The demographics of the sample can be seen in Table 1.

| Table 1. Sample demographics |
|-----------------------------|
| Demographics Variable       | n  | %    |
| **Gender**                  |    |      |
| Male                       | 43 | 54.4%|
| Female                     | 36 | 45.6%|
|                           | 79 |      |
| **Education Background**    |    |      |
| Master’s                   | 64 | 81.0%|
| Doctoral                   | 15 | 19.0%|
|                           | 79 |      |
| **Attended LMS dissemination and training** | | |
| Yes                       | 37 | 46.8%|
| No                        | 42 | 53.2%|
|                           | 79 |      |

Data in this study were collected by questionnaires with a 5-point Likert scale. The research instruments were adapted from former studies. The instrument for the variable of attitude toward using IT (Davis et al., 1989; Venkatesh & Davis, 1996), whereas the readiness for IT integration variable (Cheon et al., 2012), and the instrument for the social presence variable (Swan & Shih, 2005).

The data collected was then tabulated and then analyzed using a variance-based structural equation model with the help of the SEM-PLS application. This study used variance-based SEM due to the limited amount of data in the structural model analysis. In this case, SEM-
PLS is able to analyze the structural model in a reliable way despite a limited number of samples (Bollen, 1989; Thatcher & Perrewe, 2002).

Prior to conducting the structural model analysis, first an analysis of the outer model must be done. It refers to the validity analysis of the constructs which form the structural model (Hair, Black, Babin, & Anderson, 2009). Construct validity is done in three stages, namely convergent validity, discriminant validity, and reliability (Hair et al., 2009). Convergent validity is examined by observing the loading factor number of each item in the latent variables. Critical score of each loading factor is $>0.7$ (Hair et al., 2009). Based on the critical score indicator, there are three items dropped from the readiness for IT integration construct, namely item IR 3 and IR 8, as well as item PEU3 from the PEU construct. Items of other constructs have met the convergent validity criteria.

For the discriminant validity test, this study used the Fornell and Larcker criteria (1981). The analysis process with this criteria is done by inputting the root value of average variance extracted (AVE) into the correlational matrix diagonally. This number is then observed and compared to the correlation coefficient values below it (Fornell & Larcker, 1981). If the root value of the AVE is bigger than other correlation coefficient values in the correlation matrix, the constructs meet the discriminant validity criteria. Based on the criteria, all constructs in this study have met the discriminant validity followed by the construct reliability test. The construct reliability test is done by observing the results of Composite Reliability (CR) and Cronbach’s Alpha (CA) tests. If the results of the CR and CA calculations $>0.8$, the construct meets the reliability criteria (Hair et al., 2009). As shown in Table 2, the results of discriminant validity test and reliability test indicate that each construct has met the construct reliability (Table 3).

**FINDING AND DISCUSSION**

The analysis of research data used the variant-based SEM. The result of tests can be observed in Figure 1 and Table 4. SEM Analysis aims to test the first and second research objectives. The significance of the effect was tested by reviewing the t-statistics critical score of $>1.96$ and p-value with a critical score of $<0.05$. The results of tests show that the readiness for online learning has a significantly positive effect on the acceptance of online learning applications. Moreover, the positive effect of online learning readiness on perceived usefulness is significant with a path coefficient of 0.658 and a p-value of 0.000 ($\alpha=5\%$), while the positive effect on perceived ease of use is significant with a path coefficient of 0.169 and a p-value of 0.085 ($\alpha=10\%$), and the positive effect on perceived enjoyment is significant with a path coefficient of 0.745 and a p-value of 0.000 ($\alpha=5\%$). Based on the path coefficient values, online learning readiness has a very high effect on perceived usefulness and perceived enjoyment, while its effect on perceived ease of use is relatively weak. This finding strengthens the findings of previous studies on how normative belief, which represents individual readiness to use IT in productive work, plays an important role in shaping the attitude towards IT acceptance (Cheon et al., 2012; Dray, Lowenthal, Miszkiewicz, Ruiz-Primo, & Marczynski, 2011; Park, Nam, & Cha, 2012).

Referring to the TAM construction (Davis, 1989; Davis et al., 1989), the attitude of users to adopt certain IT tools is formed by the users’ pre-existing normative beliefs. In this case, Cheon et al. (2012) represents this notion with the variable of readiness to use to measure the normative belief. Lecturers with readiness to use IT in learning will experience the benefits of using a learning management system (LMS) and subsequently the attitude of acceptance
### Table 2. Cross-loading (Convergent validity)

| Items | Perceived Ease of Use | Perceived Enjoyment | Perceived Usefulness | Readiness for Online Learning | Social Presence |
|-------|-----------------------|---------------------|---------------------|-------------------------------|-----------------|
| IR1   |                       |                     |                     |                               | 0.848           |
| IR2   |                       |                     |                     |                               | 0.798           |
| IR4   |                       |                     |                     |                               | 0.855           |
| IR5   |                       |                     |                     |                               | 0.739           |
| IR6   |                       |                     |                     |                               | 0.733           |
| IR7   |                       |                     |                     |                               | 0.813           |
| IR9   |                       |                     |                     |                               | 0.781           |
| IR10  |                       |                     |                     |                               | 0.753           |
| PE1   |                       |                     |                     |                               | 0.861           |
| PE2   |                       |                     |                     |                               | 0.920           |
| PE3   |                       |                     |                     |                               | 0.868           |
| PE4   |                       |                     |                     |                               | 0.841           |
| PE5   |                       |                     |                     |                               | 0.843           |
| PEU1  |                       |                     |                     |                               | 0.865           |
| PEU2  |                       |                     |                     |                               | 0.859           |
| PEU4  |                       |                     |                     |                               | 0.841           |
| PEU5  |                       |                     |                     |                               | 0.846           |
| PEU6  |                       |                     |                     |                               | 0.916           |
| PU1   |                       |                     |                     |                               |                 |
| PU2   |                       |                     |                     |                               |                 |
| PU3   |                       |                     |                     |                               |                 |
| PU4   |                       |                     |                     |                               |                 |
| PU5   |                       |                     |                     |                               |                 |
| SP1   |                       |                     |                     |                               |                 |
| SP2   |                       |                     |                     |                               |                 |
| SP3   |                       |                     |                     |                               |                 |
| SP4   |                       |                     |                     |                               |                 |
| SP5   |                       |                     |                     |                               |                 |
| SP6   |                       |                     |                     |                               |                 |
| SP7   |                       |                     |                     |                               |                 |
| SP8   |                       |                     |                     |                               |                 |

### Table 3. Discriminant validity and construct reliability

| No.  | Variable                        | CA    | CR    | AVE   | PEU   | PE   | PU   | RI   | SP   |
|------|---------------------------------|-------|-------|-------|-------|------|------|------|------|
| 1.   | Social Presence                 | 0.919 | 0.934 | 0.639 | 0.799 |      |      |      |      |
| 2.   | Readiness for Online Learning   | 0.914 | 0.930 | 0.626 | 0.543 | 0.791|      |      |      |
| 3.   | Perceived Ease of Use           | 0.916 | 0.937 | 0.750 | 0.523 | 0.709| 0.866|      |      |
| 4.   | Perceived Enjoyment             | 0.917 | 0.938 | 0.752 | 0.543 | 0.745| 0.850| 0.867|      |
| 5.   | Perceived Usefulness            | 0.943 | 0.957 | 0.815 | 0.649 | 0.658| 0.784| 0.769| 0.903|
and adoption to support the learning process and create meaningful online learning (Cheon et al., 2012; Lu & Price, 2018).

In this case, lecturers are assumed as individuals with good technology literacy. This assumption is built from learning activities that have been long integrated with technology. However, when the data were collected, the learning format has transformed into full-time online learning. Therefore, the lecturers’ perceived readiness in dealing with full-time online learning becomes an important phenomenon to observe. The confirmation on the proficiency level of the literacy can be observed based on the normative belief of the lecturers’ computer literacy (Cheon et al., 2012). Those who believe in their computer competencies will certainly view themselves as ready to implement full-time online learning (Cheon et al., 2012). This
perceived readiness is what subsequently serves as the early thinking foundation for a lecturer in forming their attitude to applications that may be used in full-time online learning. Such an attitude becomes important as it will form acceptance of online learning (Davis, 1989; Davis et al., 1989; Venkatesh & Davis, 2000). This acceptance will in turn create a learning sensation in online learning, namely a learning process that is able to generate social interaction in learning to reproduce a sense of social presence typically experienced in face-to-face learning in the classroom (Swan & Shih, 2005; Tu & McIsaac, 2002).

In this regard, in the field of education, the perceived usefulness and perceived ease of use constructs have long been studied and found to be feasible to determine the acceptance of using e-learning and mobile learning (Cheon et al., 2012; Park, 2009; Park et al., 2012; Widhiastuti & Yulianto, 2017). Many studies have consistently reported that both perceived usefulness and perceived ease of use are associated with perceived acceptance, whereas perceived enjoyment is found to be an important antecedent of perceived ease of use (Venkatesh & Davis, 2000). The lecturers’ readiness to implement online learning will lead them to accept and experience the benefits of online learning applications, such as the LMS application, virtual conference applications, learning videos, games, e-modules, etc. Their readiness will also instill the perception that an application will be good to use as it assists the online learning process and subsequently generates the perception that the learning application is easy to use. These positive perceptions will lead to acceptance to the use of information systems in full-time online learning.

Further, perceived usefulness has a significantly positive effect on the lecturers’ perceived social presence with a path coefficient of 0.620 and p-value of 0.000 (α=5%). However, perceived ease of use does not have a significant effect on the lecturers’ perceived social presence with a path coefficient of 0.037 and p-value of 0.835. This finding is quite unique and different from previous findings. In this study, the endogenous variable examined is highly specific, namely social presence. By specific, it means that the variable is not necessarily the action of using IT, but more than that, namely the use of IT that can generate the sense of social presence in online learning. This study does not use the intention of use as variable because the use of online learning applications during the data collection of the research is mandatory. As a result, the critical point of the application of online learning is not in the intention of use of the online learning applications, but the social interaction value that occurs in the online learning process.

Based on the perspective of online learning assignment criteria, the use of IT in this aspect is for utilitarian purposes (Sagala & Sumiyana, 2020). Therefore, it is accurate to assume that the users’ tendency in achieving certain learning quality is built by the perceived attitude of whether the system is useful to create meaningful learning or not. If a lecturer views an online learning application as useful in generating the type of learning they are expecting, they will be able to stimulate the occurrence of good social interaction in online learning which can lead to the formation of the lecturers’ perceived social presence of the students. On the contrary, the perceived ease of use of online learning applications indeed supports the use of applications for utilitarian purposes (Venkatesh & Agarwal, 2006; Venkatesh & Davis, 1996). The emphasis of perceived ease of use is to optimize the acceptance of an information system (Venkatesh & Agarwal, 2006). In a mandatory information system, the ease of use no longer serves as a dominant variable because the users cannot refuse the information system. Moreover, in the case with information system users with good IT literacy, it is possible
that ease of use is not a variable that is given a lot of attention by users. The findings of this study indicate this notion through the lack of effect that the online learning readiness has on the perceived ease of use, and the lack of effect that perceived use has on the social presence perceived by lecturers. In mandatory online learning, it is assumed that lecturers give all their attention to the usefulness of an online learning information system to create quality learning. Therefore, social presence can be generated from information systems that can provide such benefits.

CONCLUSION

The research findings show that lecturer readiness for online learning has an important role in the perceived usefulness and enjoyment in using online learning applications. The key variable that generates the lecturers’ perceived social presence is perceived usefulness, whereas perceived ease of use does not play a role in creating perceived social presence among lecturers. Therefore, perceived usefulness is the variable that must be given special attention in order to create meaningful online learning.

The results of this study has an implication on the design of the learning information system, which must be developed in particular ways in order to facilitate the success of implementation of various learning programs. Moreover, lecturers must possess pedagogical capability and competency that are oriented to the use of online platforms. This competency is necessary to stimulate students to participate actively in the online class in order to generate good social presence perceived by both the lecturers and students. A lecturer’s capability and competency represents their readiness in implementing online learning.

This study recommends higher education institutions to develop the lecturers’ capabilities and competencies in managing various online learning applications in order to build their readiness in delivering learning in the digital age, especially the full-time online learning that serves as a learning alternative during the Covid-19 pandemic and/or blended learning, which may be implemented post-Covid-19. Further, higher education institutions must also evaluate the design of the learning application by putting the emphasis on the usefulness in the learning implementation holistically which allows the use of various learning features. Lastly, future studies may develop online learning design or technology-integrated learning that can generate quality social interaction so that students may experience a meaningful learning process.

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