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E-learning Adoption and Use Hype Cycle during Covid-19 Outbreak (A Longitudinal Survey)

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Abstract:

Both students and lecturers experience e-learning adoption and use hype, and it has replaced the conventional learning method due to the covid-19 outbreak. However, it is limited known how the e-learning adoption rate is changed and improved during the covid-19 outbreak. This study conducted a monthly longitudinal survey from late March to late June 2020 to find out the e-learning adoption and use hype rate. We randomly distributed 130 questionnaires to students and teaching staff within four faculties at State Islamic University (UIN) of Datokarama Palu. Our study found that during the early covid-19 outbreak, e-learning was reluctantly adopted by both students and lecturers due to a lack of familiarity and technological skills. However, after the third round survey, we found that the hype of e-learning use reached its peak for both students and lectures. In the final round survey, the lecturers' hype to adopt and use e-learning was increased to a plateau of productivity where mainstream adoption starts to take off, and e-learning has been used for more teaching productivity purposes. However, the economy's perception was becoming more challenging to students due to the higher cost of Internet connection, while institutions did not fully provide free Internet access. We also found that there is a perception of the students that e-learning is less meaningful compared to face-to-face learning mechanisms. The limitation of this study is that the study was conducted only in one Islamic higher education institution and the covid-19 outbreak is still ongoing. Therefore, further studies might be required to study more samples and more extended periods to produce more valid results.

Keywords: E-learning adoption, E-learning hype, E-learning lifecycle, E-learning use.

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Introduction

The emergence of computers and the Internet has caused rapid development in educational technology. Internet is one technology that plays a significant role in all aspects of life, and it seems to have become a basic human need of all ages. Globally, there are about 4.66 billion internet users at this time, with 4.32 being mobile phone users and 4.2 billion being social media users (Johnson, 2021). This fact implies that nearly more than two-thirds of the world population are active Internet and mobile phone users. As such, the use of information technology within an educational institution is also rapidly increasing.

Similarly, in Indonesia itself, the development of technology and information has also progressed very rapidly.(Nurdin, 2018; Nurdin & Yusuf, 2020). According to BPS data, Indonesia's population is currently around 270 million, of which 71 percent are of productive age between 15-64 years (BPS, 2020). Of the total productive age, around 39 percent of the millennial generation is aged between 24-39 years or approximately 105 million people. The rapid increase in the adoption of information and technology in business and education, especially by the millennial generation, is due to the high adoption of supporting devices such as the Internet and smartphones. Currently, there are 197 million Internet users in Indonesia, and there are 210 million Smartphone users (Statista, 2021).

Along with the rapid advancement of technology and information, learning media has also experienced very significant development. This can be seen from the increasing number of methods or learning media by utilizing Internet-supported devices. Information technology has also replaced existing technology a few years ago, including replacing conventional learning methods. The technology includes hardware and software that support the use of various e-learning applications.

With the emergence of e-learning as a form of innovation in learning, students cannot only access learning material, but they are also experiencing changes in the learning process. With e-learning, the students become more independent, active in observing, demonstrating, practicing, etc. Besides that, teaching materials can also be virtualized as attractively as possible with various forms to make students more comfortable and exciting during the learning process. Besides that, e-learning is also very suitable to be applied during the covid-19 pandemic because it does not require face-to-face meetings.

When the covid-19 pandemic began in March 2020, e-learning becomes popular due to offline learning methods being restricted by the government. All students and teachers were imposed on working at home to avoid the contagious virus. At the beginning of e-learning, both students and teaching staff felt mixed feelings, such as information technology literate and the cost of Internet connection. After a few months of interaction with e-learning, students and teaching staff become familiar. Still, other challenges were emerged, such as declining in learning motivation and the high cost of Internet connection.

However, the changes of students and teaching staff perception on the use of e-learning during the covid-19 pandemic are limited known. Few researchers have studied how the e-learning use perception is changed during the covid-19 pandemic. This study, therefore, uses technology lifecycle theory to understand students and teaching staff perception on the use of e-learning during the covid-19 pandemic. This study is expected to shed light on how users' perceptions are changed during the covid-19 pandemic regarding e-learning in a higher education institution.

Literature Review

E-learning Lifecycle

A literature review shows that the definition of a complete e-learning framework has been proposed by many scholars (Kumar Basak, Wotto, & Bélanger, 2018; Moore, Dickson-Deane, & Galyen, 2011). Some scholars use the term e-learning, another use term online learning, while the rest also use distance learning to discuss e-learning. However, the basic principle of e-learning involves computer and Internet use (Michael, 2010; Nurdin & Aratusa, 2020). The use of e-learning received little attention in developing

countries before the covid-19 pandemic. However, the use of e-learning has significantly increased during the covid-19 pandemic due to the limitations of direct learning.

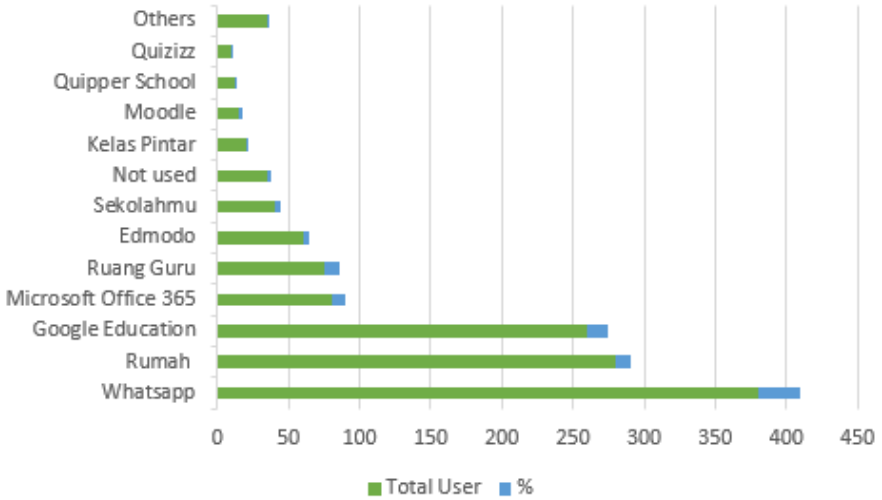
The use of e-learning has also been conceptualized with various frameworks. Among proposed frameworks, Marcos (2007) presents a workflow-based, pedagogical-centered e-learning scenario with different levels that include the main learning product and actors. However, the mandatory instructional perspective restricts the model so that it does not deal with individual learning objects. Meanwhile, de Maros, et al., (2007) present a learning object lifecycle comprising the main processes (creation, storage, search, delivery, licensing, and digital rights management), but the payment and pricing issues are not addressed.

The lifecycle use of e-learning has also been discussed by many scholars from education technology backgrounds (Abdous, 2009; Dori & Shpitalni, 2005). The e-learning lifecycle reflects a global use case that closely resembles an e-learning lifecycle that includes main actors and processes. However, such an e-learning lifecycle does not comprise each learning object cycle, but it merely presents the use of e-learning from beginning to the end and then re-use again. It is argued that the e-learning conceptual model could be more accurately described using the concept of lifecycle rather than using the concept of a framework. The e-learning lifecycle concept stresses the cycle use of e-learning from the beginning to re-use again and again over time (Abdous, 2009).

E-learning Use Trend in Indonesia

The use of information technology supports the use of e-learning in Indonesia. Indonesia is currently the third-largest Internet user in Indonesia, and about 204 million Internet users are in Indonesia (Nurhayati-Wolff, 2021). Most Internet users or about 71 percent productive age between 15-64 years (BPS, 2020). Around 39 percent of the young generation aged between 24-39 years or approximately 105 million people from the total productive age. Most of the young generation are also smartphones users, which is about 210 million users (Statista, 2019). The use of Smartphone support e-learning activities at all level of education institutions in Indonesia. Previous studies have also found that Smartphone has been used as major learning aid for e-learning purposes (Anshari, Almunawar, Shahrill, Wicaksono, & Huda, 2017; Faisal, Fernandez-Lanvin, De Andrés, & Gonzalez-Rodriguez, 2020)

Most of these users are very attached to the Internet and smartphones (Thorsteinsson & Page, 2014). Orlikowski & Scott (2008) referred to this kind of attachment(2008) as "entanglement of technology," which refers to the entanglement of humans with technology. The phenomenon of the attachment of humans and technology has caused changes in behavior in conducting business and financial transactions. Various business organizations have exploited this condition to offer new methods of trading and payment. As the significant rise in Internet and Smartphone use, e-learning use also shows a significant rise among the young generation. The use of e-learning involves various platforms, as shown in the following picture 1.



Source: (Kemendikbud, 2020)

Figure 1. E-learning Platforms Use in Indonesia

The figure shows that WhatsApp is the most commonly used (28,14%) teacher to deliver online learning. Next in rank is the Learning House platform (288 people: 20.78%), Google Suite For Education (269 people: 19.41%), Microsoft Office 365 (89 people: 6,42%), Teacher's Room (71 people: 5 ,12%), Edmodo (66 people: 4.76%), Online Learning Sekolah.mu (46 people: 3.32%), Smart Class (29 people: 2.09%), Moodle (26 people: 1, 88%), Quipper School (20 people: 1.44%), Quizizz (14 people: 1.01%). Other platforms are the learning management system developed by the school, Zoom Cloud Meeting, That Quiz, Schoology, Kahoot, Zenius, Candy CBT, Cisco Webex Meeting, Classdojo, Kejar.id, Padlet, Quick Edu, Start Meeting, Talk Fusion as many as 39 people (2.81%) and 39 people (2.81%) who have not used the online learning system (Kemendikbud, 2020)

Research Method

This study aimed to find out the lifecycle use of e-learning during the covid-19 pandemic from April to June 2020. This study employed a longitudinal case study (Cook, Parker, & Pettijohn, 2004; Martin & Hand, 2009). The longitudinal study was intended to find out the e-learning use phenomena from university students' perspective during three month period. In this study, the use of e-learning was measured using variables perceived of use, perceived of ease, perceived of benefits, and perceived of economics (Hamid, Razak, Bakar, & Abdullah, 2016; Verma & Sinha, 2018). The sample of this study involved 130 students and teaching staff from four faculties at State Institute for Islamic Studies (IAIN) Palu. We analyzed the key factors influencing the use of e-learning through empirical research and analyze the behavioral intentions of users. Therefore, the students were randomly selected as the survey subjects in this study. There were 20 items divided into four parts, which were measured by a five-point Likert scale (Nurdin, Pettalongi, & Mangasing, 2019). A total of 130 responses were collected in this study. After preliminary screening, invalid questionnaires with insufficient response times and random filling were rejected, and 97 valid responses were included for an effective response rate of 97%. In this paper, the sample data were analyzed statistically using SmartPLS 3.0 (Liao, Palvia, & Chen, 2009).

Result and Analysis

Respondents Demographic

The following figure shows the respondent from each faculty at State Institute for Islamic Studies from four faculties. The figure shows that most respondents come from the Tarbiya faculty, while the lowest respondents come from postgraduate studies. The data reflect the number of students from each faculty where Tarbiyah faculty has the highest student rate, while postgraduate studies have the lowest number of students.

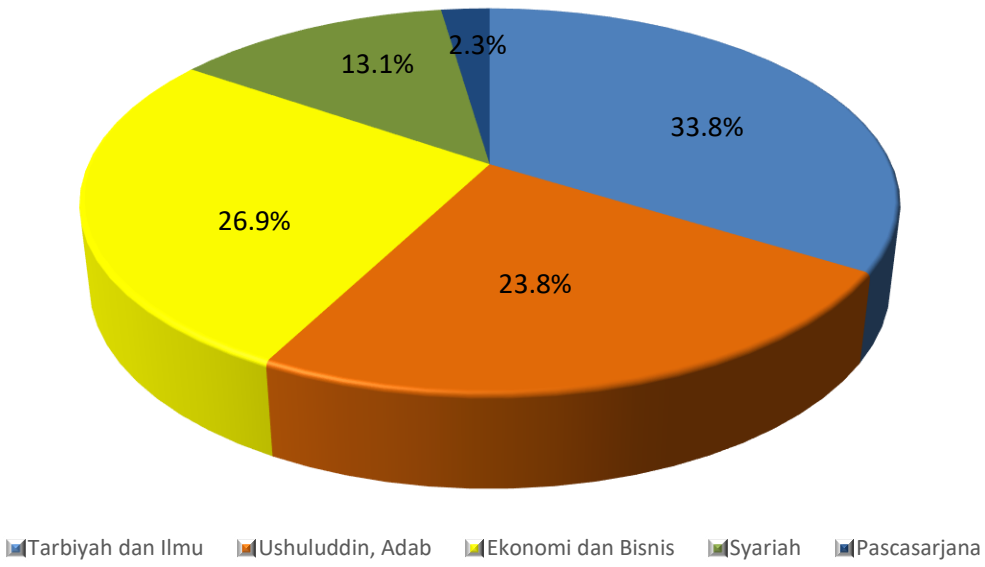


Figure 2. Respondents Distribution According Faculties

Meanwhile, the respondent distribution according to the studies program can be seen in the following figure 3

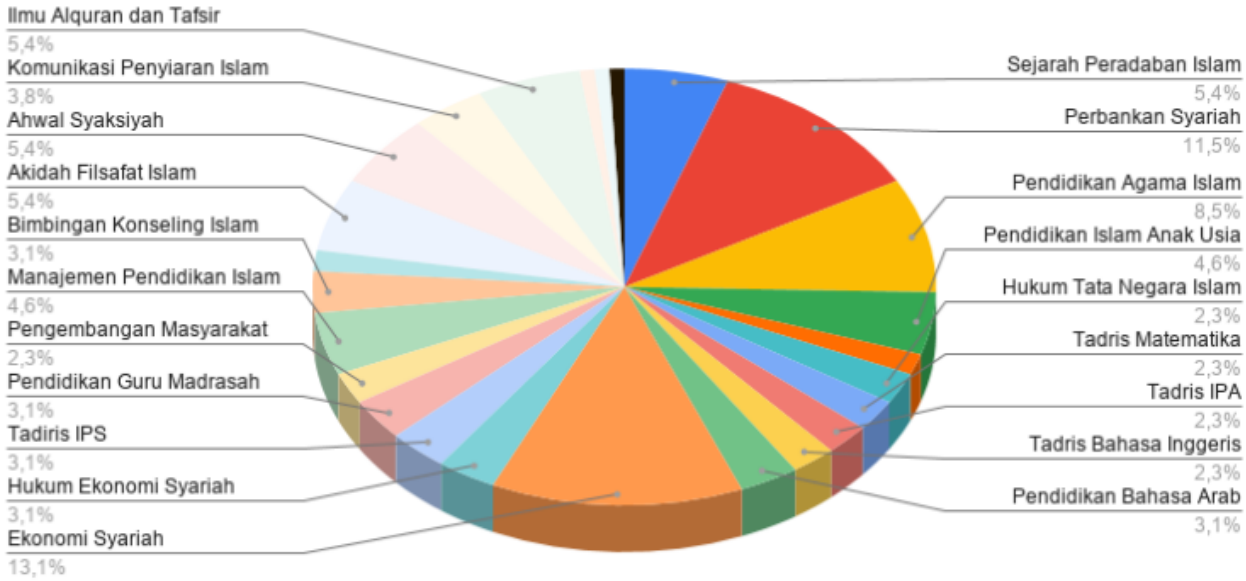


Figure 3. Samples Distribution According Studies Program

The data from figure 3 shows that the respondents come from 20 studies program from four faculties. The distribution of sample follows the number of students at each studies program.

Platform Used for E-Learning

Several internet applications have been used for e-learning activities in IAIN Palu. The applications included social media and formal e-learning platforms developed by the IT team members. However, most e-learning platforms are social media-based platforms, as shown in the following figure 4.

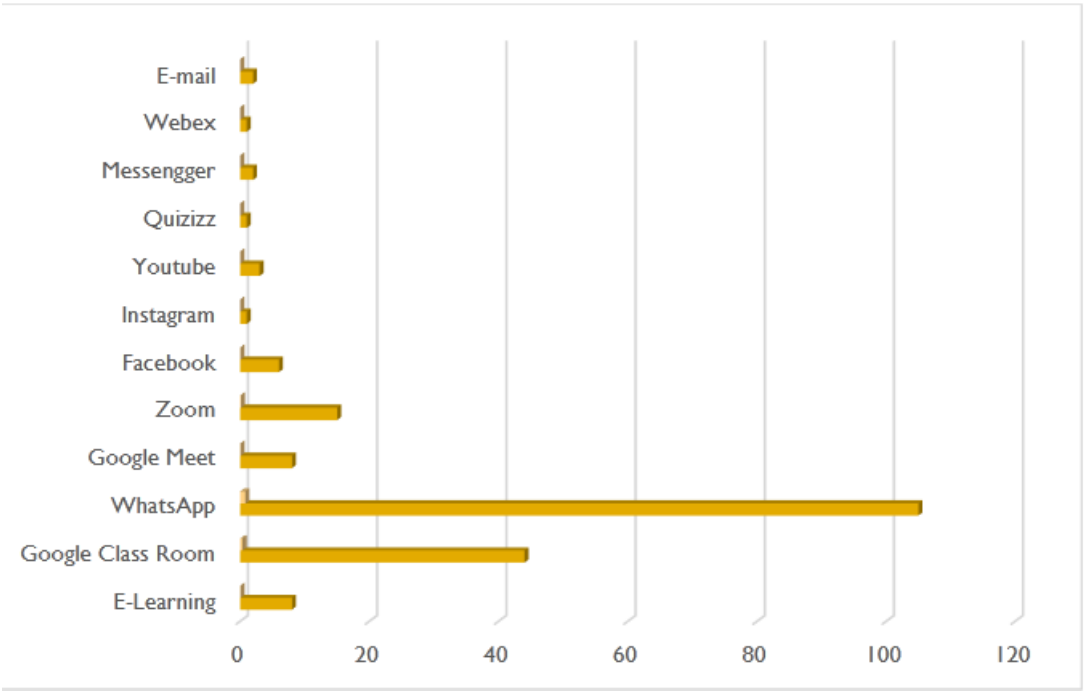


Figure 4. Platforms used for e-learning

Figure 4 shows that the most favorable platform for e-learning at IAIN Palu is WhatsApp, and the second favorite e-learning platform is Google Class Room., Meanwhile, Zoom, Google Meet, and e-learning

developed by the internal IT team are at the third, fourth, and fifth favorite e-learning g platforms. Instagram, Quizizz, and Webex are the less favorite e-learning platforms. The use of WhatsApp and Google Class Room as major e-learning platforms has been found by previous studies (Azhari & Fajri, 2021; Jabbar, Malik, AlFarsi, & Tawafak, 2021). Economic reasons might cause the reasons to use WhatsApp and Google Class Room because they are freely available and easy to access. Even though Zoom is one of the most popular applications used in meeting and online learning (Cuaca Dharma, Asmarani, & Dewi, 2017; Mpungose, 2021), the application is not free for longer meetings and online learning. The cost has become a major concern of students and teaching staff at IAIN Palu during the covid-19 pandemic.

Compared to the ear before the covid-19 pandemic, the use of e-learning is not popular with both students and the teaching staff of IAIN Palu. For example, the students and teaching staff using e-learning can be seen in the following figure 5.

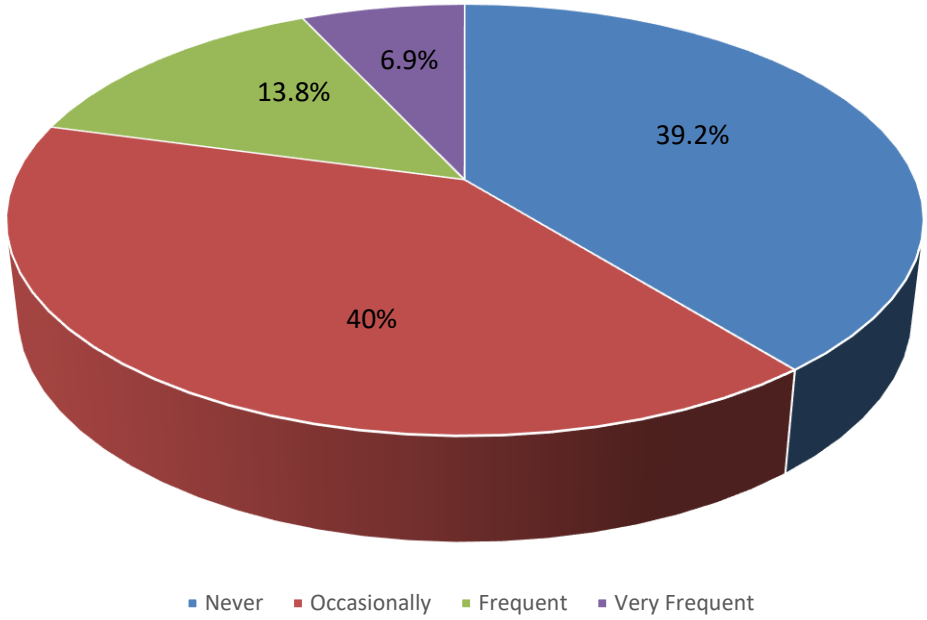


Figure 5. Teaching staff and students use of e-learning before the covid-19 pandemic

Before the covid-19 pandemic, the intensity of use of e-learning was very low. Most students and teaching staff never use e-learning or use e-learning just sometimes. The lack of use of e-learning in developing countries has been addressed in previous studies (Shantha, 2008). Lack of e-learning use is mostly caused by technology literate, financial support, trust, cultural issue (Almaiah, Al-Khasawneh, & Althunibat, 2020). In addition, most of the teaching staff in Indonesia lacked the skill of using e-learning platforms, which hindered them from interacting with e-learning applications (Rahayu, 2019). Meanwhile, students are mainly concerned with the financial cost of e-learning because most education institutions in Indonesia do not have free internet access.

Regarding the purpose of e-learning, most students (95 %) use e-learning to discuss learning material delivered by their lectures and accomplish assignments. This phenomenon is common during the covid-19 pandemic, where lectures give students more tasks to discuss learning material through e-learning systems (Daniel, 2020). The aim is to make students learn independently and engage longer with the learning material during studying at home. The purposes use of e-learning can be seen in the following figure 6.

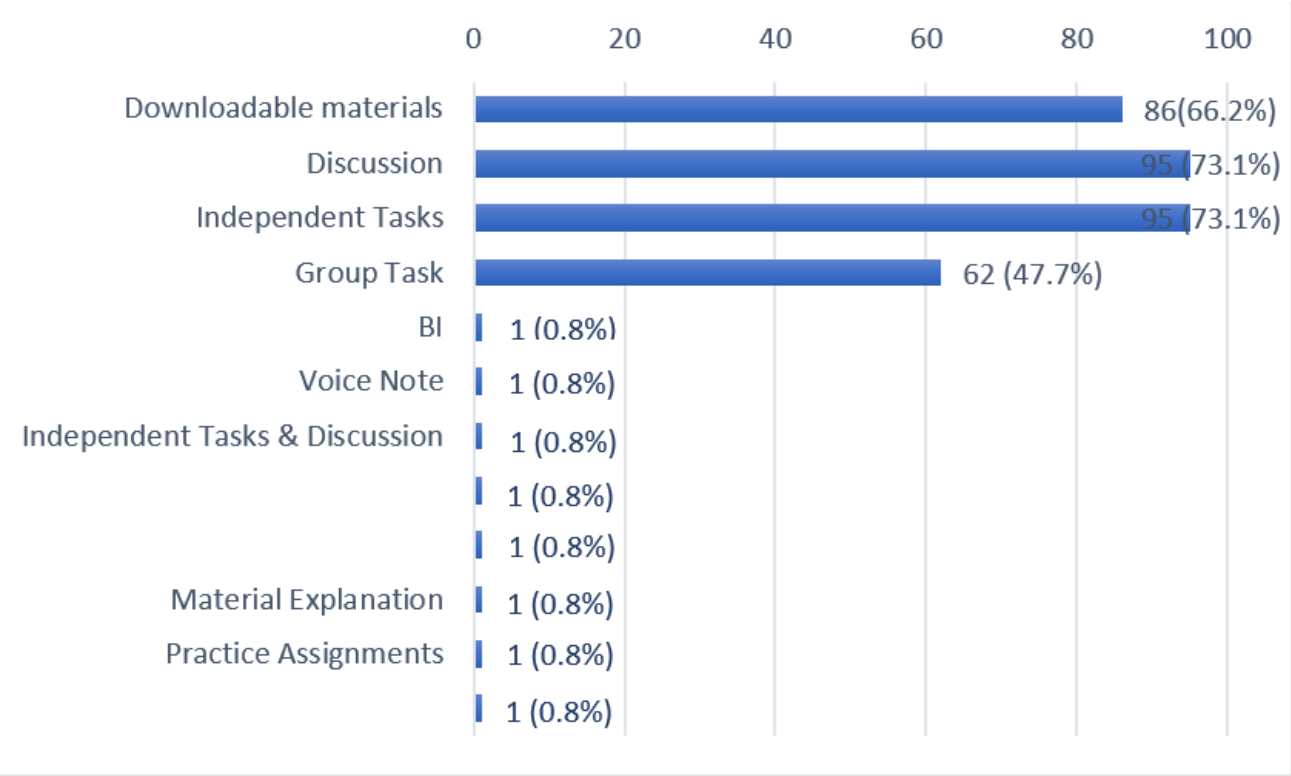
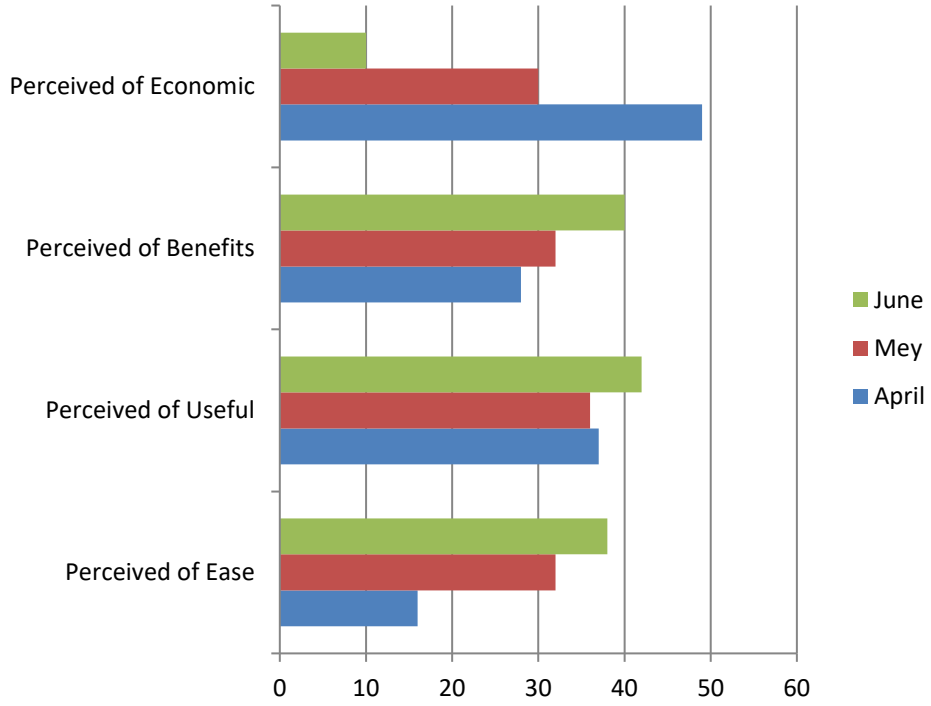


Figure 6. The purposes use of e-learning platforms

Meanwhile, the use of e-learning for practicum purposes is rare. This might imply that teaching staff prefers to use e-learning platforms for theoretical teaching rather than practical purposes. In other words, more conceptual material is taught than practical material through e-learning systems. Thus, the impact of the teaching mode might reduce students' practical material in learning during the covid-19 pandemic teaching process. Such findings highlight the need for educational institutions to ensure mechanisms are in place which facilitates active and ongoing student and teacher engagement with practical knowledge to increase students' experience with teaching material (Webster, 2019).

E-learning Perception Lifecycle Use

The first-round survey we conducted in mid-April 2021 involved 130 samples consisting of students and teaching staff. The data shows that few students and teaching staff (about 11%) consider e-learning is easy to use. However, they agree that e-learning is very useful (28%) for them during the covid-19 pandemic. Most of the students and teaching staff (38%) also agree that the cost for e-learning was not a problem for them, and they also agree (22%) that the e-learning system gave them ultimate benefit because they couldn't attend offline classes. The results of the survey can be seen in the following figure 7.



Source: Survey results on April, May, and June 2020

Figure 7. E-learning use perception lifecycle

The financial cost has become a problem to access online resources (Dhawan, 2020; Sharma, 2011). This study found that students experienced more on paying Internet connection fees at early period covid-19 pandemic between March and June 2020. At that time, the cost was not covered by the institution, while online learning had begun to intensify. As a result, the student's perception of the economic aspect of e-learning sharply decreased at the end of the survey.

Conversely, students' and teaching staff's perception of ease of use of e-learning was lower at the beginning of the survey because most were not familiar with e-learning platforms. However, after the third round survey, their perception of ease of use was increased because they got acquainted with the e-learning. Perceived ease and use increase users' intention (Al-Busaidi, 2013; Cho, Cheng, & Lai, 2009). Our findings confirmed the effect of virtual competence and revealed a nuanced mechanism by which experiences with ICT affected e-learning outcomes. We discussed the implications of this in e-learning practice (Wan, Wang, & Haggerty, 2008).

Perceived benefit of e-learning (Liaw, 2008; Wan et al., 2008), when people perceived benefit, it will increase their satisfaction (Liaw, 2008). The results showed that perceived self-efficacy is a critical factor that influences learners' satisfaction with the e-learning system. Perceived usefulness and perceived satisfaction both contribute to the learners' behavioral intention to use the e-learning system. Furthermore, e-learning effectiveness can be influenced by multimedia instruction, interactive learning activities, and e-learning system quality (Liaw, 2008).

Conclusion

Our study found that the motivation to use e-learning during the covid-19 pandemic is dynamic, influencing it during the covid-19 pandemic. Perceive of ease and usefulness is gradually increase along with the longer time of e-learning use. The experience of the benefit of e-learning use is supported by the availability of e-learning platforms that help students and teaching staff to use e-learning. On the other hand, however, the perceived economy in using e-learning was gradually declined during the period of the study. This implies that the longer e-learning is used, the cost of e-learning becomes more expensive for

students because education institutions might not fully provide an Internet connection. Future research should focus on how the economic perception is declined while other variables are increased.

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