

Factors Influencing Online Learning of Private University Students under the Covid-19 Pandemic in Selangor

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Abstract:

The high uncertainty of the Covid-19 pandemic makes it challenging for policy makers to design suitable solutions in response to it, especially in the education sector. The education sector is highly affected by the outbreak of COVID-19. The outbreak of COVID-19 is hindering education globally and hence has forced some high institutions to switch to online classes with the aim of mitigating the spread of the disease. This study's major objective was to determine factors influencing online learning of private university students under the COVID-19 pandemic in Selangor. The analysis was conducted through a quantitative approach using SPSS Version 20.0. From 217 participants given the questionnaire through online method with use of a Google link and social media such as WhatsApp and Facebook, the research obtained 206 responses. The analysis conducted, which included the linearity test, Pearson correlation analysis, and multiple regression, revealed relationship between independent variables (technical skills, course content and methodology, online connectivity and availability, student engagement) and the dependent variable (online learning under the COVID-19 pandemic). Hence, multiple regression showed that all the hypotheses were accepted. However, the research faced limitations relating to the approach used, such as convenience sampling, as the researchers focused only on a quantitative approach. Hence, future studies can focus on simple random sampling and missed approaches to further enhance the reliability and validity.

Keywords: online learning, social media, Covid-19 pandemic.

新冠肺炎疫情下雪兰莪私立大学学生在线学习的影响因素

摘要:

新冠肺炎大流行的高度不确定性使得政策制定者很难设计合适的解决方案来应对，特别是在教育领域。教育部门受到新冠肺炎爆发的严重影响。新冠肺炎的爆发正在阻碍全球教育，因此迫使一些高等院校转向在线课程，以减轻疾病的传播。本研究的主要目标是确定雪兰莪州新冠肺炎大流行期间影响私立大学生在线学习的因素。使用统计软件 20.0 版通过定量方法进行分析。该研究通过谷歌链接和 WhatsApp 和 Facebook 等社交媒体在线方式向 217 名参与者提供了问卷调查，共收到 206 份答复。进行的分析包括线性测试、皮尔逊相关分析和多元回归，揭示了自变量（技术技能、课程内容和方法、在线连接和可用性、学生参与度）和因变量（新冠疫情下的在线学习）之间的关系。-19 大流行）。因此，多元回归表明所有假设均被接受。然而，该研究面临与所使用的方法相关的局限性，例如方便抽样，因为研究人员只关注定量方法。因此，未来的研究可以集中在简单随机抽样和错过的方法上，以进一步提高可靠性和有效性。

关键词：在线学习、社交媒体、新冠肺炎大流行。

1. Introduction

The recent outbreak of the COVID-19 pandemic in December 2019 in Wuhan, China, not only affected the economy globally (Chung et al., 2020) but also significantly affected life generally. The pandemic affected more than 170 countries, including the United States, United Kingdom, China, Malaysia, and many other countries (Pharmaceutical Technology, 2020). Based on the integrated nature of the contemporary world, the performance of key sectors has been significantly disrupted because of the pandemic, and the education sector has been one of the most critical sectors deeply affected (McKibbin & Fernando, 2020). This makes developing and developed countries begin developing new ways to cushion the effects of the pandemic on different sectors. The high uncertainty of the Covid-19 pandemic makes it challenging for policy makers to design suitable solutions in response to it, especially in the education sector. The education sector is highly affected by the outbreak of COVID-19 (Loayza & Pennings, 2020).

Lecturers and students in high institutions were critically hit by unprecedented changes due to the incidence of the Covid-19 pandemic (Chung et al., 2020). Therefore, many universities globally have fully adopted online learning as a way of ensuring the continuity of education. The University of Cambridge in the United Kingdom was the first to adopt full online teaching and learning in the year 2020/2021 in order to limit the spread of COVID-19 (Europe News, 2020). Other institutions of higher learning globally have also followed this trend. The World Wide Web was developed by Tim Berners-Lee in 1989 and since its inception, it has had a huge impact on online learning opportunities and been further enhanced to improve high-speed internet technology (Chung et al., 2020).

In Malaysia, as in other countries, the Movement Control Order (MCO) was enforced to mitigate the spread of COVID-19 in the country. Therefore, the Ministry of Higher Education in the country announced that all private and public universities in the country will start conducting learning and teaching activities online until the end of 2020 (Sani, 2020). The higher education institutions were quick to adapt and proactive

to overcome the challenges presented by the MCO. This is because projects, lessons, group work, assessment, and presentations were prepared within two weeks and conducted with the use of technology, although there were challenges, most especially due to lack of human touch, such as sensing student incomprehension through facial expression, student engagement, and interaction, which could be more effective with traditional face-to-face learning (Hsiao et al., 2017). Despite this challenge, online learning offers the best solution to ensure learning continuity. Studies have shown different factors that influence online learning of university students. Mustafa et al. (2021) investigated factors causing online education of university students under the COVID-19 pandemic. The study focused on a quantitative approach based on questionnaire distribution to 1200 scholars who registered for six private universities in Pakistan. The survey used structural equation modeling (SEM) to examine causes that influence online studies. The analysis of the findings previewed the significance of professional behavior, course education methodology and planning, and online connectivity in online learning. Additionally, a study by Chung et al. (2020) on online learning readiness among university students in Malaysia amidst COVID-19 through a quantitative approach and questionnaire distribution to 399 students showed the significance of technical skills, understanding course contents, and higher institution students' engagement in the adoption of online learning.

Therefore, the current study will focus on four factors that have been found in previous studies to influence online learning among universities; these factors are technical skills, course content and methodology, online connectivity and availability, and student engagement.

2. Literature Review

2.1. Online Learning

Online learning refers to the use of information technology to facilitate virtual learning irrespective of location, unlike traditional classroom settings (Goodman et al., 2019). Online learning is also known

as the use of information and communication technology to deliver education to students; this system does not have geographical limitations. The adoption of online learning depends on different factors, including the ability to engage students, online connectivity and availability, course content and methodology, and technical skills of the students and teachers. Studies have shown significance of these factors in online learning. According to Chung et al. (2020), the significance of technical skills and understanding of the content of the subject cannot be overemphasized. This is because technical skills are critical on the part of both students and instructors, which allowed them to use online learning effectively. Online connectivity and availability are also crucial in online learning. This is because online learning requires the use of the Internet to make it work, and the internet network instability can affect the connectivity and availability of online learning (Heng & Sol, 2021). The technical issues relating to connectivity will make students skip classes, which consequently makes it difficult for the lecturer to know the number of students in attendance (Chung et al., 2020).

Furthermore, student engagement has been considered a significant aspect of online learning. The ability to give feedback and the use of online learning to facilitate group work are considered to be important aspects for effective online learning (Park & Shea, 2020). Likewise, as online learning could be effective in facilitating effective interaction between students irrespective of location, it could be an effective channel to facilitate student engagement. In addition, instructors can use online learning for effective communication of the course contents, materials, and methodology to the students; hence, it is used to facilitate effective learning during COVID-19 (Cruz et al., 2020). According to Widodo et al. (2020), students expressed satisfaction with the way online learning facilitated online connectivity between them and the instructor and between themselves. This allowed collaborative learning. However, these studies focused on general university students, whereas this study focuses on private universities. Likewise, these studies use a descriptive approach, whereas this study will use multiple regression and correlation analysis. Cruz et al. (2020) found that student engagement and interaction, staff skills and development, library access, online connectivity and availability, and student online workload affected student adoption of online learning in Australia's universities during the pandemic. Further, stable internet connection and ability to access libraries influence students' adoption of online learning.

2.2. Technical Skills and Online Learning

This refers to the competency required by teachers to use online tools or systems in teaching students (Liguori & Winkler, 2020). Studies have shown significance of technical skills in online learning adoption. Technical skills are considered as significant aspects for students to adopt online learning. The

technical skills include students' ability to respond to questions comfortably through emails and the use of internet applications or technology; these are crucial to increase student attendance at online classes. Hence, lack of technical skills in the students and lecturer will affect online learning adoption as online learning requires basic computer skills (Shaïd et al., 2021). Furthermore, the ability of instructors to have vivid understanding of the online learning environment and make it easy to learn is essential for students to adopt online learning. That is, the instructor's ability to use an online platform to convey concepts effectively is required for effective online learning to enhance students' adoption of online learning. Therefore, there is a need for students and teachers to have technical skills in online learning to make it effective (Mahyoob, 2020). Students' and instructors' technical skills are considered to be a good motivating factor for online learning adoption among students, hence the need for students to be trained on its use before adoption (Brew & Saunders, 2020).

Chung et al. (2020) recommend universities to invest in developing internet infrastructure across the country as online learning will become a new norm in the foreseeable future. Likewise, they indicated the need for the universities to provide further training to improve online teaching skills to ensure that lessons are delivered in a more effective manner. It is essential for teachers to develop all necessary competencies in order to become familiar with the use of technology as well as to learn its adequate use for integrating the class into diverse subject disciplines (Loyalka et al., 2019). Therefore, there is a need for effectively planned and realistic policies for the use of technology, strategies, facilities, and proper implementation to ensure effectiveness of the online learning system among the universities (Willems et al., 2019). Teachers' technical skills are reflected in the way they use technology to create new learning experiences for the students in such a way that makes learning collaborative, engaging, and effective. Additionally, Mo et al. (2021) found ease of use and usefulness of the teacher choice of the platform significant and their ability to achieve a satisfactory fit between the platform navigation and course design. This consequently influences the student learning outcome and attitude toward the adoption of online learning systems. Therefore, when the online platform required low technical skills, it could facilitate interest among students, especially those with limited knowledge on the use of computers.

H1: There is a significant relationship between technical skills and online learning in private universities in Selangor.

2.3. Online Connectivity and Availability

Online connectivity and availability refer to the importance of stable internet connection, lectures in recorded video, internet speed, and clear audio playing a significant role in online learning as they connect lecturers with students using the system (Al-Samarraie

et al., 2018). Online connectivity and availability are also crucial in online learning. This is because online learning requires the use of the Internet to make it work, and instability of the internet network can affect the connectivity and availability of online learning (Heng & Sol, 2021). Technical issues relating to connectivity will make students skip classes, which consequently makes it difficult for the lecturer to know the number of students in attendance (Chung et al., 2020). The system quality in terms of online connectivity and availability and alignment with the course content and methodology in online learning adoption by university students in Malaysia are considered to be important aspects for students to adopt online learning. Access to internet facilities, school e-library, and the use of suitable devices will allow students to adopt online learning. Technical issues relating to internet connectivity create disruption and can demotivate students toward adopting online learning (Tanveer et al., 2021). Muthuprasad et al. (2021) showed that a large number of students (70%) prefer online classes due to their ability to access the internet network and afford a data pack to facilitate internet connection. The students believed that the convenience and flexibility of online classes makes online learning attractive. Furthermore, school facilities and the ability to make the Internet available to students are significant aspects to enhance online learning adoption during COVID-19 (He et al., 2021). When the devices or platform is also user-friendly, it will motivate students to adopt online learning. However, poor internet infrastructure in universities and inefficient online learning platforms will affect student adoption of online learning (Elumalai et al., 2020). Hence, there is a need for high institutions to engage students more interactively not only through text but also video to make online learning encouraging for students during the pandemic (Egielewa et al., 2022).

H2: There is a significant relationship between online connectivity and availability and online learning in private universities in Selangor.

2.4. Course Content and Methodology

Course content and methodology refer to students' involvement in online learning as online learning can be a channel to facilitate lecturer and student engagement, which could be attributed to students' technological skills and ability to operate the system (Liguori & Winkler, 2020). Studies have shown a link between course content and methodology and online learning adoption. Chung et al. (2020) on online learning readiness among university students in Malaysia amidst Covid-19 showed that 66% of the students have challenges relating to course content and methodology. When the course content required a practical approach, the inability of the students to see physical demonstrations during class could affect their concentration when engaging in online learning. For instance, on engineering courses, the inability to access practical learning affects the adoption of online learning

in the country (Widodo et al., 2020). Ansong et al. (2017) indicate that when the course can be taught through an online learning platform, students will adopt online learning. The ability of online classes to assist students in comprehending the course materials compared to classroom learning will enhance students' adoption of online learning. Furthermore, proper curriculum design must make online learning effective. Hence, to make online learning effective, it is very important to design the curriculum in such a way that will assist students in comprehending the lecturers (Adedoyin et al., 2020). In addition, the curriculum suitability for online learning is an important aspect to enhance the adoption of online learning (Sharifov & Mustafa, 2020). When the students are able to easily access the course contents through an online platform, it will motivate them toward adoption of online learning. Hence, it is very important for universities to create reliable online learning platforms through which students can easily access their course materials and e-library (Ansong et al., 2017). However, these studies use SEM and a descriptive approach, whereas the present study examines multiple regressions to test the relationship between independent and dependent variables.

H3: There is a significant relationship between course content and methodology and online learning in private universities in Selangor.

2.5. Student Engagement

Student engagement refers to their involvement in online learning as online learning can be a channel to facilitate lecturer and student engagement, which could be attributed to students' technological skills and ability to operate the system (Liguori & Winkler, 2020). Studies have shown a link between student engagement and adoption of online learning methods. Kifta et al. (2021) found the significance of student engagement in online learning adoption. The ability to give feedback and the use of online learning to facilitate group work are considered to be important aspects for effective online learning (Park & Shea, 2020). Likewise, as online learning could be effective in facilitating effective interaction between students irrespective of location, it could be an effective channel to facilitate student engagement. In addition, instructors can use online learning for effective communication of the course contents, materials, and methodology to the students; hence, it is used to facilitate effective learning during COVID-19 (Brew & Saunders, 2020). Moreno et al. (2017) found that online learning enhances the efficacy of qualifications and knowledge through easy access to a large amount of information; likewise, online learning allowed students to engage with one another through discussion forums.

Online learning provides students with fruitful channels to connect with their instructors and peers. Hence, it motivates students to interact with one another and exchange and respect different viewpoints. That is,

e-learning makes interaction and communication accessible and improves the relationship that sustains learning (Heng & Sol, 2021). According to Brew and Saunders (2020), the ability to facilitate student engagement and interaction is an important factor that enhances student adoption of online learning in Australia's universities during the pandemic as students make use of social media to communicate with one another. Likewise, the universities have social media platforms through which students and lecturers can interact with one another. This was also supported by Park and Shea (2020), who found student engagement significant for the adoption of online learning as the students expressed satisfaction with the way online learning facilitated online connectivity between them and the instructor and between themselves, which allows collaborative learning.

H4: There is a significant relationship between student engagement and online learning in private universities in Selangor.

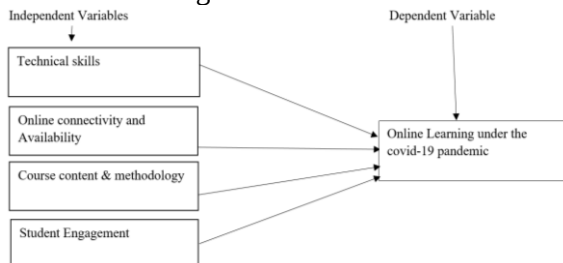


Figure 1. Conceptual framework (Developed by the authors)

3. Research Method

3.1. Research Instrument/Measurement

This research focused on quantitative analysis. The first part of the questionnaire, i.e., the demographic variable analysis, was done through descriptive analysis. The second part, which involved determining the relationship between the independent variables (technical skills, online connectivity and availability, course content and methodology, student engagement) and dependent variable (online learning), was done through correlation and regression analysis. For this purpose, the Likert scale was used to unravel reliable responses. The format was as follows: 1 - strongly disagree, 2 - disagree, 3 - neutral, 4 - agree, 5 - strongly agree. The Likert scale was used based on its reliability and ease of understanding (Sekaran & Bougie, 2016).

Table 1. Measurement (Developed by the authors)
Dependent variable: online learning adoption

Variable		
Online Learning Adoption	1. The students and the instructors have the ability to use online platform to convey the concepts effectively 2. I considered access to internet facilities to be very important aspect in online learning 3. Through online learning platform i can easily have access to my course content 4. Access to online learning platform allowed me to relate effectively with the course instructor and my fellow students 5. The instructors and the students' knowledge on information system is required for effective online learning	Muthuprasad, Aiswarya, Aditya, & Girish, (2021)

Independent variables		
Variable		
Technical skills	1. I am more comfortable responding to questions by email 2. My technical skills (email/internet apps) has increased since attending online classes 3. Instructor understands the online environment and makes it easy to learn 4. Basic knowledge on computer is required for online learning	Muthuprasad, Aiswarya, Aditya, & Girish, (2021)
	5. The instructors have the ability to use online platform to convey the concepts effectively is required for effective online learning	
Online connectivity and availability	1. I have access to internet facility for online learning 2. I have access to suitable devices for online learning 3. My school has stable internet facility for online learning 4. I have access to sufficient data pack for online learning 5. I considered the online learning platform to be user friendly	Mustafa, Khursheed, Rizvi, Zahid, and Akhtar (2020)
Course content & methodology	1. My course can be taught through online learning platform 2. Online classes help me comprehend the course materials compared to Classroom learning 3. Proper design of the curriculum design is required to make online learning effective 4. The course curriculum is suitable for online learning 5. Through online learning platform i can easily have access to my course content	Muthuprasad, Aiswarya, Aditya, & Girish, (2021)
Student Engagement	1. Online environment makes it easier for me to communicate with my instructor 2. Through online learning platform I am able to give feedback 3. Through online learning platform I am able to do group work 4. Through online learning platform I am able to relate effectively with fellow students 5. Through online learning platform I am able to relate effectively with the course instructor	Mustafa, Khursheed, Rizvi, Zahid, and Akhtar (2020)

3.2. Pilot Study

The pilot study was conducted to determine the reliability of the questionnaire, which was done through Cronbach's alpha value, which has to be equal to or higher than 0.7 to enhance the reliability (Blaxter et al., 2010). The pilot study was conducted based on 30 sample size comprising private university students in Selangor.

3.3. Sampling Technique and Sample Size

The sampling technique is the convenience sampling approach, where the respondents were selected based on accessibility and availability to answer the questions in the questionnaire. This approach is considered to be easy to reach a larger sample size. Hence, considering this study's larger sample size (217), the convenience sampling approach allowed the researchers to easily access this large number of the respondents who are students of private universities in Selangor (Sekaran & Bougie, 2016).

4. Results and Discussion

4.1. Demographic Characteristics

Table 2 shows demographic statistics that highlight the respondents' gender, age, educational level, and experience in online learning. The table shows the sample size comprising students of different private universities in Selangor, Malaysia. Likewise, the descriptive statistics shows the minimum and maximum values, mean, and standard deviation.

Table 2. Descriptive statistics (Developed by the authors)

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	206	1	2	1.42	.494
Age	206	1	2	1.16	.368
Education Level	206	1	3	2.15	.539
Experience In Online Learning	206	1	3	1.69	.719
Valid N (listwise)	206				

4.2. Reliability Test

Table 3 shows findings of the reliability test through Cronbach's alpha value. Each variable has five items. The analysis showed that for the online learning variable, the Cronbach alpha value is 0.817; for the technical skills variable, the Cronbach alpha value is 0.793; for the course content and methodology variable, the Cronbach alpha value is 0.789; for the online connectivity and availability variable, Cronbach's alpha value is 0.798; for the student engagement variable, the Cronbach alpha value is 0.773. The Cronbach alpha value of these variables is higher than 0.70, which is the required value. Hence, the questionnaire is reliable. Therefore, the researchers proceed with further data analysis.

Table 3. Reliability statistics (Developed by the authors)

Variables	Cronbach Alpha Value	Number of Items
Online learning	0.817	5
Technical Skills	0.793	5
Course Content & Methodology	0.789	5
Online Connectivity and Availability	0.798	5
Student Engagement	0.773	5

4.3. Normality Test

Table 4 reveals the normality test based on 206 samples, who are students of private universities in Selangor, Malaysia.

Table 4. Normality test (Developed by the authors)

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Online Learning Adoption	.106	206	.000	.966	206	.000

a. Lilliefors Significance Correction

The table shows a Kolmogorov-Smirnova

significance value of 0.000, which does not meet the value of 0.05, which is required for this test. Furthermore, the test shows a Shapiro-Wilk significance value of 0.000. As this study focused on 206 samples, the Kolmogorov-Smirnova test is considered applicable for it since the Shapiro-Wilk test is applicable for studies that contain 50 samples or less. As the results do not meet the required value, this study proceeded to other tests. Thus, the research conducted a Z-score test with the formula below:

$$Z\text{-Score} = \frac{\text{Statistics}}{\text{Standard Error}}$$

Table 5. Z-score test (Developed by the authors)

	Statistic	Std. Error
Online Learning Mean	3.0466	.06970
Adoption		
95% Confidence Interval for Mean	2.9092	
Lower Bound		
Upper Bound	3.1840	
5% Trimmed Mean	3.0518	
Median	3.0000	
Variance	1.001	
Std. Deviation	1.00037	
Minimum	1.00	
Maximum	5.00	
Range	4.00	
Interquartile Range	1.60	
Skewness	-.067	.169
Kurtosis	-.313	.337

Notes: Z-Score = -0.067/0.169; Z-score = 0.39

Based on the z-score formula, the normality test showed that the z-score value equals 0.39, which is considered acceptable and reliable as the value is within the required range of -3.29 to 3.29 (Hodan, 2021).

Figure 2 shows a histogram of the residual, indicating normal distribution. As the sample size is 206, the residual mean value is 3.05, and the standard deviation is 1.00. Since the histogram of the residual shows a bell shape, it reveals that the data are distributed normally (Saunders et al., 2016).

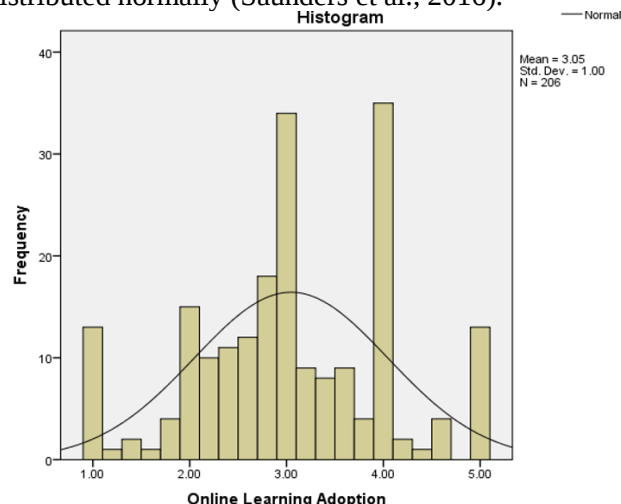


Figure 2. Histogram of the residual (Developed by the authors)

Figure 3 shows that all the data were close to the line, which means that the data are distributed normally (Sekaran & Bougie, 2016).

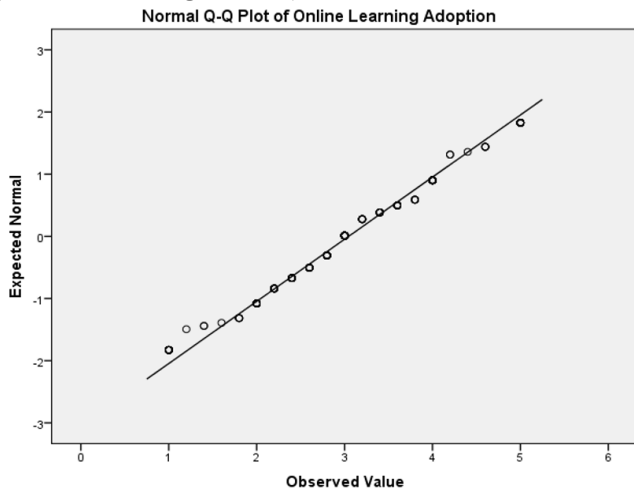


Figure 3. Normal Q-Q plot of DV (online learning adoption)
(Developed by the authors)

5. Conclusion

This study's major objective was to determine factors influencing online learning of private university students under the COVID-19 pandemic in Selangor. The analysis was conducted using SPSS Version 20.0. The findings showed relationship between the independent variables (technical skills, course content and methodology, online connectivity and availability, student engagement) and dependent variable (online learning under the COVID-19 pandemic). Hence, this chapter focuses on the discussion of the findings, which was done in relation to the findings of the previous studies.

5.1. Contribution of the Study

This report will add to the body of knowledge on factors causing online learning among universities in Malaysia. The findings of this study can be used by academics and students to gain a good understanding of theoretical frameworks of factors that influence online learning in universities. This study finding can be utilized by upcoming researchers to add to the literary study appraisal. This study will also allow theoretical students to understand the concept of online learning and its significance to students and institutions.

To enhance the efficiency of online learning, there is a need for policy makers to understand how it can be channeled. By considering diverse challenges on online learning adoption, this study developed a framework that could be adopted by universities in Malaysia to enhance successful implementation of online learning and teaching, especially during this pandemic period. The findings of this study can be used by educators or higher institutions to develop a better e-learning approach to make e-learning effective. Also, policy makers can implement these approaches in higher institutions to ensure student engagement, a conducive environment for e-learning, e-learning adoptions, and

generally to enhance e-learning efficiency.

6. Limitations and Future Research

In the process of this study, the research encountered certain challenges. One of the challenges encountered by the researcher relates to timing. This study analysis was conducted for four months. By considering the time for gathering the data from the respondents, analysis, and report preparation, four months is considered to be short for this process (Mitchell et al., 2014). However, the researchers could manage the time by designing an effective timetable. This was strictly followed by the researchers. Likewise, the researchers leveraged their connection with friends to obtain 206 responses.

Additionally, considering the high number of the students in private universities in Malaysia, 206 samples obtained are considered to be small, which could affect 100% generalization of the findings. However, this was managed through an effective questionnaire that was easy to understand. Likewise, the reliability test showed reliability of the questionnaire.

Furthermore, this study focused only on quantitative approach; the use of a mixed approach would make the findings in-depth, more reliable, and valid. This mixed approach includes both quantitative and qualitative analyses. The qualitative analysis allows an in-depth analysis (Kothari, 2004). However, the researchers managed this through an easy-to-understand questionnaire. Likewise, the researchers ensured that the questionnaire was distributed to targeted students, that is, students of private universities in Selangor.

In addition, this research uses a convenient sampling approach. This is because the questionnaire was distributed to the respondents based on their availability and nearness to the researchers, which could affect the 100% generalization of the study. Simple random sampling is considered to be most appropriate for this type of study as it allowed the sample to have equal chances of being selected (Mitchell et al., 2014). However, the researchers managed this because respondents with good knowledge of the subject were considered for this study. Likewise, simple random sampling is considered time consuming; hence, using the approach could affect the schedule of this study.

Furthermore, this study primarily focused on Selangor, although it is considered to be one of commercial cities in Malaysia with a high number of private universities in the city. Considering other major cities such as Kuala Lumpur, this may affect the 100% generalization of the study.

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