# The Impact of Online Learning on Academic Performance Mediated by Student's Commitment: A Study on Malaysian Public Universities

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**Abstract**
**Purpose:** Due to Covid-19, online learning is extensively adopted by the education industry and is a common learning method nowadays. Even though it is preferred by most of the education providers, nevertheless, the student's performance is more pertinent. This research has been conducted to investigate the impact of online learning on the academic performance of public university students in Malaysia mediated by the student's commitment. Therefore, the objective of the study is to 1) examine the effect of online learning on academic performance; 2) investigate the effect of online learning affecting student commitment; 3) analyze the effect of student commitment on academic performance.
**Design/methodology/approach:** This study is a quantitative study which the data gathered through questionnaire. PLS-SEM software version 3.3.3 was used to analyze the data obtained from 119 students at a Malaysian public university.
**Findings:** The result indicates that online learning positively impacts academic performance and student's commitment, and a positive relationship between student's commitment and academic performance. Thus, all hypotheses are found to be supported.
**Research limitations:** The study is limited to Malaysian public university only. Basically, the study is limited to three main variables that are independent variable which represent by online learning (learning platform, interaction, and technology); mediating variable which represent by student commitment (learning environment, time allocation, and peer relationship); and dependent variable of academic performance (CGPA and practical skill).
**Practical implications:** It was determined that the findings of the study prove the impact of online learning on academic achievement as mediated by student commitment were important. As a result, online learning has a favourable effect on students' dedication and academic achievement. The findings might be significant to other institutions and at different

level of education as well, hence, other variables could be explored. Lecturer, teachers, and education institutions should consider on improving the learning platform, interaction, and technology for the online learning efficiency. Whereas the student themselves should improve their learning environment, time allocation, and peer relationship in ensuring better academic performance particularly on CGPA and practical skill.

**Originality/value:** This study focuses on variables and factors which could improve a student's academic performance mainly on online learning mode. The data been collected after Covid-19 strikes which the online learning becomes the main platform and the only option that the student could go for. Therefore, the respondent's feedback in the study might different compared to other research about online learning which the mode is voluntarily chosen by the student.

**Keywords**: Online Learning, Distance Learning, Academic Performance, Student Commitment, Public University

**Introduction**
Learning that takes place through the internet is referred to as online learning. It is also referred to as e-learning and other terms. It is also a sort of distance learning that encompasses any learning that occurs outside a regular classroom environment. This paper studies the impact of online learning on academic performance mediated by student commitment among students in a public university in Malaysia. In the 21st century, technology is highly important in our daily lives. Children as young as three or four know how to use technology using a laptop, tablet, or mobile phone. Technology has advanced from traditional school learning to online learning through apps and e-learning materials. The culture of online learning is multiplying (Allen et al., 2016, as cited in Broadbent, 2017). As the online learning culture expand, there are also numbers of inquiries regarding online learning and academic success to ponder. Among to highlight is relating to technological problems.

According to Dhawan (2020), a small range of innovations is used for online education in this new age. He also states that the challenges and problems associated with new technologies include installing glitches, installation issues, login issues, and audio and video problems. As a result, the students are unprepared for a range of e-learning and academic type skills. Student commitment is the main issue with online learning regarding academic performance. According to the students, the primary hurdles to online learning are a lack of connection, technological issues, and a lack of grasp of the instructional objectives. As a result, the student's commitment is diminished. Aside from that, students are found to be underprepared in managing their employment, family, and social life with their academics, which interferes with their dedication throughout the online learning environment (Dhawan, 2020). This study been conducted to answer three (3) research questions that are:

RQ1: What is the effect of online learning on academic performance?
RQ2: What is the effect of online learning affecting students' commitment?
RQ3: What is the effect of a student's commitment on academic performance?

Whereas the objectives are (1) to examine the effect of online learning on academic performance; (2) to investigate the effect of online learning on student commitment; and (3) to analyze the effect of student commitment on academic performance. It was hypothesized that online learning has a positive impact on academic performance and student commitment, and positive relationship between student commitment and academic performance.

## Literature Review

Pandemic Covid 19 had given chances for technology to take part in most of our daily life due to nature of the virus which disallow us to get in touch physically. Most of activities during that period is based virtually including online learning. In order to ensure that students don't go without studying and to stop the virus from spreading, the authorities suggested adopting alternatives to standard learning methods in emergencies after the unexpected closure of educational facilities due to the appearance of COVID-19. (Adedoyin & Soykan, 2020). However, there are a small number of studies were done to further investigate how the student commitment affects online learning towards academic performance especially in Malaysia (Ilias, Baidi, Ghani, & Razali, 2020; Thandevaraj, Gani, & Nasir, 2021). This part reviews the prior and related research literature on online learning, student commitment, and academic performance. Academic performance, online learning, and student commitment serve as the independent and mediating variables, respectively, in this study. The broad concept of each variable is explained further detail. The link between each variable and dimension is also further explained in this part.

### *Online Learning*

Online learning is defined as learning that takes place online. It is also referred to by several other names, including e-learning. Any learning that takes place outside of a conventional classroom environment falls under the umbrella of this additional sort of distant learning. Prior to pandemic Covid 19 attack, online learning has been given status an important variable in education especially in Higher Education Institutions (Arbaugh et al., 2008; Bawane & Spector, 2009; Kabilan, Ahmad, & Abidin, 2010; Puzziferro & Shelton, 2008). However, the impact of Covid 19 has allowed online learning potential to be utilized to the utmost compared to before. Many researchers have come to do various survey across variables to see the impact of its usage (Abdullah & Kauser, 2022; Adedoyin & Soykan, 2020; Ilias et al., 2020; Wang, Xia, Guo, Xu, & Zhao, 2022). Online learning differs from emergency remote teaching, that it will be more sustainable, and that instructional activities will become more hybrid, provided that the difficulties encountered during this pandemic are thoroughly investigated and turned into opportunities (Adedoyin & Soykan, 2020). In the study done by (Wang et al., 2022) shows only online learning readiness showed a significant positive relationship with online academic performance during COVID-19. It proves that only adolescents who are emotionally competent and are prepared to learn online may be more resilient to COVID-19-related problems and learn more efficiently online. To make it worst, as study done by (Abdullah & Kauser, 2022) in Pakistan show that it has been determined that online learning has a negative impact on students' academic performance. The same result produced by (Chet, Sok, & Sou, 2022) that online learning significantly reduced students' academic performance.

### *Student's Commitment*

Student commitment in doing Online Learning (OL) is one the factor that mediate the success of OL towards academic performance, (Chet et al., 2022) mentions that student's dedication

to their studies significantly increased their level of learning pleasure or else it will lead to student dissatisfaction. In one of the works (Actualidad, 2018), highlights how students' dedication to their studies influences their academic achievement, supporting the theory that low student commitment leads to poor academic performance. It is also proven by (Maatuk, Elberkawi, Aljawarneh, Rashaideh, & Alharbi, 2022) that e-learning commitment and satisfaction were positively correlated, and these two factors had a favourable and substantial impact on students' e-learning behaviour for finance courses. There are lacking studies done to see how student commitment has play their roles between OL towards academic performance. (Ali, Puah, Fatima, Hashmi, & Ashfaq, 2022).

Fernandez (2018) mentions that the student commitment affects their academic performance. He develops a hypothesis that low student commitment causes low academic performance. He also states that the commitment by student is affected by the learning instructor learning methodology. Most lecturers have difficulties in managing their student. In a study answered by lecturers, they have a hard time interacting with their student especially those who give low commitment (Fernandez, 2018).

### *Academic Performance*

Despite being explored from many angles by many researchers, academic accomplishment as a subject of study is nevertheless a hot issue. (Actualidad, 2018). The poll in the study (Chet et al., 2022) found that 62.3% of respondents said that online learning had a negative impact on their studies, and that online learning considerably decreased their academic performance. Other concerns were the absence of motivation, preferences, intentions, and students' degree of comprehension of online learning. (Ilias et al., 2020). More research is required to examine how high school students do academically online and to find how to assist high school kids in prepare for online learning, particularly in the COVID-19 epidemic (Wang et al., 2022).

In this paper, earlier studies have been discussed to acquire additional insight and an explanation of the connections between the variables which is Academic Performance (AP) as the dependent variable, online learning (OL) as the independent variable and student's commitment (SC) as the mediating variable in this study in order to better comprehend them. Understanding how factors interact will give further knowledge and data to build the study's conclusion. The conceptual framework for the study as in Figure 1 below.
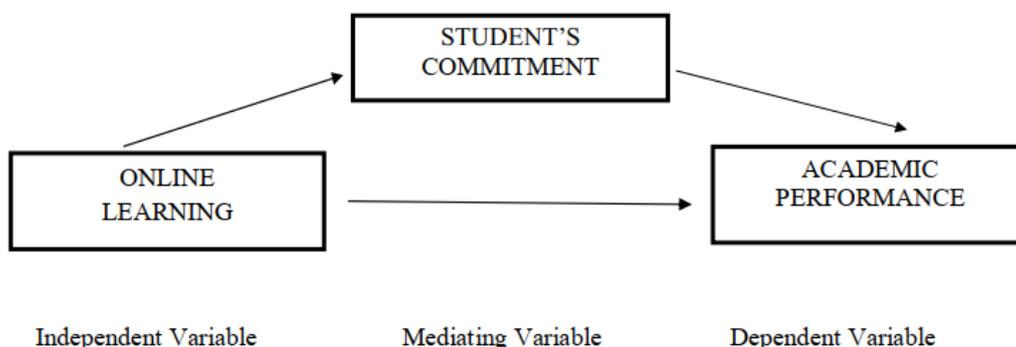


Figure 1: Conceptual Framework

## Method
The general purpose of this study is to identify the impact of online learning on academic performance mediated by student commitment. This research aims to examine the effect of online learning on academic performance among Malaysian public university students. The research is cross-sectional, utilizing data obtained from a quantitative technique. This quantitative study aims to determine the relationship between independent, mediating, and dependent variables. The research procedures were updated to construct this model, including sampling, data gathering, questionnaire growth, computation, and unit of analysis.

### Research Design
This quantitative study looks at the relationship between the independent and dependent variables. Oberiri (2017) states that quantitative research is essential for providing an overview of what research entails. A set of questionnaires been distributed to reach the targeted respondent. The primary data gathered from the survey has been analysed using PLS-SEM software version 3.3.3.

### Population, and Sample
The study covers on public university students which come from 20 public universities in all over Malaysia. According to the Malaysian Department of Statistics (2021), there are 567,625 statistics of Malaysian public university students. Using the G-Power, the sample size required is 119 students.

### Instrument Development
The questionnaire set stands from items which been adapted from several study as shown in Table 1 below.

Table 1: Source of Items Adapted

| Construct | Authors |
|---|---|
| Online Learning | Pal & Vanijja (2020); Lee et al. (2011); Sher (2009); and Edmunds, Thorpe & Conole (2012) |
| Student's Commitment | Khanam et al. (2017); Gosak et al. (2021); and Sher (2009) |
| Academic Performance | Ali & Dmour (2021); Martin & Bolliger (2018) |

This study used a close-ended questionnaire for data collection and use a six-point Likert scale consisting of independent, mediating, and dependent variables. The questionnaire has two major sections which are Section A covering the demographic information with eight (8) items: gender, age, status, current program, current university, current resident, the current mode of study, and financial support. Whereas for Section B been divided into three subsections which are (B1) online learning, (B2) student commitment, and (B3) academic performance. The items in (B1) been further divide into three (3) subsections that are learning platform, interaction, and technology. Furthermore, the items in (B2) been divided into three (3) subsections which are learning environment, time allocation, and peer relationship and items in (B3) on academic performance were in two (2) subsections that are GPA/CGPA and practical skill. All these items in the questionnaire been adapted from previous study research and literature.

*Data Collection Method*

The link of the online survey been distributed via social media platform such as WhatsApp and Facebook. The survey items have been set in a Google Form for easiness and prompt result from the respondent feedback. The researcher explains the objective of the study on the cover page of the survey link. This is to ensure that all respondents understand the purpose of study prior answer the questionnaire. The study applied purposive sampling for better insights and more precise research results. A number of 119 respondents have participated in this study.

*Data Analysis Method*

The Partial Least Square - Structural Equation Modelling (PLS-SEM) is the software used to analyse the data gathered from the questionnaire. According to Hair et al. (2014), the PLS-SEM can be utilized to examine the association between all system variables.

**Findings**

The study discusses the findings of a questionnaire answered by 119 participants in order to meet the study's objectives.

*Respondent Demographic Profile*

The demographic profile may have a significant impact on the research objective. One hundred nineteen respondents answered the questionnaire of Malaysian public university students. The respondent demographic profile of respondent is listed in the table appendix. The demographic profile of respondents is divided into eight items, which consist of gender, age, status, current program, current university, current residence, the current mode of study, and financial support. The item is measured and analyzed using Microsoft Excel.

From the 120 respondents, 56.67% were female, and 43.33% were male. There was a significant variation in age group, with 77.50% of respondents between the ages of 21 and 25. Regarding the status of the respondents, 12 of the respondents representing 10.00%, were married, while 108, representing 90.00%, were single. The majority of the respondent were well educated, with more than half (79.17%) of the respondents holding a bachelor's degree, 12.50% having a Master and 8.33% having a Diploma.

Majority respondents which are 13 students (10.83%) were from Universiti Sains Malaysia, followed by Universiti Malaysia Perlis with 10 students (8.33%) and Universiti Malaysia Sarawak with nine students (7.50%). Seven of the respondents represent 5.83% were from Universiti Pendidikan Sultan Idris and Universiti Malaysia Kelantan. In addition, 5% of the respondents were from UM, UKM, UPM, UMP, UniSZA and UPNM, while 4.17% were from UTM and UMS. Whereas the lowest participation which is 3.33% were from UiTM, UIAM, UUM, USIM, UMT, UTHM, and UTeM.

According to the location of current resident of the respondents (upon answering the questionnaire), 43 students which representing 35.83%, were university residents, and 20.83% were at a rented room, apartment, or off-campus rental residence, while 43.33% were at a family or friend's house. Out of 120 respondents, more than half are studying full-time (95.83%), and only 4.17% of the respondents are studying part-time. Lastly, most respondents have taken PTPTN, loans, and other financings as a source of financial support.

The respondents representing own, scholarship, and PTPTN/other financing/loan are 25, 22, and 73, respectively. In comparison, the percentage are 20.83%, 18.33%, and 60.83%.

### Assessment of Measurement Model

For the assessment of the measurement model, (PLS) Partial Least Square was performed using SmartPLS Version 3.3.3. The PLS approach to Structural Equation Modelling (SEM) is a flexible tool for statistical model building. (Babin et al., 2008) SEM can measure the latent variables and test the relationship between latent variables. The measurement model covers convergent validity and construct validity; this measurement model examines the relationship between the latent variable and their measures. At the same time, the structural model measures the relation between the latent variable. The structural model also covers path analysis and hypothesis testing.

Modifications to the initial model are usually required to measure or develop the level of importance of each factor. Modification models also help determine the load for each factor. Any factor less than 0.4 (loading data for each factor requires more than 0.4) should be eliminated, and the model should be rerun. In addition, adjustments to the baseline model ensure that the model's measurements are more precise. According to Figure 2, the items removed are OL1, OL6, OL9, OL10, OL11, SC2, SC3, and SC4. The reason for the removal of the item is because the Outer Loading must be higher than the value 0.4, the Cronbach's Alpha must be higher than the value 0.7, the Composite Reliability (CR) must be higher than the value 0.7, and the Average Variance Extracted (AVE) must be higher than the value 0.5.
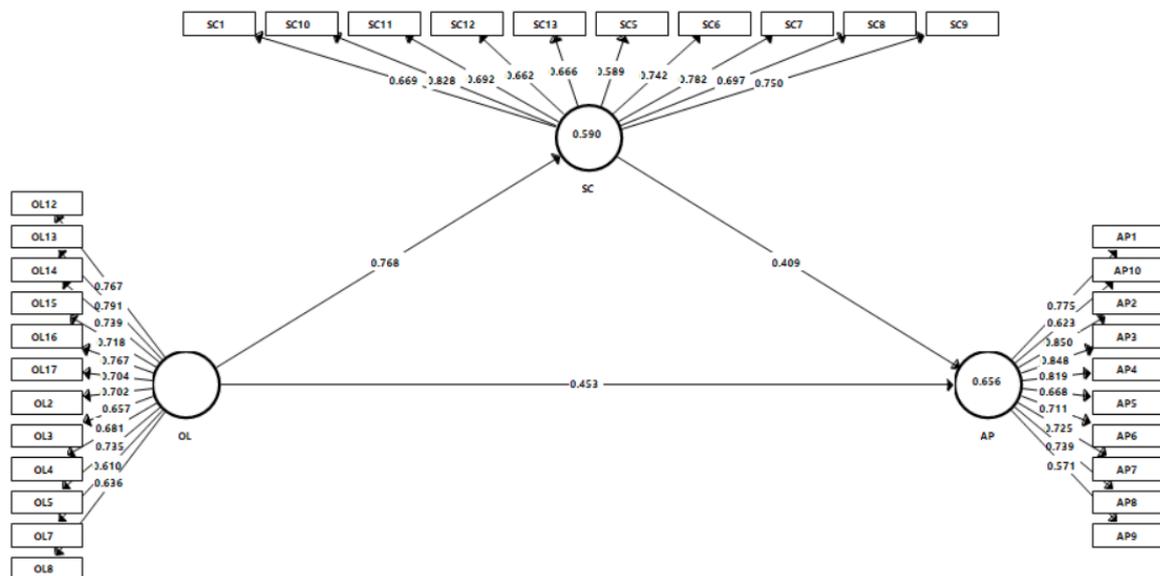


Figure 2: Hypothesized PLS Path Model

### Convergent Validity

Convergent validity is a sub-topic to construct validity. Convergent validity shows that the test having the same construct should be highly correlated. Hair et al., 2010 recommended that the researcher use the factor loading, composited reliability, and average variance extracted (AVE) to examine the convergent validity. Besides, Fornell and Larcker (1981) also explained that construct validity could be examined by measuring and evaluating the composite reliability, factor loading, and average variance extracted (AVE).

Based on the Table 1, the outer loading for the construct OL is OL2 (0.702), OL3 (0.657), OL4 (0.681), OL5 (0.735), OL7 (0.61), OL8 (0.636), OL12 (0.767), OL13 (0.791), OL14 (0.739), OL15 (0.718), OL16 (0.767) and OL17 (0.704). The Cronbach's Alpha is 0.91, the composite reliability is 0.924, and the AVE is 0.506. The items OL1, OL6, OL9, OL10, and OL11 are removed because they do not meet the requirement that the value of outer loading must be higher than 0.4.

Besides that, refer to Table 2, the outer loading for the construct SC is SC1 (0.669), SC5 (0.589), SC6 (0.742), SC7 (0.782), SC8 (0.697), SC9 (0.75), SC (0.828) SC11 (0.692), SC12 (0.662) and SC13 (0.666). The Cronbach's Alpha is 0.89, the composite reliability is 0.91, and the AVE is 0.505. The items SC2, SC3, and SC4 are removed because they do not meet the requirement that the value of outer loading must be higher than 0.4.

According to Table 2, the outer loading for the construct AP is AP1 (0.775), AP2 (0.85), AP3 (0.848), AP4 (0.819), AP5 (0.668), AP6 (0.711), AP7 (0.725), AP8 (0.739), AP9 (0.571) and AP10 (0.623). The Cronbach's Alpha is 0.904, the composite reliability is 0.922, and the AVE is 0.545. There is no item removed in the construct AP as the item meets the requirement that the value of outer loading must be higher than 0.4.

Table 2: Convergent Validity

| Item | OL | SC | AP |
|---|---|---|---|
| 1 | Deleted | 0.669 | 0.775 |
| 2 | 0.702 | Deleted | 0.85 |
| 3 | 0.657 | Deleted | 0.848 |
| 4 | 0.681 | Deleted | 0.819 |
| 5 | 0.735 | 0.589 | 0.668 |
| 6 | Deleted | 0.742 | 0.711 |
| 7 | 0.61 | 0.782 | 0.725 |
| 8 | 0.636 | 0.697 | 0.739 |
| 9 | Deleted | 0.75 | 0.571 |
| 10 | Deleted | 0.828 | 0.623 |
| 11 | Deleted | 0.692 | - |
| 12 | 0.767 | 0.662 | - |
| 13 | 0.791 | 0.666 | - |
| 14 | 0.739 | - | - |
| 15 | 0.718 | - | - |
| 16 | 0.767 | - | - |
| 17 | 0.704 | - | - |
| AVE | 0.545 | 0.545 | 0.545 |
| CR | 0.922 | 0.922 | 0.922 |

Note: OL = Online Learning; SC = Student's Commitment; AP = Academic Performance

### Discriminant Validity

Referring to Table 3, as discriminant validity is required to create the validity of the outer model, it displays the differences in objects between the constructs. Path analysis used to confirm discriminant validity till hypotheses are tested. The structural model has been used to evaluate the research with the indicator being OL is connected toward SC and AP while SC is connected toward AP. Thus, the discriminant is valid as the value is smaller than 1 which is OL: SC (0.843), OL: AP (0.836) and SC: AP (0.84).

Table 3: Discriminant Validity

|      | AP    | OL    | SC  |
|------|-------|-------|-----|
| AP   |       |       |     |
| OL   | 0.836 |       |     |
| SC   | 0.84  | 0.843 |     |

### Hypothesis Testing

The bootstrapping process and assessment of t values, p values, or bootstrapping confidence intervals are required when testing for significance. To analyze the hypothesis, the researcher used one-tail test bootstrapping through PLS-SEM. To validate that the hypothesis is supported, the p-value must be less than 0.05, the t-value must be higher than 1.645, and the confidence interval must be negative.

As shown in Table 4, the analysis shows that, the Online Learning (OL) impact on Academic Performance (AP) has $\beta = 0.453$ t-value = 4.34 which supporting H1, while Student's Commitment (SC) has $\beta = 0.768$ t-value = 19.629 supporting H2. Lastly, the analysis of Student's Commitment effect on Academic Performance (AP) has $\beta = 0.409$ t-value = 3.937, supporting H3 is found to be significant.

Table 4: Summary of Hypotheses Testing

| Hypothesis | Path | Standard Beta | Standard Error | t-Value | p-Value | Bias | Confidence Intervale | | Decision |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 5.00% | 95.00% | |
| H1 | OL -> AP | 0.453 | 0.104 | 4.34 | 0 | 0.011 | 0.286 | 0.619 | Supported |
| H2 | OL -> SC | 0.768 | 0.039 | 19.629 | 0 | 0.004 | 0.686 | 0.818 | Supported |
| H3 | SC -> AP | 0.409 | 0.104 | 3.937 | 0 | -0.007 | 0.227 | 0.572 | Supported |

**Note**: p < 0.05 (1-tailed test)

## Discussion and Conclusion

### Discussion

RQ1: What is the effect of online learning on academic performance?

The result from the hypotheses testing in PLS-SEM structural model demonstrated that online learning practices (OL) were positively influenced students' commitment (SC) and students' academic performance (AP) at $\beta = 0.768$, t = 19.629 and $\beta = 0.453$, t = 4.34 respectively. These results suggested that as the level of online learning practices increased, the level of students' commitment and students' academic performance also increased. Hence, these findings proved that concerns and speculations about online learning might compromise students' commitment and ruin their academic performance were not entirely true.

RQ2: What is the effect of online learning affecting students' commitment?

The effect of online learning (OL) had a significant relationship with students' commitment (SC) and showed that hypothesis 2 is supported, which is the t-value is 19.629. Based on Smart-PLS, the highest mean for student commitment is SC15 (5). The students stated that collaboration with fellow students helps them improve their studies. Next, the standardized β-value of the relationship between online learning and student's commitment is 0.768. This value is in the confidence interval ranging from 0.686 to 0.818.

RQ3: What is the effect of a student's commitment on academic performance?

The effect of the student's commitment on academic performance among students has been analyzed as above. Based on the study, the most effective academic performance (AP) is AP2 with 5.008. Most of the respondents give six scores as the effect of the student's commitment on academic performance. The researcher assumed that the students obtain good CGPA through online learning. Furthermore, there is a significant relationship between the student's commitment and academic performance, with the standardized β equal to 0.409. The table indicates the standardized β-value in the confidence interval range between 0.227 and 0.572. Next, the t-value is 3.937. The effect of student commitment had a significant relationship with academic performance and showed that hypothesis three is supported.

*Implications*

The present study conveyed several implications for future academicians and practitioners. Based on the previous discussion, quantitative research has been done to confirm further the independent variable is online learning while the mediating variable is student commitment. Besides, academic performance is the dependent variable. The implications could add to the body of knowledge for academics and further inspire practitioners to think about how online learning affects academic achievement among Malaysian public university students as mediated by student commitment. Theoretical and real-world consequences been examined in the section that follows.

Theoretical Implication

The study's theoretical ramifications are somewhat limited. First off, this study was effective in creating a framework to evaluate how online learning affects academic performance among university students at a public institution in Malaysia, which is mediated by student commitment. This paradigm takes into account three key elements: academic performance, student dedication, and online learning. Second, it was determined that the study's findings on the impact of online learning on academic achievement as mediated by student commitment were important. As a result, online learning has a favourable effect on students' dedication and academic achievement.

Practical Implication

The study of online learning on academic performance mediated by students' commitment does not only matter to the students in public universities. However, it also can matter for all students, such as in primary school, secondary school, private university, etc. This study could be a reference for further research by identifying the effect of online learning on academic performance mediated by student commitment among students. In addition, it can also allow the education department regarding the level of education to increase the student commitment to online learning.

*Limitation of Study*

Regardless the research was carefully planned and accomplished its objectives, several limitations were identified. This study lack usable and reliable resource. Most of the resources have mixed findings, making them challenging to implement. Most of the previous research papers are also limited to foreign countries. In other words, there are limited research papers on the relationship of online learning on academic performance mediated by student commitment in Malaysia.

Furthermore, this study also faces difficulty obtaining respondents, even with a broad population of public universities in Malaysia. Most students do not have time to participate in aiding their studies. This may be because of the COVID-19 pandemic, which has changed their daily activities. Most students have to familiarize themselves in the new learning working environment, including the change of learning styles from face-to-face to online. Moreover, the student faces more problems regarding the staggering change in Malaysian Standard Operating Procedure (SOP) of minimizing and breaking the chain of COVID-19 infection.

*Recommendation for Future Studies*

Due to time and financial limitations, the study has remaining flaws. To better grasp the topic, researchers must broaden their target audience. Future research ideas include focusing on new populations such those at private universities, elementary schools, high schools, and colleges, among others. This will broaden and deepen our understanding of the present and upcoming research on this subject. In addition, it is advised to look into other mediating factors including spending, the learning environment, and others. This will widen the topic and investigate related research in other areas.

*Conclusions*

This study determines the impact of online learning on academic performance mediated by student commitment among students. The three objectives from the research question were developed, with three hypotheses proposed. An online survey was used to collect data from the respondent, consisting of those between 20 to 25 years old. The question for the questionnaire was adapted from a previous study related to the topic. PLS-SEM was used to analyze the collected data. One hundred nineteen respondents were successfully collected, and this study's response rate is 71%. Of the three hypotheses proposed, all hypotheses were supported. Therefore, online learning positively impacts academic performance and student commitment.

The result has contributed to theoretical and practical implications. For the theoretical implication, this study provides information on the impact of online learning on academic performance, as mediated by student commitment. As for practical, this information can be used to enhance students' academic performance and dedication to online learning. The findings might be significant to other institutions and at different level of education as well, hence, other variables could be explored. Lecturer, teachers, and education institutions should consider on improving the learning platform, interaction, and technology for the online learning efficiency. Whereas the student themselves should improve their learning environment, time allocation, and peer relationship in ensuring better academic performance particularly on CGPA and practical skill.

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